



Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402

CNL-15-118

June 24, 2015

10 CFR 50.4

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, D.C. 20555-0001

Watts Bar Nuclear Plant, Unit 2
Construction Permit No. CPPR-92
NRC Docket No. 50-391

**Subject: WATTS BAR NUCLEAR PLANT (WBN) UNIT 2 - TRANSMITTAL OF
UNIT 1/UNIT 2 AS-CONSTRUCTED FIRE PROTECTION REPORT
(TAC No.ME3091)**

- References:
1. TVA letter to NRC dated March 13, 2013, "Watts Bar Nuclear Plant (WBN) Unit 2 - Transmittal of Revised Unit 1/Unit 2 As Designed Fire Protection Report (TAC No. ME3091)"
 2. TVA letter to NRC dated September 18, 2014, "Watts Bar Nuclear Plant (WBN) Unit 2 - Transmittal of Unit 1/Unit 2 As-Constructed Fire Protection Report (TAC No. ME3091)"
 3. TVA letter to NRC dated October 27, 2014, "Watts Bar Nuclear Plant Unit 2 - Response to Questions Regarding the Unit 1/Unit 2 As-Constructed Fire Protection Report (TAC No. ME3091)"

By letter dated March 13, 2013, (Reference 1), Tennessee Valley Authority (TVA) submitted Watts Bar Nuclear Plant (WBN) Unit 1/Unit 2 As-Designed Fire Protection Report. By letter dated September 18, 2014, (Reference 2), TVA submitted the Watts Bar Nuclear Plant (WBN) Unit 1/Unit 2 As-Constructed Fire Protection Report (U1/U2 FPR). By letter dated October 27, 2014, (Reference 3), TVA provided the response to a request for additional information (RAI) from the Nuclear Regulatory Commission (NRC) that resulted from a meeting on October 8, 2014 to discuss the U1/U2 FPR.

Since the submittal of References 1 through 3, TVA assembled a multi-discipline site, corporate, and specialized vendor contract support team to perform programmatic, procedure development, and design basis engineering, extensive analysis and reviews of the fire protection program. As a result of these analyses, reviews, and procedure updates, changes to the U1/U2 FPR were identified. These changes have been incorporated into the As-Constructed U1/U2 FPR provided in Enclosure 1.

In Reference 3, TVA made a commitment to include the changes to the U1/U2 FPR addressed in the October 27, 2014 RAI response, in the next update to the NRC. The changes based on the RAI response are also included in the version of the U1/U2 FPR provided in Enclosure 1.

In Reference 2, TVA provided Report R1976-20-1, WBN Unit 2 Multiple Spurious Operation Evaluation, Revision 3. To assist the NRC staff's review, the updated report is provided as Enclosure 3.


NUREG-0847, SSER 26, Appendix HH, provides a status of required action items associated with open items, confirmatory issues, and proposed license conditions that the NRC staff has identified. In this submittal, TVA is confirming the completion of the Unit 2 OMA feasibility walkdowns (SSER 26, Appendix HH, Open Item 140), the multiple spurious operation scenario resolution actions for scenarios which only affect Unit 2 (SSER 26, Appendix HH, Open Item 141), the electrical coordination modifications (SSER 26, Appendix HH, Open Item 142), and the as-built FPR aligns with the as-designed FPR with gaps submitted to the NRC for approval (SSER 26, Appendix HH, Open Item 143). Therefore, TVA has completed actions to support closure of Appendix HH items 140, 141, 142, and 143.

TVA has determined that a license amendment request for a change to License Condition 2.F of the Unit 1 Operating License should be submitted separate from the as-constructed U1/U2 FPR and before the TVA intends to request an operating license for Unit 2. This License Condition establishes the NRC's basis for approval of WBN's Fire Protection Program. Considering this, TVA intends to submit the amendment request for a change to License Condition 2.F by July 22, 2015.

The new commitment discussed above in this letter is listed in Enclosure 2. Should you have any questions regarding this submittal, please contact Gordon Arent at (423) 365-2004.

I declare under penalty of perjury that the foregoing is true and correct. Executed on this 24th day of June 2015.

Respectfully



J. W. Shea
Vice President, Nuclear Licensing

Enclosures

cc: See Page 3

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Enclosures:

1. WBN Unit 1/Unit 2 As-Constructed Fire Protection Report (FPR)
2. New Fire Protection Commitment
3. Calculation EDQ0009992012000085 - Appendix R - WBN Unit 2 Multiple Spurious Operation (MSO) Evaluations

cc (Enclosures):

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Enclosure 1
WBN Unit 1/Unit 2 As-Constructed Fire Protection Report (FPR)

1.0 BACKGROUND

On April 18, 1977, Watts Bar Nuclear Plant (WBN) submitted a Fire Protection Program (FPP) to the Nuclear Regulatory Commission (NRC) detailing the fire hazards analysis and a comparison to the guidelines of Appendix A to Branch Technical Position APCSB 9.5-1 (Part II, Reference 4.1.10). On September 9, 1980, WBN submitted the Fire Protection Analysis describing the safe shutdown capabilities. On November 19, 1980, the NRC published 10 CFR 50.48, "Fire Protection," (Part II, Reference 4.1.1) and a new Appendix R to 10 CFR 50 that established fire protection requirements for operating nuclear power plants. This rule became effective on February 17, 1981; it specified certain fire protection features for operating nuclear power plants licensed before January 1979.

2.0 PURPOSE

The purpose of the Fire Protection Report (FPR) is to consolidate a sufficiently detailed summary of the WBN regulatory-required FPP into a single document and to reflect the design of both units. The Final Safety Analysis Report (FSAR) references this report as detailing WBN's Fire Protection Program. Updates to this report are made on a schedule consistent with updates to the FSAR.

The FPR has been developed in accordance with the guidelines of NRC Generic Letter 86-10, "Implementation of Fire Protection Requirements" (Part II, Reference 4.1.16) and NRC Generic Letter 88-12, "Removal of Fire Protection Requirements from Technical Specifications" (Part II, Reference 4.1.18). The FPR brings WBN into compliance with NRC recommendations for documenting the FPP and commitments. The FPR documents WBN's Appendix R evaluation that ensures that safe shutdown capability can be maintained during and after a fire in accordance with Sections III.G, III.J, III.L and III.O of 10 CFR 50, Appendix R (Part II, Reference 4.1.8).

3.0 SCOPE

This report includes the following documentation:

1. Introduction (Part I)

Part I provides the introduction and a table that summarizes the plant design. The table is also a guide to the manner used to demonstrate compliance with 10 CFR 50 Appendix R.

2. Fire Protection Plan (Part II)

Part II describes the organizations supporting the WBN Fire Protection Program, the plant fire protection systems and features, fire loss prevention procedures and administrative controls, the plant emergency response organization, the Fire Protection Systems and Features Operating Requirements (OR), and Testing and Inspection Requirements (TIR).

3. Safe Shutdown Capabilities (Part III)

Part III identifies the analysis methodology used to demonstrate compliance with Sections III.G and III.L of 10 CFR 50, Appendix R. It describes the specific safe shutdown functions required to satisfy Appendix R and identifies the major systems used to satisfy the safe shutdown

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performance goals. The processes used to identify required components and required circuits are identified. Tabular lists of required mechanical and electrical equipment and components are also included in this part.

4. Alternate Shutdown Capability (Part IV)

Part IV identifies and describes the methodology used to demonstrate compliance with Appendix R Section III.G.3 and III.L for alternative shutdown given a fire in the Control Building. The general design criteria for electric and physical independence of the alternative shutdown system from the Control Building are addressed.

5. Operator Actions, Repairs, and Emergency Lighting (Part V)

Part V describes the process used to determine manual action requirements. The ability of plant staff to perform the manual actions is evaluated based on minimum staffing levels and the location of the fire. Cold shutdown repairs incorporated into the compliance strategies are identified. The adequacy of emergency lighting for access to, and performance of actions at manual action locations is also assessed.

6. Fire Hazards Analysis (Part VI)

Part VI summarizes the engineering evaluations performed to determine the adequacy of fire protection features for the fire areas and rooms identified for WBN. This part summarizes the physical characteristics of required fire barriers (including fire doors and fire dampers), combustible loading and fire severity, suppression and detection capabilities, deviations and evaluations, and fire safe shutdown capability for each area and room. The paths and systems available for safe shutdown are identified. Safe shutdown equipment, components, and cables that could be damaged by the fire are identified, along with the mitigating features to ensure availability.

7. Deviations and Evaluations (Part VII)

Part VII contains the deviations identified to the applicable sections of 10 CFR 50 Appendix R and Appendix A to Branch Technical Position (BTP) APCSB 9.5-1 (Part II, Reference 4.1.10). Engineering evaluations developed in accordance with the guidance of Generic Letters 83-33 (Part II, Reference 4.1.15) and 86-10 (Part II, Reference 4.1.16) are presented. National Fire Protection Association (NFPA) code deviations that impact the operational capabilities of fire protection features protecting safe shutdown or alternate shutdown equipment are also identified. Part VII also contains evaluations of the Unit 2 operator manual actions.

8. Conformance to BTP 9.5-1, Appendix A (Part VIII)

Part VIII contains a line-by-line comparison of WBN against the guidelines of Appendix A to BTP 9.5-1. The status of conformance with the guidelines is summarized. Alternatives to strict compliance are identified where applicable. The details that support Part VIII are contained in other parts of the FPR and in referenced plant documentation.

9. Conformance to 10CFR50, Appendix R (Part IX)

Part IX contains a line-by-line comparison of WBN against the guidelines of Appendix R to

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10 CFR 50. The status of conformance with the requirements of Sections III.G, III.J, III.L and III.O is summarized. Alternatives to strict compliance are identified where applicable. The details that support Part IX are contained in other parts of the FPR and in referenced plant documentation.

10. NFPA Code Conformance Evaluation (Part X)

Part X contains a review of the NFPA codes referenced in Appendix A to BTP 9.5-1 and addresses the applicability of the NFPA codes to the WBN regulatory compliance fire protection program.

4.0 SUMMARY COMPLIANCE TABLE

Table I-1 summarizes the classical fire protection features at WBN on a fire area and room basis. Not all of the fire protection features documented in Table I-1 are required to demonstrate compliance with the guidance of Appendix A to BTP 9.5-1 or the requirements of Appendix R to 10CFR50. Part II of the FPR identifies those detection and suppression systems that are required, along with the associated Operability and Testing and Inspection Requirements for the systems. Table I-1 also presents basic information on the fire safe shutdown significance of each room in the plant.

Table I-1 contains ten columns, which capture the following information:

Column 1: (Room Number and Name)	Fire area number and identification of rooms in the fire area
Column 2: (Safe Shutdown Equipment or Cables Y/N)	Presence of safe shutdown cables or components in each room
Column 3: (Automatic Detection Y/N, Partial)	The presence and extent of automatic fire detection provided in each room
Column 4: (Automatic Suppression Y/N, Partial)	The presence and extent of automatic fire suppression provided in each room
Column 5: (Fire Rated Wraps)	Use of fire rated fire barriers and rating on trays or conduits in each room for which it is credited
Column 6: (Combustible Load, Fire Severity)	The equivalent fire severity of in situ combustible materials in each room (see note below)
Column 7: (Deviation Number in Part VII)	Reference to deviations from 10 CFR 50 Appendix R, Appendix A to BTP 9.5-1, and NFPA codes documented in Part VII that are applicable to the room
Column 8: (Evaluation Number in Part VII)	Reference to engineering evaluations prepared in accordance with the guidance of Generic Letters 83-33 and 86-10 documented in Part VII that are applicable to the room
Column 9: (CSD Repairs required in any room due to fire in room)	Cold shutdown (CSD) repairs which may be required due to a fire in the specific room (with the repair potentially required due to a fire in any room in the analysis volume in which the specific room is located)

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<p>Column 10: (III.G compliance for HSD)</p>	<p>Notations in this column indicate the method of compliance with 10 CFR 50 Appendix R Section III.G for achieving hot shutdown (HSD):</p> <ul style="list-style-type: none"> • III.G.1 is not noted in the table, but is credited for some function in all rooms except the control building which is a III.G.3 area. • III.G.2.a is credited for some function in each room indicated by “2a” in this column. • III.G.2.b is credited for some function in each room indicated by “2b” in this column. • III.G.2.c is credited for some function in each room indicated by “2c” in this column. • III.G.2.d, e and f are credited for some functions in each room in containment indicated by “2def” in this column. • Operator Manual Actions credited in lieu of physical separation or to mitigate spurious equipment actuation is indicated by the following: <ul style="list-style-type: none"> ○ 2-G indicates a unit 2 OMA performed on equipment in the safe shutdown path (NEI 00-01 Green). The Feasibility and Reliability evaluations for actions required in less than 2 hours are included in Part VII, Section 8. ○ 2-O indicates a unit 2 OMA performed on equipment that is important to safe shutdown, but not in the safe shutdown path (NEI 00-01 Orange) ○ 1-G indicates a unit 1 OMA performed on equipment in the safe shutdown path (NEI 00-01 Green). As discussed in Part VII, Section 7, these OMAs were addressed in Section 3.5, “Manual Operator Actions,” of SSER 18 . ○ 1-O indicates a unit 1 OMA performed on equipment that is important to safe shutdown but not in the safe shutdown path (NEI 00-01 Orange). As discussed in Part VII, Section 7, these OMAs were addressed in Section 3.5 of SSER 18. ○ 0-G indicates an OMA applicable to both units performed on equipment in the safe shutdown path (NEI 00-01 Green). These OMAs were addressed in Section 3.5 of SSER 18 for Unit 1 and Part VII, Section 8 if required in less than 2 hours for Unit 2. These OMAs were addressed in SSER 26 (Part II, Reference 4.1.41). ○ 0-O indicates an OMA applicable to both units performed on equipment that is important to safe shutdown but not in the safe shutdown path (NEI 00-01 Orange). These OMAs were addressed in SSER 26.
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Note: The equivalent fire severity values are defined in Section 2.1 of Part VI based on fire severity indices. The fire severity indices have five categories. The five categories are:

<u>CLASSIFICATION</u>	<u>COMBUSTIBLE LOAD</u>	<u>FIRE SEVERITY</u>
Insignificant	<6,500 Btu/ft ²	<5 minutes
Low	<80,000 Btu/ft ²	<60 minutes
Moderate	<160,000 Btu/ft ²	<120 minutes
Moderately Severe	<240,000 Btu/ft ²	<180 minutes
Severe	>240,000 Btu/ft ²	>180 minutes

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Refer to NOTE 6

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Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial	Automatic Suppression Y/N, Partial	Fire Rated Wraps	Combustible Load, Fire Severity	Deviation Number in Part VII	Evaluation Number in Part VII	CSD Repairs req'd in any room due to fire in room	III.G Compliance for HSD
FIRE AREA 1:									
674.0-A1 - Tritiated Drain Collector Tank Room	Yes	No	No	No	Insignificant		3.1.1, 6.4.2.3		
674.0-A2 - Tritiated Drain Collector Tank Pumps	No	No	No	No	Insignificant		3.1.1		
676.0-A1 - Corridor	Yes	Yes, Partial	No	3 hour	Low	2.6.3.2.a, 2.6.3.4	3.1.1	Yes	2a
676.0-A2 - Holdup Tank Room A	No	No	No	No	Insignificant		3.1.1, 6.4.2.2		
676.0-A3 - Holdup Tank Room B	No	No	No	No	Insignificant	2.6.3.2.a	3.1.1, 6.4.2.2		
676.0-A4 - Floor Drain Collect Pump, Filter & Tank	No	No	No	No	Insignificant	2.6.3.2.b	3.1.1		
676.0-A4a - Floor Drain Collection Tank Room	No	No	No	No	Insignificant		3.1.1		
676.0-A5 - Gas Stripper Feed Pump Room	No	Yes, Partial	No	No	Low		3.1.1		
676.0-A6 - Spare	No	Yes	No	No	Insignificant		3.1.1		
676.0-A7 - Spare	No	No	No	No	Insignificant		3.1.1		
676.0-A8 - Containment Spray Pump Room 1B-B	Yes	Yes, Partial	No	No	Insignificant		3.1.1		
676.0-A9 - Containment Spray Pump Room 1A-A	Yes	Yes, Partial	No	No	Insignificant		3.1.1		
676.0-A14 - Containment Spray Pump Room 2A-A	Yes	Yes, Partial	No	No	Insignificant		3.1.1		
676.0-A15 - Containment Spray Pump Room 2B-B	Yes	Yes, Partial	No	No	Insignificant		3.1.1		
676.0-A16 - Unit 1 Pipe Chase	Yes	Yes	No	No	Insignificant		3.1.1	Yes	
692.0-A1 - Corridor Subdivided into 692.0-A1A (692-A1A1,- A1A2,- A1A3, -A1AN), 692-A1B (692-A1BN,- A1B1,- A1B2, -A1B3) and 692-A1C	Yes	Yes, Partial	Yes, Partial	1 hour	Moderate	2.4, 2.6.3.2.a, 2.6.3.4	3.1.1, 8.3.1	Yes	1-G, 2b, 2c, 2-G
692.0-A2 - Gas Decay Tank Valve Gallery	No	No	No	No	Insignificant		3.1.1		

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Refer to NOTE 6

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Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial	Automatic Suppression Y/N, Partial	Fire Rated Wraps	Combustible Load, Fire Severity	Deviation Number in Part VII	Evaluation Number in Part VII	CSD Repairs req'd in any room due to fire in room	III.G Compliance for HSD
692.0-A3 - Gas Decay Tank Room	Yes	No	No	No	Insignificant		3.1.1, 6.4.2.4		
692.0-A4 - Chemical Drain Tank Room	No	Yes	Yes	No	Insignificant				
692.0-A5 - Gas Decay Tank Room	No	No	No	No	Insignificant		3.1.1, 6.4.2.4		
692.0-A8 - Unit 1 Pipe Chase	Yes	Yes	No	No	Low		3.1.1	Yes	
692.0-A9 - Charging Pump 1A-A	Yes	Yes, Partial	Yes, Partial	No	Low		3.1.1		1-G
692.0-A12 - Safety Injection Pump 1B-B	Yes	Yes	Yes	No	Insignificant				
692.0-A13 - Safety Injection Pump 1A-A	Yes	Yes	Yes	No	Insignificant				
692.0-A17 - Maintenance and Test Equipment (M&TE) Hot Tool Room	No	Yes, Partial	Yes, Partial	No	Insignificant		3.1.1		
692.0-A18 - Hot Tool Room	Yes	Yes, Partial	Yes, Partial	No	Insignificant		3.1.1		
692.0-A27 - Concentrate Filter Room	No	No	No	No	Insignificant	2.6.3.4	3.1.1		
692.0-A29 - Boric Acid Evaporator Package Room B	Yes	No	No	No	Insignificant	2.9.1	3.1.1		
692.0-A30 - Boric Acid Evaporator Package Room A	Yes	No	No	No	Insignificant	2.9.1	3.1.1		
692.0-A31 - Spare	No	Yes, Partial	No	No	Low	2.6.3.2.a, 2.6.3.4	3.1.1		
713.0-A28 - Unit 1 Pipe Chase	Yes	Yes	No	No	Insignificant		3.1.1	Yes	
FIRE AREA 1-1:									
692.0-A20 - Safety Injection Pump 2B-B	Yes	Yes	Yes	No	Insignificant				
FIRE AREA 1-2:									
692.0-A19 - Safety Injection Pump 2A-A	Yes	Yes	Yes	No	Insignificant				

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 2-1:									
676.0-A10 - RHR Pump Room 1B-B	Yes	Yes, Partial	No	No	Insignificant				
FIRE AREA 2-2:									
676.0-A13 - RHR Pump Room 2B-B	Yes	Yes, Partial	No	No	Insignificant				
FIRE AREA 3-1:									
676.0-A11 - RHR Pump Room 1A-A	Yes	Yes, Partial	No	No	Insignificant				
FIRE AREA 3-2:									
676.0-A12 - RHR Pump Room 2A-A	Yes	Yes, Partial	No	No	Insignificant				
FIRE AREA 4:									
692.0-A6 - Turbine Driven Auxiliary Feedwater Pump 1A-S	Yes	Yes	Yes	No	Insignificant				1-G, 1-O
FIRE AREA 5:									
692.0-A7 - Unit 1 Penetration Rm	Yes	Yes	Yes, Partial	No	Insignificant		7.1.3.1		1-G
FIRE AREA 6:									
692.0-A10 - Charging Pump Room 1B-B	Yes	Yes, Partial	Yes, Partial	No	Low		3.1.1, 7.1.3.1		1-G, 1-O
FIRE AREA 7:									
692.0-A11 - Charging Pump Room 1C	Yes	Yes, Partial	Yes, Partial	No	Low				
FIRE AREA 8:									
713.0-A1 - Auxiliary Building Corridor Subdivided into 713.0-A1A (713-A1A1,- A1A2,- A1A3,- A1A4,-A1AN), -A1B (713-A1BN) and -A1C	Yes	Yes	Yes, Partial	1 hour	Moderately Severe	2.4, 2.5, 2.6.3.1, 2.6.3.4, 2.6.3.2.a	3.1.2 , 8.3.4, 5, 63 & 64	Yes	2b, 2c, 1-G, 1-O, 2-O
713.0-A2 - Air Lock	No	Yes	Yes	No	Low				

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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713.0-A3 - Titration Room	No	Yes	Yes, Partial	No	Low				
713.0-A4 - Radio Chemical Lab	Yes	Yes	Yes	No	Low				
713.0-A5 - Counting Room	No	Yes	Yes	No	Low				
713.0-A9 - Unit 1 Mixed Bed And Cation Valve Gallery	No	No	No	No	Insignificant		3.1.2		
713.0-A10 - Seal Water Heat Exchanger 1A	No	No	No	No	Low		3.1.2		
713.0-A11 - Heat Exchanger 1B	Yes	No	No	No	Insignificant		3.1.2		
713.0-A12 - Heat Exchanger 1A	Yes	No	No	No	Insignificant		3.1.2		
713.0-A13 - Sample Room 1	Yes	Yes	Yes	No	Low				
713.0-A14 - Sample Room 2	Yes	Yes	Yes	No	Insignificant				
713.0-A15 - Heat Exchanger 2A	Yes	No	No	No	Low		3.1.2		
713.0-A16 - Heat Exchanger 2B	Yes	No	No	No	Low		3.1.2		
713.0-A17 - Seal Water Heat Exchanger 2A	No	No	No	No	Insignificant		3.1.2		
713.0-A18 - Unit 2 Mixed Bed And Cation Valve Gallery	No	No	No	No	Insignificant		3.1.2		
713.0-A22 - Holdup Tank Valve Gallery	No	Yes	Yes	No	Low				
713.0-A23 - CVCS Valve Gallery	No	No	No	No	Insignificant		3.1.2		
713.0-A24 - Waste Gas Compressor Valve Gallery	No	No	No	No	Insignificant		3.1.2		
713.0-A25 - Waste Gas Compressor B	No	No	No	No	Low		3.1.2		
713.0-A26 - Waste Gas Compressor A	No	No	No	No	Low		3.1.2		
713.0-A27 - Decontamination Room	Yes	Yes	Yes	No	Low		8.3.6, 63 & 64	Yes	
713.0-A30 - Air Lock	No	No	No	No	Insignificant		3.1.2		
713.0-A31 - Waste Gas Analyzer Room	No	No	No	No	Insignificant		3.1.2		

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 9:									
713.0-A6 - Unit 1 Penetration Room	Yes	Yes	Yes	1 hour	Moderate		3.1.3, 3.2, 3.5	Yes	2c
713.0-A8 - Unit 1 Reactor Building Access Room	No	No	No	No	Insignificant		3.1.3	Yes	
FIRE AREA 9-1:									
713.0-A7 - Unit 1 Volume Control Tank (VCT) Room	Yes	Yes	Yes, Partial	No	Insignificant		3.1.3a, 3.5 & 7.1.3.2		1-O
FIRE AREA 10:									
692.0-A14 - Cask Decontamination Collection Tank Room	No	Yes, Partial	Yes	No	Insignificant				
692.0-A15 - Spent Resin Tank Room	No	No	No	No	Insignificant		6.4.2.1		
692.0-A16 - Valve Gallery	No	No	No	No	Insignificant				
728.0-A7 - Cask Decontamination Room	No	No	No	No	Insignificant				
729.0-A5 - Cask Unloading Area	No	Yes	Yes	No	Low				
729.0-A6 - Nitrogen Storage Area	Yes	Yes, Partial	No	No	Insignificant	2.6.1, 2.9.4	3.1.4, 6.2.2.2		
729.0-A8 - Unit 1 Post Accident Sampling Room	Yes	Yes, Partial	Yes, Partial	1 hour	Low	2.6.1	6.2.2.2		2c
729.0-A9 - Unit 2 Post Accident Sampling Room	Yes	Yes, Partial	Yes, Partial	1 hour	Low	2.6.1			2c
757.0-A13 - Refueling Room (includes 741.5 – New Fuel Storage Vault)	Yes	No	No	No	Insignificant	2.6.3.1, 2.6.3.2.b, 2.9.10, 4.1, 4.5			
772.0-A9 - HEPA Filter Plenum Room	Yes	Yes	Yes	No	Low		8.3.42, 63 & 64		
776.0-A1 - Elevator Machine Room	No	No	No	No	Severe				
786.0-A1 - Fan Room	No	No	No	No	Insignificant				
814.75-ACS - Stair No. 2 & Penthouse	No	No	No	No	Insignificant				
Stair No. 4 - Stair No. 4 & Penthouse	No	Yes, Partial	No	No	Insignificant				

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 11:									
729.0-A3 - Waste Package Area	No	Yes	Yes	No	Low				
729.0-A4 - Waste Package Area	No	Yes	Yes	No	Moderate				
FIRE AREA 12:									
729.0-A1 - Main Steam Valve Room (Unit 1 South)	Yes	No	No	No	Insignificant	2.9.2	3.1.5		
737.0-A6 - Air Lock	No	No	No	No	Insignificant	2.9.2	3.1.5		
FIRE AREA 13:									
729.0-A2 - Main Steam Valve Room (Unit 1 North)	Yes	No	No	No	Insignificant	2.9.3	3.1.6		
729.5-A16 - Unit 1 Shield Building Vent Radiation Monitoring Room	Yes	No	No	No	Insignificant				
Unit 1 Additional Equipment Building (U1-AEB) - (729.0-A14, 737.0-A13, 763.5-A1, 775.25-A1, 786.5-A1)	Yes	Yes, Partial	No	No	Low Moderate				
729.0-A12 - Unit 1 Steam Valve Instrument Room A	Yes	No	No	No	Low	2.9.7	3.1.6		
FIRE AREA 14:									
737.0-A1 - Auxiliary Building Corridor (Subdivided into 737.0-A1A, -A1AN, -A1BN, -A1CN, A1B and -A1C)	Yes	Yes	Yes, Partial	1 hour	Moderately Severe	2.4, 2.6.3.1, 2.6.3.2.a, 4.1	3.4, 8.3.8, 9, 10 & 11	Yes	2b, 2c, 0-G, 0-O, 1-G, 2-G, 2-O
737.0-A2 - Hot Instrument Shop	No	Yes	No	No	Low		3.1.7		
737.0-A4 - Air Lock	No	No	No	No	Insignificant		3.1.7		
737.0-A7 - Unit 1 Letdown Heat Exchanger	Yes	No	No	No	Low		3.1.7	Yes	
737.0-A8 - Unit 2 Letdown Heat Exchanger	Yes	No	No	No	Low		3.1.7		
737.0-A11 - Air Lock	No	No	No	No	Insignificant		3.1.7		
FIRE AREA 15-1:									
737.0-A3 - Unit 1 Heat and Vent Equipment Room	Yes	Yes	Yes, Partial	1 hour	Low		3.4	Yes	2c

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 15-2:									
737.0-A12 - Unit 2 Heat and Vent Equipment Room	Yes	Yes	Yes, Partial	1 hour	Low		3.4, 8.3.18 & 65		2c
FIRE AREA 16:									
737.0-A5 - Ventilation and Purge Air Room (Subdivided into 737.0-A5S, -A5M, -A5N)	Yes	Yes	Yes, Partial	1 hour	Low	2.4, 2.6.1	6.2.2.1, 8.3.12, 13, 14, 63 & 64		2b, 2c
737.0-A15 - Gross Failed Fuel Detector Room	No	No (Note 1)	Yes (Note 1)	No	Insignificant				
FIRE AREA 17:									
757.0-A2 - 6.9kV and 480V Shutdown Board Room A	Yes	Yes	Yes	1 hour	Moderately Severe	2.6.3.1, 4.3	8.3.20	Yes	2c, 0-G, 0-O, 1-G, 1-O, 2-O
757.0-A9 - Unit 1 Personnel and Equipment Access	Yes	Yes	Yes	1 hour	Moderate		8.3.24	Yes	2c
FIRE AREA 18:									
757.0-A3 - 125V Vital Battery Board Room II	Yes	Yes	No (Note 5)	No	Low		8.3.21 & 65		1-O
FIRE AREA 19:									
757.0-A4 - 125V Vital Battery Board Room I	Yes	Yes	No (Note 5)	No	Low		8.3.22, 63 & 64		1-G, 1-O
FIRE AREA 20:									
757.0-A1 - Auxiliary Control Room	Yes	Yes	Yes	1 hour	Moderate	2.1	8.3.19	Yes	2c
FIRE AREA 21:									
757.0-A25 - Auxiliary Control Instrument Room 1A	Yes	Yes	Yes	1 hour	Severe				2c
FIRE AREA 22:									
757.0-A26 - Auxiliary Control Instrument Room 1B	Yes	Yes	Yes	1 hour	Moderately Severe		8.3.32 & 65		2c
FIRE AREA 23:									
757.0-A27 - Auxiliary Control Instrument Room 2A	Yes	Yes	Yes	No	Moderate		8.3.33, 63 & 64	Yes	2-G

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 24:									
757.0-A28 - Auxiliary Control Instrument Room 2B	Yes	Yes	Yes	1 hour	Moderately Severe		8.3.34, 62 & 65		2c, 2-G
FIRE AREA 25:									
757.0-A10 - Miscellaneous Equipment Room	Yes	Yes	Yes	1 hour	Moderately Severe	2.6.3.2.b	8.3.25, 62 & 65	Yes	2c
757.0-A12 - Reactor Building Access Room (Unit 1)	Yes	Yes	Yes	No	Moderate				
782.0-A1 - Unit 1 Control Rod Drive Equipment Room	Yes	Yes	Yes	No	Moderate		8.3.51, 62 & 65		
782.0-A2 - Pressurizer Heater Transformer Room 1	Yes	Yes	Yes	No	Moderate		8.3.52, 62 & 65		
FIRE AREA 26:									
757.0-A11 - Unit 1 Reactor Bldg Equipment Hatch	Yes	Yes	Yes, Partial	1 hour	Low		6.1.1		2c
FIRE AREA 27:									
757.0-A5 - 480V Shutdown Board Room 1B	Yes	Yes	Yes	1 hour	Moderately Severe	4.1	8.3.23		2c, 0-O, 1-G, 1-O
FIRE AREA 28:									
757.0-A21 - 480V Shutdown Board Room 2A	Yes	Yes	Yes	1 hour	Moderately Severe	4.1	8.3.28 & 64	Yes	2c, 0-G, 2-G, 2-O
FIRE AREA 29:									
757.0-A22 - 125V Vital Battery Board Room IV	Yes	Yes	No (Note 5)	No	Low		8.3.29, 62 & 65		
FIRE AREA 30:									
757.0-A23 - 125V Vital Battery Board Room III	Yes	Yes	No (Note 5)	No	Low		8.3.30, 63 & 64	Yes	2-O
FIRE AREA 31:									
757.0-A17 – Unit 2 Personnel and Equipment Access Room	Yes	Yes	Yes	No	Low		8.3.27, 62 & 65		
757.0-A24 - 6.9kV & 480V Shutdown Board Room B	Yes	Yes	Yes	1 hour	Moderately Severe	2.6.3.1, 4.3	8.3.31, 62 & 65		2c, 0-G, 1-G, 1-O, 2-G, 2-O

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 32:									
772.0-A1 - 480V Board Room 1-A	Yes	Yes	Yes	1 hour	Moderately Severe	2.6.3.1	8.3.35, 63 & 64		2c, 1-G, 1-O
FIRE AREA 33:									
772.0-A2 - 480V Board Room 1-B (Subdivided into 772.0-A2A1, -A2A2, -A2A3, -A2A4)	Yes	Yes	Yes, Partial	1 hour 3 hour (Note 4)	Severe	2.4	3.1.8, 8.3.36, 37, 62, 63, 64 & 65		2a, 2b, 2c, 0-G, 1-G, 1-O
FIRE AREA 34:									
772.0-A3 - 125V Vital Battery Room II	Yes	Yes	No (Note 5)	No	Low				
FIRE AREA 35:									
772.0-A4 - 125V Vital Battery Room I	Yes	Yes	No (Note 5)	No	Low		8.3.38, 63 & 64		
FIRE AREA 36:									
772.0-A5 - 480V Transformer Room 1-B	Yes	Yes	Yes	1 hour	Moderate		8.3.39 & 62		2c
FIRE AREA 37:									
772.0-A6 - 480V Transformer Room 1-A	Yes	Yes	Yes	1 hour	Moderate		8.3.40 & 64	Yes	2c
FIRE AREA 38:									
772.0-A7 - Unit 1 Mechanical Equipment Room	Yes	Yes	Yes	No	Moderately Severe	4.3			
FIRE AREA 39:									
772.0-A8 - Fifth Vital Battery and Board Room	Yes	Yes	Yes	No	Low		8.3.41, 62, 63, 64 & 65		
FIRE AREA 40:									
772.0-A10 – Unit 2 Mechanical Equipment Room	Yes	Yes	Yes	No	Moderately Severe	4.1, 4.3	8.3.43, 63 & 64		
FIRE AREA 41:									
772.0-A11 - 480V Transformer Room 2-B	Yes	Yes	Yes	1-hour	Moderately Severe		8.3.44 & 65		2c, 2-O

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 42:									
772.0-A12 - 480V Transformer Room 2-A	Yes	Yes	Yes	No	Moderately Severe		8.3.45 & 64	Yes	
FIRE AREA 43:									
772.0-A13 - 125V Vital Battery Room IV	Yes	Yes	No (Note 5)	No	Low		8.3.46, 62 & 65		
FIRE AREA 44:									
772.0-A14 - 125V Vital Battery Room III	Yes	Yes	No (Note 5)	No	Low		8.3.47, 63 & 64		
FIRE AREA 45:									
772.0-A15 - 480V Board Room 2-B (Subdivided into 772.0-A15A1, - A15A2, - A15A3, - A15A4)	Yes	Yes	Yes, Partial	1-hour	Severe	2.4	3.1.8, 8.3.48, 49, 62 & 65	Yes	2b, 2c, 0-G, 2-G, 2-O
FIRE AREA 46:									
772.0-A16 - 480V Board Room 2-A	Yes	Yes	Yes	No	Moderately Severe	2.6.3.1, 4.1	8.3.50, 63 & 64		2-O
FIRE AREA 47:									
786.0-A2 - Roof Access Air Lock	No	No	No	No	Insignificant				
786.0-A3 - Mechanical Equipment Room 2B	No	No	No	No	Insignificant				
786.0-A4 - Mechanical Equipment Room 1B	No	No	No	No	Insignificant				
786.0-AR - Roof	Yes	No	No	No	Insignificant				
786.0-A5 - 225 kVA DG Room B	No	Yes	Yes	No	Moderate				
786.0-A6 - 225 kVA DG Room A	No	Yes	Yes	No	Moderate				
FIRE AREA 48: Control Building (Note 2)									
692.0-C1 - Mechanical Equipment Room	Assumed Yes	Yes	Yes	No	Insignificant	2.6.4			
692.0-C2 - Mechanical Equipment Room	Assumed Yes	Yes	Yes	No	Insignificant				

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692.0-C3 - 250V Battery Room 1	Assumed Yes	Yes	Yes	No	Low				
692.0-C4 - 250V Battery Board Room No.1	Assumed Yes	Yes	No	No	Low	2.3			
692.0-C5 - 250V Battery Board Room No.2	Assumed Yes	Yes	No	No	Low	2.3			
692.0-C6 - 250V Battery Room 2	Assumed Yes	Yes	Yes	No	Low				
692.0-C7 - 24V and 48V Battery Room	Assumed Yes	Yes	Yes	No	Low				
692.0-C8 - 24V and 48V Battery Board and Charger Room	Assumed Yes	Yes	No	No	Low	2.3			
692.0-C9 - Communications Room	Assumed Yes	Yes	Yes	No	Moderate				
692.0-C10 - Mechanical Equipment Room	Assumed Yes	Yes	Yes	No	Insignificant	2.6.4			
692.0-C11 - Corridor	Assumed Yes	Yes	Yes	No	Low	4.2			
692.0-C12 - Secondary Alarm Station Room	Assumed Yes	Yes, Partial	Yes	No	Moderate				
708.0-C1 - Unit 1 Auxiliary Instrument Room	Assumed Yes	Yes	Yes	No	Moderately Severe				
708.0-C2 - Corridor	Assumed Yes	Yes	No	No	Low	2.3			
708.0-C3 - Computer Room	Assumed Yes	Yes, Partial	Yes	No	Moderately Severe				
708.0-C4 - Unit 2 Auxiliary Instrument Room	Assumed Yes	Yes	Yes	No	Moderately Severe				
729.0-C1 - Spreading Room	Yes	Yes	Yes	No	Severe				
755.0-C1 - Mechanical Equipment Room	Assumed Yes	Yes	Yes, Partial	No	Low				
755.0-C2 - Women's Restroom	Assumed Yes	Yes	Yes	No	Low				
755.0-C3 - Corridor (includes space above Operations office and living area)	Assumed Yes	Yes, Partial	Yes	No	Insignificant				
755.0-C4 - Kitchen	Assumed Yes	Yes	Yes	No	Low				
755.0-C5 - Toilet	Assumed Yes	Yes	Yes	No	Low				

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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755.0-C6 - Locker Room	Assumed Yes	Yes	Yes	No	Insignificant				
755.0-C7 - Shower	Assumed Yes	No	No	No	Insignificant	2.3			
755.0-C8 - Shower	Assumed Yes	No	No	No	Insignificant	2.3			
755.0-C9 - Conference Room	Assumed Yes	Yes	Yes	No	Moderately Severe				
755.0-C10 - Shift Manager's Office	Assumed Yes	Yes	Yes	No	Severe				
755.0-C12 - Main Control Room	Yes	Yes, Partial	No	No	Low	2.3, 4.1			
755.0-C13 - Relay Room	Assumed Yes	Yes	No	No	Low	2.3			
755.0-C14 - Technical Support Center	Assumed Yes	Yes	Yes	No	Low				
755.0-C15 - Corridor	Assumed Yes	Yes	No	No	Insignificant	2.3			
755.0-C16 - Conference Room	Assumed Yes	Yes	Yes	No	Low				
755.0-C17 - Telephone Room	Assumed Yes	No	No	No	Insignificant	2.3			
755.0-C18 - NRC Office	Assumed Yes	Yes	Yes	No	Low				
755.0-C19 - Corridor	Assumed Yes	Yes	Yes	No	Low				
755.0-C20 - DPSO Shop	Assumed Yes	Yes	No	No	Low	2.3			
Stairwell C1	Assumed Yes	No	No	No	Low	2.3, 4.2, 4.3			
Stairwell C2	Assumed Yes	No	No	No	Low	2.3, 4.2, 4.3			
FIRE AREA 49: Diesel Generator Building									
742.0-D4 - Diesel Generator Unit 1A-A	Yes	Yes	Yes	No	Moderately Severe	4.4			
760.5-D3 - Unit 1A-A Air Exhaust Room	Yes	Yes	No	No	Moderate				
760.5-D4 - 480V Board Room 1A-A	Yes	Yes	Yes	No	Moderate				
760.5-D5 - Unit 1A-A Air Intake Room	Yes	Yes	No	No	Low				

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 50: Diesel Generator Building									
742.0-D5 - Diesel Generator Unit 2A-A	Yes	Yes	Yes	No	Moderately Severe	4.4			
760.5-D6 - Unit 2A-A Air Exhaust Room	Yes	Yes	No	No	Moderate				
760.5-D7 - 480V Board Room 2A-A	Yes	Yes	Yes	No	Moderate				
760.5-D8 - Unit 2A-A Air Intake Room	Yes	Yes	No	No	Low				
FIRE AREA 51: Diesel Generator Building									
742.0-D6 - Diesel Generator Unit 1B-B	Yes	Yes	Yes	No	Moderately Severe	4.4			
760.5-D9 - Unit 1B-B Air Exhaust Room	Yes	Yes	No	No	Moderate				
760.5-D10 - 480V Board Room 1B-B	Yes	Yes	Yes	No	Moderate				
760.5-D11 - Unit 1B-B Air Intake Room	Yes	Yes	No	No	Low				
FIRE AREA 52: Diesel Generator Building									
742.0-D7 - Diesel Generator Unit 2B-B	Yes	Yes	Yes	No	Moderately Severe	4.4			
760.5-D12 - Unit 2B-B Air Exhaust Room	Yes	Yes	No	No	Moderate				
760.5-D13 - 480V Board Room 2B-B	Yes	Yes	Yes	No	Moderate				
760.5-D14 - Unit 2B-B Air Intake Room	Yes	Yes	No	No	Low				
FIRE AREA 53: Diesel Generator Building									
742.0-D3 - Toilet	No	No	No	No	Low				
742.0-D8 - Fuel Oil Transfer Room	No	Yes	Yes	No	Insignificant	4.6			
742.0-D9 - Pipe Gallery and Corridor (742.0-D9A,D9B, & D9N)	Yes	Yes	Yes	No	Low	4.3, 4.4, 4.6, 5.2			

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 54: Diesel Generator Building									
742.0-D1 - CO ₂ Storage Room	No	No	No	No	Insignificant				
742.0-D2 - Lube Oil Storage Room	No	Yes	Yes	No	Severe	5.2			
742.0-D10 - Conduit Interface Room	No	Yes	No	No	Moderate				
760.5-D1 - Corridor	No	No	No	No	Insignificant				
760.5-D2 - Radiation Shelter	No	No	No	No	Low				
Stairwell D1	No	No	No	No	Low				
FIRE AREA 55: Diesel Generator Building									
Cable Chase - A	Yes	Yes	Yes	No	Severe				
FIRE AREA 56: Diesel Generator Building									
Cable Chase - B	Yes	Yes	Yes	No	Severe				
FIRE AREA 57: (Deleted - Formerly Assigned to the Additional Diesel Generator Building)									
FIRE AREA 58: IPS									
IPS EL 741 West – ERCW Pump Room A	Yes	Yes, Partial	No	No	Moderate	2.6.2.1	6.3, 8.3.57 & 64		
IPS EL 741 West - Screen Wash and HPFP A Pump Room	Yes	No	No	No	Low	2.6.2.1, 5.1	3.3		
IPS EL 722 West - ERCW Strainer Room A	Yes	Yes	No	No	Insignificant	4.1			
FIRE AREA 59: IPS									
IPS EL 741 East - ERCW Pump Room B	Yes	Yes, Partial	No	No	Moderate	2.6.2.1	8.3.58 & 65		
IPS EL 741 East - HPFP B Pump Room	Yes	No	No	No	Low	5.1	3.3		
IPS EL 722 East - ERCW Strainer Room B	Yes	Yes	No	No	Insignificant	4.1			

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 60: IPS									
IPS EL 711.0 - Board Room (Subdivided into IPS-CA, IPS-CC-A, IPS-CB, IPS-CC-B)	Yes	Yes	Yes	No	Moderate	2.4	8.3.59, 60, 61, 64 & 65		
IPS Roof Deck EL 728 - RCW Pump Deck	No	No	No	No	Insignificant		6.3		
FIRE AREA 61:									
Unit 1 Reactor Building - Annulus	Yes	Yes, Partial	Yes, Partial	Yes (RES)	Severe	2.2, 2.7.1	3.2	Yes	2def, 1-O
Unit 1 Reactor Building - Primary Containment (Subdivided into RO-1, RO-2, RO-3, RO-4, RI-1, RI-2, RI-3, RI-4, RIR, RA1, RA2, RA3, RA4, RF1, RF2, RU)	Yes	Yes, Partial	Yes, Partial	Yes (RES)	Moderate	2.2, 2.7.1, 2.8		Yes	2def
FIRE AREA 62: Not required for Fire Safe Shutdown									
CDWE Building - Condensate Demineralizer Waste Evaporator Building (CDWE)	No	No	No	No	Moderate				
FIRE AREA 63:									
Turbine Building	Yes	Yes, Partial	Yes, Partial	No	N/A	2.6.4, 2.7.3			1-O, 2-O
FIRE AREA 64:									
Yard (Duct Banks to IPS, Tanks, Transformers and H ₂ Storage Trailers)	Yes	Yes, Partial	Yes	No	N/A	2.6.2.2, 2.7.2	8.3.55, 56, 64 & 65		
IRE AREA 65:									
676.0-A17 - Unit 2 Pipe Chase	Yes	Yes	No	No	Insignificant	2.6.3.4	3.1.9		
692.0-A24 - Unit 2 Pipe Chase	Yes	Yes	No	No	Insignificant		3.1.9		
713.0-A29 - Unit 2 Pipe Chase	Yes	Yes	No	No	Insignificant		3.1.9		

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 66:									
692.0-A21 - Charging Pump 2C	Yes	Yes, Partial	Yes, Partial	No	Low				
FIRE AREA 67:									
692.0-A22 - Charging Pump 2B-B	Yes	Yes, Partial	Yes, Partial	No	Low		3.1.1, 8.3.2		2-O
FIRE AREA 68:									
692.0-A23 - Charging Pump 2A-A	Yes	Yes, Partial	Yes, Partial	No	Moderate		3.1.1		2-G
FIRE AREA 69:									
692.0-A26 - Turbine Driven Aux Feedwater Pump 2A-S Room	Yes	Yes	Yes	No	Low				2-G, 2-O
FIRE AREA 70:									
692.0-A25 - Unit 2 Penetration Room	Yes	Yes	Yes, Partial	No	Insignificant		8.3.3		2-G, 2-O
FIRE AREA 71:									
713.0-A19 - Unit 2 Penetration Rm	Yes	Yes	Yes	No	Moderate		3.1.10, 3.2		2-O
713.0-A21 - Unit 2 RB Access Room	No	No	No	No	Insignificant		3.1.10		
FIRE AREA 71-1:									
713.0-A20 - Unit 2 Volume Control Tank Room	Yes	Yes	Yes, Partial	No	Insignificant		3.1.10a, 3.5 & 8.4.2		2-O
FIRE AREA 72:									
737.0-A10 - Air Lock	No	No	No	No	Insignificant	2.9.6	3.1.11		
729.0-A11 - Unit 2 South Main Steam Valve Rm	Yes	No	No	No	Insignificant	2.9.6	3.1.11		

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

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FIRE AREA 73:									
729.0-A10 - Unit 2 North Main Steam Valve Rm	Yes	No	No	No	Insignificant	2.9.5	3.1.12		
729.0-A13 - Unit 2 North Main Steam Valve Instrument Room B	Yes	No	No	No	Insignificant	2.9.8	3.1.12		
Unit 2 Additional Equipment Building (U2-AEB) (Rooms 729.0-A15, 737.0-A14, and 763.5-A2)	Yes	Yes, Partial	No	No	Low	2.9.9			
729.5-A17 - Unit 2 Shield Bldg Vent Rad Monitor Room	Yes	No	No	No	Insignificant		3.1.12		
FIRE AREA 74:									
737.0-A9 - Ventilation and Purge Air Room (Subdivided into 737.0-A9S, -A9M, and -A9N)	Yes	Yes	Yes	1 hour	Low	2.4, 2.6.1	8.3.15, 16, 17, 63 & 64		2b, 2c
737.0-A16 - Unit 2 Gross Failed Fuel Detect. Room	No	No (Note 3)	Yes	No	Insignificant				
FIRE AREA 75:									
757.0-A14 - Unit 2 RB Access Room	Yes	Yes	Yes	No	Low	2.9.11			
757.0-A16 - Emergency Gas Treatment Filter Room	Yes	Yes	Yes, Partial	No	Moderate		8.3.26, 63 & 64		
782.0-A3 - Unit 2 CRD Equipment Room	Yes	Yes	Yes	No	Moderate		8.3.53, 63 & 64		
782.0-A4 - Pressurizer Heater Transformer Room 2	Yes	Yes	Yes	No	Moderate		8.3.54, 63 & 64		
FIRE AREA 76:									
757.0-A15 - Unit 2 RB Equipment Hatch	Yes	Yes	Yes, Partial	No	Low	2.9.12	6.1.1		
FIRE AREA 77:									
Unit 2 Reactor Building - Annulus	Yes	Yes, Partial	Yes, Partial	RES	Severe	2.2, 2.7.1	3.2, 8.3.7, & 64		2def, 2-O
Unit 2 Reactor Building - Primary Containment (Subdivided into 2RO-1, 2RO-2, 2RO-3, 2RO-4, 2RI-1, 2RI-2, 2RI-3, 2RI-4, 2RIR, 2RA1, 2RA2, 2RA3, 2RA4, 2RF1, 2RF2, 2RU)	Yes	Yes, Partial	Yes, Partial	No	Moderate	2.7.1, 2.8, 2.9.13 thru 2.9.21			

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TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Note 1: 737.0-A15 is a small room within room 737.0-A5 and contains an insignificant amount of in-situ combustibles. The suppression system in Room 737.0-A5 extends into this room, but the detection system does not (no detectors in Room 737.0-A15). Actuation of detection system in 737.0-A5 is required to release the deluge valve and charge system head in 737.0-A15. See Part VI Section 3.22.1.

Note 2: Entire control building is an alternative shutdown area (III.G.3). Cable location by room not routed; therefore, assumed to be in any room.

Note 3: 737.0-A16 is a small room within room 737.0-A9 and contains an insignificant amount of in-situ combustibles. The suppression system in Room 737.0-A9 extends into this room, but the detection system does not (no detectors in Room 737.0-A16). Actuation of detection system in 737.0-A9 is required to release the deluge valve and charge system head in 737.0-A16. See Part VI Section 3.81.1.

Note 4: Conduit 1VC4024B (in 772.0-A2A1) is wrapped with 3-hour Thermo-Lag from the R-line south to where the conduit exits the room.

Note 5: The 125V Vital Battery and Battery Board Rooms (I, II, III & IV) are provided with a total area suppression system; however, it is manually actuated.

Note 6: See individual rooms in Part VI for additional information on detection, suppression, fire severity, deviations, and evaluations.

PART II – FIRE PROTECTION PLAN

1.0 PURPOSE AND SCOPE

Part II of the Watts Bar Nuclear Plant (WBN) Fire Protection Report describes the Fire Protection Plan (Plan) developed for WBN to ensure compliance with the requirements of 10 CFR 50.48 (Reference 4.1.1), 10 CFR 50, Appendix R, Sections III.G, J, L, and O (Reference 4.1.8) and the guidelines of Appendix A to Branch Technical Position (BTP) APCSB 9.5-1 (Reference 4.1.10).

2.0 OBJECTIVES OF THE FIRE PROTECTION PLAN

The Plan describes the controls associated with the WBN Fire Protection Program (FPP); identifies the organizations and positions that are responsible for the FPP; describes the authority of positions responsible for implementing the FPP; and outlines the plans for fire protection, fire detection and suppression capability, and limitation of fire damage. The Plan describes the features necessary to implement the FPP such as: administrative controls; personnel requirements for fire prevention and manual fire suppression activities; automatic and manually operated fire detection and suppression systems; and the means to limit fire damage to structures, systems, and components important to safety so that the capability to safely shutdown the plant is ensured.

The Plan describes the measures that are established at WBN to extend the concept of defense-in-depth to fire protection in areas important to safety. These measures are established:

- to prevent fires from starting,
- to rapidly detect, control, and promptly extinguish those fires that do occur, and
- to provide protection for systems important to safety, so that a fire that is not promptly extinguished by the fire suppression activities, will not prevent the safe shutdown of the plant.

3.0 BASIS OF THE FIRE PROTECTION PLAN

The Plan at WBN has been developed to comply with and is based upon the requirements of General Design Criterion 3 in Appendix A to 10 CFR 50 (Reference 4.1.7), 10 CFR 50.48, paragraph (a) and TVA's commitment to implement Sections III.G, III.J, and III.O to 10 CFR 50, Appendix R and Appendix A to Branch Technical Position APCSB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976" (August 23, 1976). The requirements contained in Section III.L of Appendix R to 10 CFR 50 are also applicable to areas where alternate shutdown capability is selected. This Plan establishes the policy for and describes the manner in which TVA conforms to these requirements and the guidelines which have been promulgated to describe acceptable implementation methods. The applicable guidelines used as the basis for the Plan are listed in Section 4.1, Regulatory Documents.

PART II – FIRE PROTECTION PLAN

4.0 **REFERENCES**

4.1 **Regulatory Documents**

- 4.1.1 10 CFR 50.48, "Fire Protection"
- 4.1.2 10 CFR 50.59, "Changes, tests, and experiments"
- 4.1.3 10 CFR 50.65, "Requirements for monitoring the effectiveness of maintenance at nuclear power plants"
- 4.1.4 10 CFR 50.71, "Maintenance of records, making of reports"
- 4.1.5 10 CFR 50.72, "Immediate notification requirements for operating nuclear power reactors"
- 4.1.6 10 CFR 50.73, "Licensee event report system"
- 4.1.7 10 CFR 50 Appendix A, Criterion 3, "Fire Protection"
- 4.1.8 10 CFR 50 Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979"
- 4.1.9 10 CFR 100, "Reactor Site Criteria"
- 4.1.10 Branch Technical Position APCS 9.5-1, Appendix A, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976" (August 23, 1976)
- 4.1.11 Branch Technical Position (CMEB) 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants" (NUREG 0800)
- 4.1.12 Generic Letter 81-12, Fire Protection Rule
- 4.1.13 Generic Letter 82-21, Technical Specifications for Fire Protection Audits
- 4.1.14 Generic Letter 83-22, NRC Safety Evaluation of [Westinghouse Owners Group (WOG)] "Emergency Response Guidelines," dated June 3, 1983
- 4.1.15 Generic Letter 83-33, NRC Positions on Certain Requirements of Appendix R to 10 CFR 50
- 4.1.16 Generic Letter 86-10, Implementation of Fire Protection Requirements
- 4.1.17 Generic Letter 86-10, Supplement 1, Fire Endurance Acceptance Criteria for Fire Barrier Systems Used to Separate Redundant Safe Shutdown Trains within the Same Fire Area
- 4.1.18 Generic Letter 88-12, Removal of Fire Protection Requirements from Technical Specifications
- 4.1.19 Generic Letter 92-08, Thermo-Lag 330-1 Fire Barriers

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- 4.1.20 Information Notice 84-09, Lesson Learned from NRC Inspections of Fire Protection Safe Shutdown Systems (10CFR50, Appendix R)
- 4.1.21 Information Notice 87-50, Potential LOCA at High- and Low-Pressure Interfaces from Fire Damage
- 4.1.22 Information Notice 91-47, Failure of Thermo-lag Fire Barrier Material to Pass Fire Endurance Test
- 4.1.23 Information Notice 91-79, Deficiencies in the Procedures for Installing Thermo-Lag Fire Barrier Materials
- 4.1.24 Information Notice 91-79 Supplement 1, Deficiencies Found in the Thermo-Lag Fire Barrier Installation
- 4.1.25 Information Notice 92-46, Thermo-Lag Fire Barrier Material Special Review Team Final Report Findings, Current Fire Endurance Tests, and Ampacity Calculation Errors
- 4.1.26 Information Notice 92-55, Current Fire Endurance Test Results for Thermo-Lag Fire Barrier Material
- 4.1.27 Information Notice 92-82, Results of Thermo-Lag 330-1 Combustibility Testing
- 4.1.28 Information Notice 94-22, Fire Endurance and Ampacity Derating Test Results for 3-Hour Fire-Rated Thermo-Lag 330-1 Fire Barriers
- 4.1.29 Information Notice 94-34, Thermo-Lag 330-660 Flexi-Blanket Ampacity Derating Concerns
- 4.1.30 Information Notice 95-27, NRC Review of Nuclear Energy Institute Thermo-Lag 330-1 Combustibility Evaluation Methodology Plant Screening Guide
- 4.1.31 Information Notice 95-32, Thermo-Lag 330-1 Flame Spread Test Results
- 4.1.32 Information Notice 95-49, Seismic Adequacy of Thermo-Lag Panels
- 4.1.33 Information Notice 95-49 Supplement 1, Seismic Adequacy of Thermo-Lag Panels
- 4.1.34 NRC letter to TVA dated August 29, 1977 - Fire Protection Functional Responsibilities, (Watts Bar Nuclear Plant Units 1 and 2) ("FRACQA Letter") ML073120507
- 4.1.35 NRC Memorandum, March 22, 1982, "Fire Protection Rule - Appendix R," (Clarification of Generic Letter 81-12), ML050140137
- 4.1.36 NRC Supplemental SER dated December 26, 1985, for Revision 1 of the Westinghouse Owners Group Emergency Response Guidelines
- 4.1.37 NUREG-0452, Standard Technical Specifications for Westinghouse Pressurized Water Reactors

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- 4.1.38 NUREG-0797, Supplement No. 26, Safety Evaluation Report for Texas Utilities' Comanche Peak Steam Electric Station
- 4.1.39 NUREG-0847, Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2, June 1982
- 4.1.40 NUREG-0847, Supplement 18, Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Units 1 and 2, October 1995
- 4.1.41 NUREG-0847, Supplement 26, Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Unit 2, June 2013
- 4.1.42 NUREG-0847, Supplement 27, Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Unit 2, January 2015
- 4.1.43 NUREG-1552, "Fire Barrier Penetration Seals in Nuclear Power Plants"
- 4.1.44 NUREG-1852, Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire, Final Report
- 4.1.44a Regulatory Guide 1.75, Revision 3, Criteria for Independence of Electrical Safety Systems
- 4.1.45 Regulatory Guide 1.189, Revision 2, Fire Protection for Nuclear Power Plants
- 4.1.46 Regulatory Guide 8.15, Revision 1, Acceptable Programs for Respiratory Protection
- 4.2 TVA Documents**
- 4.2.1 Calculation EDQ00099920090016, Appendix R - Units 1 and 2 Manual Action Requirements
- 4.2.2 Calculation EDQ00099920090017, Appendix R - Units 1 and 2 Emergency Lighting Requirements
- 4.2.3 Calculation EDQ0009992012000085, Appendix R - WBN Unit 2 Multiple Spurious Operation (MSO) Evaluations
- 4.2.4 Calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User"
- 4.2.5 Calculation EDQ00299920090013, Unit 2 Cables Required for Fire Safe Shutdown Following a Fire
- 4.2.6 Calculation EPM-BFS-041895, "Design Basis of Radiant Energy Shields (RES) Protecting Electrical Circuits in Secondary Containment"
- 4.2.7 Calculation EPMBFS052395, "Fire Hazard Evaluation for the Reactor Coolant Pump Oil Collection System"
- 4.2.8 Calculation EPM-BFS-053195, "Design Basis of Radiant Energy Shields (RES) Protecting Electrical Circuits in Primary Containment"

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- 4.2.9 Calculation EPM-BFS-063095, “Non-Combustibility Analysis for Minnesota Mining and Manufacturing (3M) M20-A and M20-C Type Radiant Energy Shields (RES)”
- 4.2.10 Calculation EPMDOM012990, “Combustible Loading Data (CLD)”
- 4.2.10a Calculation EPMRAC032392, “Evaluation of Suppression System Discharge”
- 4.2.11 Calculation EPMSMC110292, “Backup Nitrogen Supply for Auxiliary Feedwater LCVs and Main Steam PORVs”
- 4.2.12 Calculation MDQ0000772012000033, “AFW LCVs and PCVs Backup Nitrogen Supply Requirements”
- 4.2.13 Calculation MDQ0010002012000074, “Design Basis of Radiant Energy Shields (RES) Protecting Electrical Circuits in the Reactor Building (3M Type E54C)”
- 4.2.14 Calculation MDQ00103220120188, “Pressure Drop Calculation for the Nitrogen Supply Piping to AFW Pressure and Level Control Valves”
- 4.2.15 Calculation MDQ00206220110382, “Nitrogen Cylinders and Capacity for Chemical and Volume Control System (CVCS)”
- 4.2.16 Calculation MDQ00299920110381, “Appendix R - Operator Manual Action Evaluations”
- 4.2.17 Calculation WBNAPS2065, “Appendix-R Post-Fire Reactor Coolant System Cooldown and Depressurization”
- 4.2.18 Calculation EDQ00099920090012, “Unit 1 and 2 Appendix R Safe Shutdown Analysis”
- 4.2.19 Calculation WBPE2399301004, “250V DC Battery System Analysis”
- 4.2.20 Calculation WBPEVAR9205004, “Appendix R Analysis for Intraplant Communications Systems”
- 4.2.21 *Deleted*
- 4.2.21a Calculation WCG11876, “Examination and Documentation of Architectural Doors”
- 4.2.22 Calculation XDN00000020110002, “WBN Unit 1 Multiple Spurious Operation Review for RG 1.189 Revision 2”
- 4.2.23 Contract # 822493 Documentation
- 4.2.24 DCN No. 26366-A, Provide List of Fire Dampers for Fire Safe Shut Down
- 4.2.25 DCN No. 35361-A, HVAC Duct Fire Dampers
- 4.2.26 DCN 59675A, Install two 225kVA Air Cooled Diesel Generators on the Auxiliary Building Roof for mitigation of all Beyond Design Basis Events[FLEX diesel generators]

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- 4.2.27 Demonstration Data Package - 0-TI-2018, "Appendix R Demonstration of Operations Actions Required Following a Fire"
- 4.2.28 Design Criteria WB-DC-30-13, "10CFR50, Appendix R, Type I, II, and III Circuits -- Unit 1 / Unit 2"
- 4.2.29 Design Criteria WB-DC-30-4, Separation/Isolation
- 4.2.30 Design Criteria WB-DC-40-51, "Fire Protection of Safe Shutdown Capability (Unit 1 / Unit 2)"
- 4.2.31 Design Criteria WB-DC-40-58, "Auxiliary Control System -- Watts Bar Nuclear Plant Unit 1 / Unit 2"
- 4.2.32 Design Criteria WB-DC-40-59, "Personnel Access Doors"
- 4.2.33 Design Criteria WB-DC-40-62, "Fire Protection"
- 4.2.34 Drawing Series 45A883, Electrical Penetration Seal Details
- 4.2.35 Drawing Series 45W883, Conduit & Grounding Penetration Sealing & Fire Stop Details
- 4.2.35a Drawing Series 47A243, Radiant Energy Shield Schedule
- 4.2.36 Drawing Series 47A381, HVAC Dampers
- 4.2.37 Drawing Series 47A472, Mechanical Penetration Seal Details
- 4.2.38 Drawing 47W200 Sheet 2, Equipment Plan EI 772.0 & Above
- 4.2.39 Drawing Series 47W240, Fire Compartmentation
- 4.2.40 Drawing Series 47W243, Thermo-Lag Details
- 4.2.41 Drawing Series 47W866, HVAC Flow Diagram
- 4.2.42 Drawing Series 47W920, Mechanical HVAC
- 4.2.43 Emergency Operating Instructions (EOIs)
- 4.2.44 Engineering Report for Penetration Seal Program Assessment, RIMS T28960712801
- 4.2.45 Fire test report dated June 15, 1984 for large size damper installation, RIMS MEB840925801
- 4.2.46 Fire test report dated July 19, 1984 for large size damper installations
- 4.2.47 Fire damper installation evaluation dated December 12, 1984 documenting UL's evaluation of TVA's installation of the large dampers, RIMS MEB850115801

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- 4.2.48 General Engineering Specification G-73, “Installation, Modification, and Maintenance of Fire Protection Systems and Features”
- 4.2.49 General Engineering Specification G-96, “Installation, Modification, and Maintenance of Penetration Seals”
- 4.2.50 General Engineering Specification G-98, “Installation, Modification, and Maintenance of Electrical Raceway Fire Barrier Systems”
- 4.2.51 Letter from TVA to NRC, dated July 1, 1994, Watts Bar Nuclear Plant, “Response to NRC Request for Additional Information Related to WBN Fire Protection Report” (ML073230669)
- 4.2.52 Letter from J. W. Hufham (TVA) to E. Adensam (NRC), dated January 4, 1985 (ML073540060)
- 4.2.53 Letter from L. M. Mills (TVA) to A. Schwencer (NRC), dated 9/9/80 RIMS A27800909005
- 4.2.54 Mechanical Design Standard DS-M17.2.2, “Electrical Raceway Fire Barrier Systems”
- 4.2.55 Memorandum from Ira M. Heatherly to Brian Briody dated October 26, 1998 - “High Pressure Fire Protection System Hydraulic Performance Review”, RIMS B45981026001
- 4.2.56 Memorandum from J. J. Pierce and L. E. Perry to R. D. Hall, dated November 16, 1994, “Evaluation of Heavy Equipment Doors A154, W10A, and W10B Used as Fire Barriers”, RIMS T24941116589
- 4.2.57 Nonconforming Condition Report (NCR) W-422-P
- 4.2.58 Problem Evaluation Report (PER) 786848 Significance Evaluation
- 4.2.59 Procedure 0-AOI-30.1, “Plant Fires”
- 4.2.60 Procedure 0-AOI-30.2, “Fire Safe Shutdown,” Series
- 4.2.61 Procedure 0-TI-2018, “Appendix R Demonstration of Operations Actions Required Following a Fire”
- 4.2.62 Procedure FPDP-1, “Conduct of Fire Protection”
- 4.2.63 Procedure FPDP-3, “Management of the Fire Protection Report”
- 4.2.64 Procedure FPDP-5, “Development and Evaluation of Fire Drills”
- 4.2.64a Procedure NPG-SPP-03.6, “Fire Protection Program Change Regulatory Reviews”
- 4.2.65 Procedure NPG-SPP-09.5, “Temporary Modifications, Temporary Configuration Changes”

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- 4.2.66 Procedure NPG-SPP-18.4.5, "Fire Protection Quality Assurance (Q07)"
- 4.2.67 Procedure NPG-SPP-18.4.6, "Control of Fire Protection Impairments"
- 4.2.68 Procedure NPG-SPP-18.4.7, "Control of Transient Combustibles"
- 4.2.69 Procedure NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)"
- 4.2.70 Significant Condition Report (SCR) WBNMEB8680 R1
- 4.2.71 System Description N3-13-4002, "Fire Detection System"
- 4.2.72 System Description WBN-SDD-N3-26-4002, "High Pressure Fire Protection"
- 4.2.73 System Description N3-39-4002, "CO2 Storage, Fire Protection, and Purging"
- 4.2.73a System Description WBN-SDD-N3-77A-4001, "Gaseous Waste Disposal System"
- 4.2.73b System Description WBN-SDD-N3-228-4003, "Watts Bar Nuclear Plant Lighting (Unit 1/Unit 2)"
- 4.2.74 Training Program Description TPD-FBT, "Fleet Fire Brigade Training"
- 4.2.75 TVA Organization Topical Report TVA-NPOD89, "TVA Nuclear Power Group Organization Description"
- 4.2.76 TVA Quality Assurance Program Description, TVA-NQA-PLN89-A, "Nuclear Quality Assurance Plan"
- 4.3 Other Documents**
 - 4.3.1 ASTM E84-90, "Standard Test Method for Surface Burning Characteristics of Building Materials"
 - 4.3.1a ASTM E119-88, "Standard Test Methods for Fire Tests of Building Construction and Materials"
 - 4.3.1b ASTM E648, "Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source"
 - 4.3.1c ASTM E662, "Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials"
 - 4.3.1d ASTM E136, "Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C"
 - 4.3.1e ASTM E162, "Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source"
 - 4.3.2 ASTM E814-83, "Standard Test Method for Fire Tests of Through-Penetration Fire Stops"

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- 4.3.2a ASTM E1354, "Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter"
- 4.3.3 NRC Letter to TVA, dated May 29, 1986, "Deviation Requests From Appendix R of 10 CFR 50"
- 4.3.4 NRC Letter to TVA, dated January 6, 1998, "Completion of Licensing Action for Generic Letter 92-08, 'Thermo-Lag 330-1 Fire Barriers' and Supplemental Safety Evaluation Report on Ampacity Issues Related to Thermo-Lag Fire Barriers for Watts Bar Nuclear Plant, Unit 1"
- 4.3.5 NRC Letter to TVA, dated November 6, 1984, "Fire Protection Criteria at the Watts Bar Nuclear Plant, Units 1 and 2"
- 4.3.6 NEI 00-01, "Nuclear Energy Institute Guidance for Post-Fire Safe Shutdown Circuit Analysis," Revision 2, May 2009
- 4.3.7 NEI 09-14, "Nuclear Energy Institute Guidelines for the Management of Underground Piping and Tank Integrity," Revision 1, December 2010
- 4.3.8 Westinghouse Letter WBT-D-4257, "RCP Motor Level Alarm," dated February 21, 2013

4.4 NFPA Codes and Standards

NOTE: Part X of this Fire Protection Report (FPR) documents the level of compliance with the NFPA codes and standards identified in Section 4.4. Major modifications and/or new installations of Fire Protection Systems shall be installed in accordance with the most recent edition of that code at the time the system is designed/installed. For expansions of existing features or installations, the below listed codes of record shall be used. Other codes and standards referenced in Appendix A to BTP 9.5-1 are also addressed in Part X. Deviations from code criteria that impact operational capability of the systems are documented in Part VII of the FPR. Code deviations that do not impact operational capability of the systems are documented in the applicable system descriptions.

- 4.4.1 National Fire Protection Association Fire Protection Handbook, 17th Edition
- 4.4.2 NFPA 4-1977, "Organization for Fire Services" (not applicable)
- 4.4.3 NFPA 4A-1969, "Organization for Fire Department" (not applicable)
- 4.4.4 NFPA 6-1974, "Organization of Industrial Fire Loss Prevention" (not applicable)
- 4.4.5 NFPA 7-1974, "Management Control of Fire Emergencies" (not applicable)
- 4.4.6 NFPA 8-1974, "Recommendations for Management Responsibility for Effects of Fire on Operations" (not applicable)
- 4.4.7 NFPA 10-1975, "Portable Fire Extinguishers"
- 4.4.8 NFPA 11B-1977, "Synthetic Foam and Combined Agent Systems"

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- 4.4.9 NFPA 12-1973, “Carbon Dioxide Extinguishing Systems”
- 4.4.10 NFPA 12A-1973, “Halogenated Extinguishing Agent Systems Halon 1301”
- 4.4.11 NFPA 12B-1973, “Halogenated Extinguishing Agent Systems Halon 1211”
- 4.4.12 NFPA 13-1975, “Installation of Sprinkler Systems”
- 4.4.13 NFPA 14-1974, “Standpipe and Hose Systems”
- 4.4.14 NFPA 15-1973, “Water Spray Fixed Systems for Fire Protection”
- 4.4.15 NFPA 20-1974, “Centrifugal Fire Pumps” for electric driven pumps
- 4.4.16 NFPA 20-1993, “Centrifugal Fire Pumps” for diesel driven fire pumps
- 4.4.17 NFPA 24-1973, “Outside Protection”
- 4.4.18 NFPA 25-1992, “Inspection, Testing, and Maintenance of Water-Based Fire Suppression Systems”
- 4.4.19 NFPA 26-1958, “Standard for Supervision of Valves”
- 4.4.20 NFPA 27-1975, “Private Fire Brigades” (not applicable)
- 4.4.21 NFPA 30-1973, “Flammable and Combustible Liquids Code”
- 4.4.22 NFPA 37, “Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines”
- 4.4.23 NFPA 49-1975, “Hazardous Chemicals Data”
- 4.4.24 NFPA 50A-1973, “Gaseous Hydrogen Systems”
- 4.4.25 NFPA 51-1974, “Oxygen Fuel Gas Systems for Welding and Cutting”
- 4.4.26 NFPA 51B-1976, “Cutting and Welding Processes”
- 4.4.27 NFPA 69-1973, “Explosion Prevention Systems”
- 4.4.28 NFPA 72D-1975, “Proprietary Protective Signaling Systems”
- 4.4.29 NFPA 72E-1974, “Automatic Fire Detectors”
- 4.4.30 NFPA 80-1975, “Fire Doors and Windows”
- 4.4.31 NFPA 90A-1975, “Air Conditioning and Ventilating Systems”
- 4.4.32 NFPA 92M-1972, “Waterproofing, Draining of Floors” (considered not applicable) (Withdrawn at the 1979 Fall Meeting)
- 4.4.33 NFPA 101-2015, Life Safety Code

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- 4.4.34 NFPA 194-1974, “Fire Hose Connectors”
- 4.4.35 NFPA 196-1974, “Fire Hose”
- 4.4.36 NFPA 197-1966, “Training Standard on Initial Fire Attack” (not applicable)
- 4.4.37 NFPA 204-1968, “Guide for Smoke and Heat Venting” (not applicable; superseded by 204M) (became NFPA 204M in 1982, became 204 in 1992)
- 4.4.38 NFPA 220-1985, “Standard on Types of Building Construction”
- 4.4.39 NFPA 251-1985, “Standard Methods of Fire Tests of Building Construction and Materials”
- 4.4.40 NFPA 253-1978, “Flooring Radiant Panel Test”
- 4.4.41 NFPA 255-1979, “Test Methods Surface Burning-Building Materials”
- 4.4.42 NFPA 258-1976, “Smoke Generated by Solid Materials”
- 4.4.43 NFPA 601-1975, “Guard Service in Fire Loss Prevention” (not applicable)
- 4.4.44 NFPA 803-1983, “Fire Protection for Light Water Nuclear Power Plants”

Deleted

5.0 **DEFINITIONS**

Analysis Volume – That portion of a fire area subjected to a detailed Appendix R safe shutdown analysis to ensure one train of Fire Safe Shutdown (FSSD) capabilities is always available. The analysis volume can consist of the entire fire area or a portion of the fire area. When the analysis volume is a portion of the fire area, it can consist of multiple rooms, a single room, portions of a room (as defined by column line locations), or any combination of the above. Analysis volumes involving only a portion of a room include a 20 foot wide (minimum) overlap with adjacent analysis volumes. Refer to Part III, Section 10.3 and Part VI, Section 2.2 for additional detail. (FPR Preparer)

Approved – Tested and accepted for a specific purpose or application by a nationally recognized testing laboratory (TVA General Engineering Specification G-73) or acceptable to the authority having jurisdiction. (FPR Preparer)

Aqueous Film Forming Foam (AFFF) – Synthetic foam concentrates based on fluorinated surfactants plus foam stabilizers, usually diluted with water to a 3-percent or 6-percent solution. The foam formed acts both as a barrier to exclude air or oxygen and to develop an aqueous film on the fuel surface capable of suppressing the evolution of fuel vapors. The foam produced with AFFF concentrate is dry chemical compatible; therefore, AFFF is suitable for combined use with dry chemicals. (G-73)

Authority Having Jurisdiction (AHJ) – The Director of Nuclear Reactor Regulation, or designee, is the AHJ described in NFPA documents, except that NRC does not require review and approval of equivalency evaluations for alternative systems, methods, or devices, and NRC does not require plans and calculations to be submitted before implementation. (RG 1.189, Reference 4.1.45) The Fire Protection Program Change Regulatory Review is used to

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determine whether NRC approval is required (NPG-SPP-03.6, Reference 4.2.64a). For fire protection changes that do not require NRC approval, the approving authority specified in TVA design control and procedure change processes is the AHJ. For insured facilities, variances from Loss Control Standards also require approval of the insurer. (FPR Preparer)

Automatic – Self-acting, operated by its own mechanism when actuated by some impersonal influence such as a change in current, pressure, temperature or mechanical configuration. (G-73)

Barrier – A feature of construction provided to separate or enclose various occupancies to create a boundary limit based on functional requirements, or a flexible material designed to withstand the penetration of water, vapor, grease, or harmful gases. (G-96)

Combustible Control Zone (CCZ) – Designated locations (such as spaces, areas, elevations) where transient combustibles storage is prohibited unless adequate evaluation and/or compensatory actions are implemented. These zones are subdivisions of fire areas and serve as a form of fire barrier, providing fire separation of redundant fire safe shutdown (FSSD) equipment. Combustible material stored in these areas is controlled by site instructions. (FPR Preparer)

Combustible Material – Material which does not meet the definition of noncombustible. Any material which in the form in which it is used and under the conditions anticipated will ignite and burn (e.g., cable insulation, lube oil, plastic sheeting, charcoal, paper, etc.) (G-73)

Combustible Liquid - A liquid having a flash point at or above 100°F (37.8°C) (G-73)

Electrical Raceway Fire Barrier System (ERFBS) – A special type of Fire Barrier System designed to protect electrical raceways (e.g., conduits, cable trays, junction boxes, etc.) containing FSSD circuits required for 10 CFR 50, Appendix R safe shutdown. (DS-M17.2.2)

Engineering – The organization responsible for the design basis of the plant. (G-73)

Fire Area – That portion of a building or plant that is separated from other areas by boundary fire barriers. (G-73)

Fire Barrier – Those components of construction; walls, floors, ceilings, and their supports including beams, joists, columns, penetration seals or closures, fire doors, and fire dampers that are rated by approving laboratories in hours of resistance to fire and are used to prevent the spread of fire. (G-73) An ERFBS and radiant energy shields are also considered as fire barriers. (FPR Preparer)

Fire Break (Fire Stop) – A passive fire protection feature of construction intended to limit flame propagation along vertical or horizontal cable tray runs.

NOTE: Functionally identical to "Fire Stop". (G-73)

Fire Damper – A device, installed in the air distribution system, designed to close automatically to interrupt migratory air flow and to restrict the passage of flame. Fire dampers close upon exposure to heat and some fire dampers also close as a result of a signal from a sensing device such as a CO₂ discharge signal or a smoke detector. A combination fire and smoke damper meets the requirements of both. Some fire dampers contain electro-thermal links (ETLs);

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however, these devices are non-regulatory and not relied upon. See Section 12.10.5 below for additional information. (G-73)

Fire Detector – A device designed to automatically detect the presence of fire and initiate an alarm system and other appropriate action (see NFPA 72E, "Automatic Fire Detectors"). (G-73)

Fire Door – The door component of a fire door assembly. (G-73)

Fire Door Assembly – Any combination of a fire door, frame, hardware, and other accessories, that together provide a specific degree of fire protection to the opening. (G-73)

Fire Hazards Analysis (FHA) – An analysis performed by fire protection and systems engineers to consider potential in situ and transient fire hazards; determine the consequences of fire in any location in the plant on the ability to safely shutdown the reactor or on the ability to minimize and control the release of radioactivity to the environment and specify measures for fire prevention, fire detection, fire suppression and fire containment and alternative shutdown capabilities as required for each fire area containing structures, systems and components important to safety that are in conformance with NRC guidelines and regulations. The FHA demonstrates that the plant will maintain the ability to perform safe shutdown functions and minimize radioactive release to the environment in the event of a fire, and should verify that NRC FPP guidelines or equivalent level of protection have been met. (G-73)

Fire Loading – The amount of combustibles present in a given situation, expressed in BTU per square foot. (G-73)

Fire Rated Assembly – A passive fire protection feature that is used to separate redundant fire safe shutdown capabilities. A fire rated assembly includes fire rated walls, floors, ceilings, ERFBSs, equipment hatches, stairwells, doors, dampers, and penetration seals. (FPR Preparer)

Fire Rated Penetration Seal – An opening in a fire barrier for the passage of pipe, cable, etc., which has been sealed to the same fire resistive rating of the fire barrier. (DS-M17.2.2)

Fire Resistance Rating – The time that materials or assemblies have withstood a fire exposure in accordance with the test procedures of "Standard Methods of Fire Tests of Building Construction and Materials," NFPA 251 (Reference 4.4.39). (G-73)

Fire Safe Shutdown (FSSD) Equipment – Structures, systems, or components required to shutdown the reactor and maintain it in a safe shutdown condition in the event of a fire. Structures, systems, and components used to satisfy fire safe shutdown requirement commitments do not have to be safety-related. (FPR Preparer)

Fire Severity – A unit of measure, in terms of time (hours or minutes) that is used to quantify the hazards associated with the fire loading in a given plant area. It is based on an approximate relationship between fire loading and exposure to a fire severity equivalent to the ASTM E119 standard time-temperature curve. This measure is based on fire loading of ordinary combustibles such as wood, paper, and similar materials with a heat of combustion of 7000 to 8000 Btu per lb. Therefore fire severity measure should not be used with combustibles having a high heat-release rate. (FPR Preparer)

Fire Suppression – Control and extinguishing of fires. Manual fire suppression is the use of hoses, portable extinguishers, or manually-actuated fixed systems by plant personnel.

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Automatic fire suppression is the use of automatically actuated fixed systems such as water, Halon, or carbon dioxide systems. (G-73)

Fire Wall – A wall having adequate fire resistance and structural stability under fire conditions to accomplish the purpose of subdividing buildings to restrict the spread of fire. (DS-M17.2.2)

Fire Watch – A fire watch is a compensatory action used when fire protection systems or features are non-functional or impaired as required by Operating Requirements (ORs). Additionally, fire watches may be utilized for compensatory actions when limits are exceeded in administrative controls for areas (e.g., excessive transient fire loads). (FPR Preparer)

Fire Watch-Roving – Roving fire watch requires that a trained individual be in the specified fire area(s) within specified intervals. A margin of 25 percent is allowed for unforeseen emergencies and to identify, report, and/or minimize unacceptable fire hazards in the area(s). (FPR Preparer)

Fire Watch-Continuous – Continuous fire watch requires that a trained individual be in the fire area at all times, that the fire area contain no impediment to restrict the movements of the continuous fire watch, and that each compartment within the fire area is patrolled at least once every 15 minutes with a margin of 5 minutes. A fire area designated for a continuous fire watch consists of one or more rooms which are easily accessible to each other and can be patrolled within 15 minutes with a margin of 5 minutes. Exceptions are provided in Section 13.0.A where more than one fire area may be covered by one continuous fire watch. The location(s) that a single continuous fire watch can patrol are based on time studies and require approval of the Fire Protection Supervisor or designee. (FPR Preparer)

Fire (Protection) Water Distribution System – The piping and appurtenances on TVA property between a source of fire protection water and the base of the riser (flange or flange and spigot piece or base tee) for automatic sprinkler systems, fixed water spray systems, standpipe systems, and other water based fire suppression systems. (G-73)

Flammable Liquid – A liquid having a flash point below 100°F and having a vapor pressure not exceeding 40 lbs./in² (absolute) at 100°F shall be known as a Class I Liquid. (G-73)

Foam-Water Sprinkler System – An extinguishing system: pipe connected to a source of air-foam concentrate, and a water supply, and appropriate sprinklers, which distributes foam and water over the protected area. (G-73)

Frequency – Each Testing and Inspection Requirement (TIR) has a specified Frequency in which the TIR must be met in order to meet the associated Operating Requirement (OR). The "specified frequency" is discussed in Section 14.1 to 14.10. (FPR-Preparer)

Functional: A system, structure or component (SSC) described in the FPR is capable of performing its FSSD function. SSCs Operable in accordance with the Technical Specifications meet the requirements for FSSD functionality. (FPR Preparer)

Functional Test – Use of a simulated signal to the sensor or device to verify the functionality, including alarm and/or activation functions. (FPR-Preparer)

Inaccessible Area – Those areas defined in FSAR Chapter 12.3 as a Zone IV, IVa, or IVb (High Radiation Area) or a Zone V (Very High Radiation Area). Areas may be designated as inaccessible by the Fire Protection Supervisor because operating conditions that pose

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immediate danger to life and health from environmental or operational conditions or require the shutdown of essential operating equipment to perform the testing/inspection. Inaccessible areas are as follows:

Inaccessible Areas

Building	Elevation	Area/Room
Auxiliary Bldg	674.0	Tritiated Drain Collector Tank Room, 674.0-A1**
	676.0	Hold-Up Tank A, 676.0-A2**
	676.0	Hold-up Tank B, 676.0-A3**
	676.0	Floor Drain Collection Tank Room, 676.0-A4a
	676.0	Unit 1 Pipe Chase, 676.0-A16*
	676.0	Unit 2 Pipe Chase, 676.0-A17*
	692.0	Spent Resin Tank Room, 692.0-A15**
	692.0	Spent Resin Tank Valve Gallery, 692.0-A16
	692.0	Unit 1 Pipe Chase, 692.0-A8*
	692.0	Unit 2 Pipe Chase, 692.0-A24*
	692.0	Gas Decay Tank (F, G, H & J) Room, 692.0-A3**
	692.0	Gas Decay Tank (A, B, C, D & E) Room, 692.0-A5**
	713.0	Unit 1 Volume Control Tank Room, 713.0-A7
	713.0	Unit 2 Volume Control Tank Room, 713.0-A20
	713.0	Unit 1 Pipe Chase, 713.0-A28*
	713.0	Unit 2 Pipe Chase, 713.0-A29*
	713.0	Unit 1 Mixed Bed & Cation Valve Gallery, 713.0-A9*
	713.0	Unit 2 Mixed Bed & Cation Valve Gallery, 713.0-A18*
	713.0	CVCS Valve Gallery, 713.0-A23*
	729.0	Cask Loading Area, 729.0-A5*
	729.0	Unit 1 North Main Steam Valve Room (all elev.), 729.0-A2
	729.0	Unit 1 South Main Steam Valve Room (all elev.), 729.0-A1
	729.0	Unit 2 North Main Steam Valve Room (all elev.), 729.0-A10
	729.0	Unit 2 South Main Steam Valve Room (all elev.)
	737.0	Unit 1 Letdown Heat Exchanger Room, 737.0-A7
	737.0	Unit 2 Letdown Heat Exchanger Room, 737.0-A8
	757.0	Unit 1 Reactor Bldg. Equipment Hatch, 757.0-A11
	757.0	Unit 2 RB Equipment Hatch, 757.0-A15

U1 Reactor Bldg All All

U2 Reactor Bldg All All

* Inaccessible only during resin transfer.

**Refer to Part VII for engineering evaluation.

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Internal Conduit Seals

- (1) Smoke and Hot Gas Seals - Seals installed inside conduit openings to prevent the passage of smoke and hot gasses through fire barriers. These seals may be located at the fire barrier or at the nearest conduit entry on both sides of the fire barrier. Smoke and hot gas seals are not required to have a fire resistance rating equal to the fire barrier in which they are installed. (G-96)
- (2) Heat and Fire Seals - Fire rated seals installed inside conduits at or in close proximity to the fire barrier. Heat and fire seals have the same or greater fire resistance rating as the fire barrier they are installed in. (G-96)

Labeled - Equipment or materials to which has been attached a label, symbol or other identifying mark of an organization acceptable to the authorities having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of labeled equipment or materials and by whose labeling the manufacturer indicates compliance with appropriate standards or performance in a specified manner. (G-73)

Limited Combustible Material - As applied to a building construction material, a material not complying with the definition of noncombustible material, which, in the form in which it is used, has a potential heat value not exceeding 3500 Btu per lb. (8141 Kj/Kg), and complies with one of the following paragraphs (1) or (2). Materials subject to increase in combustibility or flame spread rating beyond the limits herein established through the effects of age, moisture, or other atmospheric condition shall be considered combustible.

- (1) Materials having a structural base of noncombustible material, with a surfacing not exceeding a thickness of 1/8 in. (3.2mm) which has a flame spread rating not greater than 50.
- (2) Materials, in the form and thickness used, other than as described in (a), having neither a flame spread rating greater than 25 nor evidence of continued progressive combustion and of such composition that surfaces that would be exposed by cutting through the material on any plane would have neither a flame spread rating greater than 25 nor evidence of continued progressive combustion. (NFPA 220 [Reference 4.4.38]).

Listed – Equipment or materials included in a list published by an organization acceptable to the authority having jurisdiction and concerned with product evaluation, that maintains periodic inspection of production of listed equipment or materials and whose listing states either that the equipment or material meets appropriate standards or has been tested and found suitable for use in a specified manner. (G-73)

Mode – The term Mode is used with the numbers 1 through 6 to associate the plant's status with specific plant physical parameters. For the definition of these parameters see the Technical Specifications. (FPR Preparer)

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Noncombustible Material –

- (1) A material which in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors when subjected to fire or heat; having a structural base of noncombustible material, as defined above, with a surfacing not over 1/8-inch thick that has a flame spread rating not higher than 50 when measured using ASTM E84 Test, "Surface Burning Characteristics of Building Materials" (Reference 4.3.1). (G-73)

-OR-

- (2) A material which, in the form in which it is used and under the conditions anticipated, will not ignite, burn, support combustion, or release flammable vapors, when subjected to fire or heat. Materials which are reported as passing ASTM E136, Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C, shall be considered noncombustible materials. (NFPA 220)

Operating Requirement (OR) – The lowest level functional capabilities or performance levels of equipment required to ensure adequate fire protection capability is established and maintained to protect safety-related and FSSD equipment from the effects of fire. When an OR is not met, action statements are provided to describe remedial action until the OR can be met. (FPR Preparer)

Operator Actions - Operator Actions (OAs) are actions taken by an Operator while in the Main Control Room (MCR). Additionally, actions performed at auxiliary control system stations (e.g., Auxiliary Control Room) in response to a main control room abandonment event are considered OAs. See Part V for a detailed discussion. (FPR Preparer)

Operator Manual Actions - Operator Manual Actions (OMAs) are those actions performed by operators to manipulate components and equipment from outside the main control room to achieve and maintain post fire hot shutdown, but do not include "repairs". See Part V for additional details. (FPR Preparer)

Penetration – An opening through structural members or barriers such as walls, floors, or ceilings for passage of penetrating components. (G-96)

Penetration Seal – Materials, devices, or assemblies installed in communicating spaces across barriers, which provide effective sealing against defined environmental exposure criteria to achieve the same functional requirement as that originally intended by the structural member or the barrier. (G-96)

Portable Fire Extinguisher – A portable device containing powder, liquid, or gases which can be expelled under pressure for the purpose of suppressing or extinguishing a fire. (FPR Preparer)

Preaction Sprinkler System – A system employing automatic sprinklers attached to a piping system connected to a water supply containing air that may or may not be under pressure, with a supplemental fire detection system installed in the same area as the sprinklers. Actuation of the fire detection system (as from a fire) opens a valve that permits water to flow into the sprinkler piping system and to be discharged from any sprinklers that may be open. (G-73)

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Primary Containment – A structure that contains the reactor vessel that acts as a barrier to the release of radioactive fission products or other radioactive substances. Primary containment is a gas-tight shell that receives and contains the water, steam, and fission products that flow from any break in the reactor coolant pressure boundary located within the structure. (FPR Preparer)

Reactivity Margin - The subcriticality margin required to ensure $K_{eff} < 0.99$. Maintaining reactivity margin requirements ensures the Appendix R reactivity control requirements of III.G.3 and III.L are met.

Safety-Related – Items that meet the following criteria:

Those functions necessary to ensure:

- (1) The integrity of the reactor coolant pressure boundary.
- (2) The capability to shut down the reactor and maintain it in a safe condition.
- (3) The capability to prevent or mitigate the consequences of an incident which could result in potential offsite exposures comparable to those specified in 10 CFR 100 (Reference 4.1.9). (G-73)

Safety-Related Area – Any area containing safety-related equipment. Safety-related areas include: Unit 1 and 2 Reactor Buildings, Auxiliary Building, Unit 1 and Unit 2 North and South Main Steam Valve Rooms, Unit 1 and Unit 2 Additional Equipment Buildings, Control Building, Intake Pumping Station, Diesel Generator Building, duct banks, and portions of the Yard containing safety-related equipment. (FPR Preparer)

Secondary Containment – The structure that provides a plenum for the temporary, low pressure retention of gaseous leakage from primary containment. (FPR Preparer)

Smoke Detector – A device which detects the visible or invisible particles of incomplete combustion. (G-73)

Sprinkler System – A network of piping connected to a reliable water supply that will distribute the water throughout the area protected and will discharge the water through sprinklers in sufficient quantity either to extinguish the fire entirely or to prevent its spread. The system, usually activated by heat, includes a controlling valve and a device for actuating an alarm when the system is functional. (G-73) Manually actuated systems do not contain a device for actuating an alarm when the system is in operation. (FPR Preparer).

Standpipe and Hose System – An arrangement of piping, valves, hose connections, and allied equipment installed in a building with the hose connections located in a manner that the water can be discharged in streams or spray patterns through attached hose and nozzles, for the purpose of extinguishing a fire and so protecting a building and its contents in addition to protecting its occupants. This is accomplished by connections to water supply systems or by pumps, tanks and other equipment necessary to provide an adequate supply of water to the hose connections (G-73).

Testable Valves – Refers to valves such as Outside Stem and Yoke (OS&Y), butterfly, and gate, (with or without automatic operators) that are designed to be cycled or exercised to ensure operation and prevent binding. This does not refer to valves such as check valves, solenoid valves, alarm test valves, or suppression system water flow alarm valves. (FPR Preparer)

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Testing and Inspection Requirement (TIR) – Physical attributes to be reviewed and reverified to ensure the equipment specified can perform its intended function(s) of the protection of safety related or fire safe shutdown systems. The frequency of this review and reverification is also provided. (FPR Preparer)

Thermal Detector – A device that detects abnormally high temperature or rate of temperature rise. (FPR Preparer)

Transient Fire Loads – Any combustible material that is not permanently present in a given area, and may be introduced during maintenance, repair, rework, or may be transported to a final destination for permanent installation or maintenance, repair, rework of equipment systems and components present there. (G-73)

Water Spray Nozzle – A normally open water discharge device which, when supplied with water under pressure, will distribute the water in a special, directional pattern peculiar to the particular device. (G-73)

Water Spray System – A special fixed piping system connected to a reliable source of fire protection water supply and, equipped with water spray nozzles for specific water discharge and distribution connected to the water supply through an automatically or manually actuated valve which initiates the flow of water. An automatic valve is actuated by operation of automatic detection equipment installed in the same areas as the water spray nozzles. (In special cases the automatic detection equipment may also be located in another area.) (G-73)

Water Supply – An arrangement of pumps, piping, valves, and associated equipment necessary to provide an adequate, reliable supply of water for the extinguishment of fires. (FPR Preparer)

6.0 FIRE PROTECTION QUALITY ASSURANCE

TVA procedure NPG-SPP-18.4.5, “Fire Protection Quality Assurance (Q07),” (Reference 4.2.66) defines the augmented Quality Assurance (QA) Program for fire protection. This procedure satisfies the guidelines for QA for Fire Protection established by Appendix A to Branch Technical Position BTP APCSB 9.5.1 and “Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance” (dated August 29, 1977 [Reference 4.1.34]) for fire protection features that provide protection for safety-related structures, systems or components and fire safe shutdown systems. Refer to Part VIII of the FPR for a comparison of the WBN Fire Protection Program with Appendix A guidelines. The QA program for fire protection uses the applicable parts of the TVA Nuclear Quality Assurance Plan (TVA-NQA-PLN89-A) (Reference 4.2.76). More stringent QA requirements may apply to fire protection features that also perform nuclear safety-related functions such as secondary containment isolation. This QA program is described in corporate Standards and implemented in WBN procedures.

7.0 FIRE PROTECTION ORGANIZATION/PROGRAMS

TVA’s Nuclear Organization is described in TVA Organization Topical Report TVA-NPOD89-A, “TVA Nuclear Power Group Organization Description” (Reference 4.2.75). Standard Department Procedure FPDP-1, “Conduct of Fire Protection” (Reference 4.2.62) provides additional details for the organizational responsibilities related to the Fire Protection Program.

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7.1 TVA Corporate Management

The Executive Vice President and Chief Nuclear Officer (CNO) has corporate responsibility for overall plant nuclear safety. The CNO reports directly to the Chief Operating Officer, who reports directly to the Chief Executive Officer.

The Vice President Nuclear Engineering has the overall responsibility for establishing and directing engineering functions within the NPG. This includes managing organization functions for design engineering, which includes a corporate level fire protection group.

7.1.1 Corporate Fire Protection / Appendix R Group

The Corporate Fire Protection/Appendix R Group provides oversight and governance of the site fire protection and fire safe shutdown programs. The Corporate Program Manager will meet the requirements of “Member Grade” in the Society of Fire Protection Engineers. To fulfill its role, the Corporate Fire Protection/Appendix R Group is responsible to:

- a. Oversee the Fire Protection Program requirements at each of the Nuclear Sites.
- b. Participate in industry activities to ensure TVA interests are represented in the development of proposed industry and regulatory initiatives for fire protection programs.
- c. Establish TVA Nuclear direction for compliance with established industry and regulatory practice relative to defense-in-depth as it applies to fire protection.
- d. Provide corporate level interface for Nuclear Assurance audits, regulatory inspections and insurance property loss reviews.
- e. Establish TVA Nuclear policy relative to compliance with existing and proposed changes to the applicable regulations and standards for the fire protection program, including fire safe shutdown.
- f. Provide advice and assistance to plant personnel on fire protection program issues.
- g. Provide oversight and governance for the fire protection and fire safe shutdown programs

7.2 Site Vice President (VP)

The Site VP reports to the Senior VP, Operations, who reports directly to the CNO. The Site VP is responsible to provide general management and oversight to all operations activities for the site to ensure safe and efficient operation of the plant in compliance with requirements.

The organizational responsibilities specific to the WBN Fire Protection Program are detailed below.

7.2.1 Plant Manager

The Plant Manager is responsible for management oversight of the development and implementation of the WBN Fire Protection Program. The Plant Manager reports directly to the Site VP.

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7.2.1.1 Director, Operations

The Operations Director directs the Fire Protection organization to ensure the safety of nuclear plant facilities and to safeguard the health and safety of the general public. The Operations Director reports to the Plant Manager.

7.2.1.1.1 Fire Operations Supervisor

The WBN Fire Operations Supervisor reports to the Superintendent, Operations Support, who reports to the Operations Director. The Fire Protection Supervisor provides general management and direction of Nuclear Plant Fire Protection Program functions and is responsible to:

- a. Direct the development and maintenance of the nuclear plant site Fire Protection Program, implementing procedures, and all programmatic documents to define and implement day-to-day management of the nuclear plant's site Fire Protection Program
- b. Ensure the training provided on fire protection program meets TVA standards or better including training such as for general employee population, personnel performing testing and inspections or fire protection equipment, and for fire response;
- c. Ensure a well trained and equipped emergency response organization that is able to rapidly respond to, control, and extinguish fires while maintaining awareness of plant conditions and impaired fire protection features that may affect the fire brigade response;
- d. Coordinate with the Fire Marshal to maintain qualifications of the plant fire brigade to ensure compliance with requirements;
- e. Ensure Pre-fire Plans reflect the current plant configuration, are readily available and are used appropriately during actual emergencies, drills, and training;
- f. Supervise the inspection, testing, and maintenance of the fire protection equipment, systems, and features;
- g. Direct reviews of designs, concepts, and specifications to ensure that fire protection is considered and meets regulatory requirements;
- h. Direct and participate in investigations related to the nuclear plant site Fire Protection operations to determine root causes and preventive measures for fire protection-related events;
- i. Analyze the impact of external forces, processes, and regulations on the nuclear plant site Fire Protection Program and develop nuclear plant positions or responses to ensure continued programmatic compliance or program enhancements;

7.2.1.1.2 Fire Marshal

The Fire Marshal reports to the Operations Director. The Fire Marshal oversees all aspects of the Fire Protection and Fire Loss Prevention program for WBN, provides authoritative recommendations regarding critical issues related to fire protection, and ensures appropriate TVA resources are available for fire protection issues. The Fire Marshal has authority to enforce fire protection regulations and commitments. The Fire Marshal ensures effective

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implementation of administrative controls regarding fire protection and fire prevention throughout the site. The Fire Marshal is responsible to:

- a. Serve as a recognized leader and expert for fire protection issues;
- b. Represent the interest of the site and TVA on industry committees;
- c. Participate in the development of long-range planning involving large fiscal expenditures for the site in area of fire protection;
- e. Serve as a plant interface with Design Engineering through design change reviews, to ensure design changes effectively resolve identified issues and that the design change process effectively implements fire protection program requirements.
- f. Oversee plant functions to provide direction, governance and oversight on the effectiveness of the fire protection administrative controls.
- g. Develop and provide programmatic oversight for the control of transient combustibles and ignition sources;
- h. Review, authorize, and monitor scheduled fire suppression, detection and barrier impairments, and determine compensatory measures required per the Fire Protection Report;
- i. Perform periodic inspections and assessments of plant areas to ensure fire protection program requirements are being effectively implemented;
- j. Review and support fire investigations and reports, ensuring proper oversight;
- k. Interface with Site and Corporate Fire Protection Program Engineers concerning administrative control and fire systems;
- l. Interface with Fire Ops and provide technical oversight of Fire Ops activities;
- m. Provide off-site agency (e.g., NRC/INPO/NEIL) inspection/evaluation fire protection interface;
- n. Ensure procedures describe the scope of activities and provide adequate controls and processes for program implementation of the three attributes of fire protection defense in depth: prevent fire; detect, control, extinguish fires rapidly; and protect equipment to achieve and maintain safe shutdown;
- o. Provide oversight of fire protection training, including performing independent assessment/evaluation of drill performance;

The Fire Marshal has available an individual who meets the eligibility requirements for "Member/Professional Grade" in the Society of Fire Protection Engineers to support the fire protection administrative program.

7.2.2 Fire Protection Support Personnel

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Personnel assigned to the fire protection organization or other site organization, perform specific work activities as required to support the fire protection supervisory personnel. These personnel may be under the direct supervision of the fire protection supervisory personnel or other supervisors but provide support functions to fire protection. Examples include such items as planning for work instructions or training fire watch personnel.

7.2.3 Site Engineering

The Site Engineering Director provides overall management of engineering functions at the site. The Site Engineering director manages the site's system health program and engineering programs, which includes the fire protection program. Site engineering staff is provided to:

- a. Maintain fire protection systems oversight through the use of system monitoring via system health reports, apparent and root cause analyses, etc. as appropriate;
- b. Perform periodic walk downs of the fire protection systems and components to maintain a current awareness of the system and component conditions;
- c. Provide fire protection engineering expertise when required to support emergent or sensitive plant issues, troubleshooting, or assistance requests from Operations or Maintenance.
- d. Ensure fire protection systems are designed in accordance with licensing requirements and industry standards and deviations are documented;
- e. Ensure changes to plant configuration and designs are analyzed and controlled so that no adverse impacts result to the fire protection program.

Quality Assurance

Quality Assurance ensures that audits are performed in accordance with the NQAP which includes the periodic assessments for the fire protection program including fire drill and training conducted by the fire brigade and plant personnel.

- f. Maintains the plant design to ensure continued compliance to Appendix R.

7.2.4 Site Personnel

The WBN Fire Protection Report applies to all TVA employees and contractors performing activities at WBN.

Site personnel who have duties or perform work activities at WBN are responsible for being familiar with procedures applicable to them during a fire emergency and conducting day-to-day work activities in accordance with plant fire protection administrative procedures.

Unescorted access-authorized general employee's fire protection-related responsibilities and requirements are provided in annual general employee training.

7.3 Quality Assurance

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Quality Assurance ensures that audits are performed in accordance with the NQAP which includes the periodic assessments for the fire protection program including fire drill and training conducted by the fire brigade and plant personnel.

8.0 FIRE PROTECTION PROGRAM ADMINISTRATIVE AND TECHNICAL CONTROLS

This section of the WBN Plan provides the administrative process and controls for implementation of the Fire Protection Program.

8.1 Program Changes and Associated Review and Approval

- a. The Nuclear Safety Review Board (NSRB) provides independent review, oversight, and technical reviews.
- b. The Fire Protection Supervision reviews proposed changes to the Fire Protection Report and fire protection administrative procedures to ensure adequacy and compliance with established regulatory commitments in accordance with site specific procedures.
- c. WBN may make changes to the approved Fire Protection Report without prior approval of the NRC in accordance with the Fire Protection License Condition in each unit's Operating License.
- d. The Fire Protection Report is updated on a schedule consistent with 10 CFR 50.71 (Reference 4.1.4).

8.2 Modification Control

A fire protection evaluation is performed (when required) for plant modifications in accordance with established procedures. This evaluation is performed to ensure that adequate fire protection measures are maintained, combustible loading considerations are addressed, the overall Fire Protection Program is not degraded, and requirements and guidelines of regulatory agencies have been considered. The evaluation also addresses specific commitments to the applicable sections of 10 CFR 50, Appendix R (Reference 4.1.8).

8.3 Audits/Inspections of the Fire Protection Program

Generic Letter No. 82-21, "Technical Specifications for Fire Protection Audits" (Reference 4.1.13) provides for a system of audits to be conducted to assess the WBN fire protection equipment and FPP implementation to verify continued compliance with NRC requirements and TVA commitments. The audit program is provided in the NQAP. The frequency of audits is different from GL 82-21 per industry guidance as documented in the NQAP.

8.4 Assessment of Information Notices, Generic Letters, Bulletins, etc.

The Watts Bar Nuclear Experience Review (NER) Program ensures that NRC Information Notices, Generic Letters, Bulletins, and other relevant documents that provide information on generic or specific fire protection and/or fire safe shutdown issues are assessed for applicability to WBN. The responsible organizations (i.e., Licensing, Engineering, Operations, etc.) for addressing the applicable issues are determined upon assessment of the issues identified in the documents.

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8.5 Violation and Reportability

Non-compliance with an Operating Requirement (OR) or a Testing and Inspecting Requirement (TIR) described in Section 14.0 shall be evaluated for reportability in accordance with 10 CFR 50.72 (Reference 4.1.5) and 10 CFR 50.73 (Reference 4.1.6). Non-compliances occur when the limits of the TIR (including allowable extensions) are exceeded or conditions of the OR and its associated action statement are not met. The required reportability evaluations will be performed in accordance with TVA's Corrective Action Program.

9.0 EMERGENCY RESPONSE

9.1 Fire Brigade Staffing

Effective handling of fire emergencies is an important aspect of the WBN Fire Protection Program. This is accomplished by trained and qualified emergency response personnel. The fire response organization is staffed and equipped for firefighting activities. Each shift fire brigade is comprised of a fire brigade leader and four fire brigade members. Additionally an Incident Commander is available to direct each shift's fire brigade. The Incident Commander meets the requirements of a Unit Supervisor or Shift Technical Advisor and has sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The Incident Commander position is separate from the Shift Manager, Unit Supervisor and Shift Technical Advisor positions. The fire brigade shall not include the Shift Manager or the other members of the minimum shift crew necessary for safe shutdown of the unit. Additional firefighting support is available when needed through an agreement with a local fire department.

The fire brigade composition may be less than the minimum requirements for a period of time not to exceed two hours, in order to accommodate unexpected absence, provided immediate action is taken to fill the required positions. The following are examples of emergencies that may prevent the full fire brigade from being available onsite:

- a. a life-threatening medical emergency, requiring the plant ambulance and appropriately trained medical personnel to leave the site for transport of the patient, and
- b. the fire brigade may respond to fires outside the site area, but still on the TVA Reservation, that has the potential to or is affecting the ability for WBN to maintain the ability to safely shut down. This includes areas such as the Watts Bar Hydro and former Fossil Plant switchyards. A response of this type is at the direction of the Shift Manager based on a concern for plant safety due to the fire or fire's threat. These are expected to be rare occurrences.

9.2 Fire Brigade Support Personnel

- a. Site Nuclear Security provides access to the security controlled area for the fire brigade and offsite fire response personnel during fire emergencies. This includes traffic and crowd control, when necessary.
- b. Site Radiation Protection (RP) personnel provide radiological support for the fire brigade to advise them on radiological hazards and assist in radiological decontamination efforts if necessary. RP personnel also provide radiological support for offsite fire response personnel.

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- c. Additional support is provided as required, by Operations, Maintenance, Chemistry, etc.

9.3 Training and Qualifications

WBN fire brigade training ensures that each fire brigade's capability to combat fires is established and maintained. In addition each fire brigade member and leader annually receives:

- a) Training on the use of special respiratory equipment
- b) Training to maintain qualification for unescorted access to the plant
- c) A medical evaluation to ensure ability to perform strenuous physical activity

The training program consists of initial (classroom and practical) training and recurrent training which includes periodic instruction, fire drills and annual fire brigade training.

a. Initial Training

Initial training consists of classroom instruction and practical exercises to include actual fire extinguishment and use of firefighting and related equipment under strenuous firefighting conditions. Training includes:

- 1) Identification of the fire hazards and associated types of fires that may occur in the plant and an identification of the location of such hazards.
- 2) Identification of the location of firefighting equipment for each fire area, and familiarization with layout of the plant including access and egress routes to each area.
- 3) The proper use of available firefighting equipment, and the correct method of fighting each type of fire. The types of fires covered include electrical fires, fires in cables and cable trays, hydrogen fires, flammable liquid fires, waste/debris fires, and record file fires.
- 4) Indoctrination on the plant firefighting plan with specific coverage of each individual's responsibilities.
- 5) The proper use of communication, lighting, ventilation, and emergency breathing apparatus.
- 6) The toxic characteristics of expected products of combustion.
- 7) The proper methods for fighting fires inside buildings and tunnels.
- 8) Detailed review of firefighting procedures and procedure changes.
- 9) Review of latest plant modifications and changes in firefighting plans.
- 10) The direction and coordination of the firefighting activities (fire brigade leaders only).

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In addition, fire brigade leaders receive additional training that provides the fire brigade leader with the knowledge and skills necessary to supervise and direct the activities of the fire brigade during an incident.

b. Recurrent Training

Training and qualification are scheduled with a maximum allowed extension of 25 percent of the listed frequency interval. Performance deficiencies of the fire brigade or individual brigade members are remedied by scheduling additional training. Any individual who misses or fails to complete recurrent training is placed in an ineligible status when the current training expires until the training is completed in accordance with site procedure (Ref. 4.2.74).

1) Periodic Classroom Instruction (PCI)

Regular planned training sessions are held every three months. These planned training sessions repeat the initial training subject matter over a two-year period. These sessions are normally held on-site. If the appropriate quarterly session's subject matter is covered during the Annual Fire Brigade Training, credit may be given for the quarterly PCI.

2) Fire Drills

Drills are preplanned to establish the objectives and are conducted by the fire training instructor or designated representative. Drills are conducted as follows:

- a) A minimum of one on-site drill per shift (crew) every 92 days.
- b) A minimum of one unannounced drill per shift (crew) per year.
- c) At least one drill per shift (crew) per year on a "backshift" for each fire brigade.
- d) At three-year intervals, a randomly selected, unannounced drill critiqued by qualified individuals performing a triennial audit of the fire protection plan.
- e) An annual fire drill, which includes participation by the offsite fire departments that have an active agreement to provide firefighting and equipment response to the plant.
- f) Fire brigade members including leaders shall participate in at least two on-site drills per year.
- g) When assigned as the shift Incident Commander, the Incident Commander attends the fire drills that occur during that shift.

3) Annual Fire Brigade Training

Annual Fire Brigade Training is held for the fire brigade on the proper method of fighting various types of fires similar in magnitude, complexity, and difficulty as those that may occur. These types of fires include Class A (ordinary combustible

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material such as wood, cloth, paper, rubber, plastics, etc.) and/or Class B (flammable liquids, combustible liquids, petroleum greases, oils, flammable gasses, etc.). In addition, some fires may address Class C (energized electrical) fires in combination with a Class A and/or B. This training includes actual fire extinguishment of a live fire similar to that which may occur in the plant of sufficient magnitude to exceed the capacity of a single hand held fire extinguisher and require the use of emergency breathing apparatus under strenuous conditions.

Annual briefings are provided to the local fire departments to assure their continued understanding of their role in the event of a fire emergency at the plant. The annual briefings are required for only those local fire departments that have aid agreements with the plant.

9.4 **Firefighting Equipment**

Firefighting equipment is provided throughout the plant. The availability of firefighting equipment is such that delays in obtaining equipment by the fire brigade for fire emergencies are minimized.

Firefighting equipment may, alternatively, be staged adjacent to or at the access to areas/locations to facilitate equipment availability. This may be necessary to address equipment surveillance test concerns relative to life safety and ALARA practices.

Examples of the types of firefighting equipment available are as follows:

- motorized apparatus
- portable ventilation equipment
- fire extinguishers
- self-contained breathing apparatus and reserve air bottles
- fire hose
- nozzles, gated wyes, fittings, and foam applicators
- personal protective equipment such as turn-out coats, boots, gloves, and helmets
- communication equipment
- portable lights
- ladders for firefighting use

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9.5 Fire Emergency Procedures and Prefire Plans

Fire emergency procedures and prefire plans specify actions taken by the individual discovering a fire and actions considered by the emergency response organization. Included in these procedures are operational instructions for response to the fire detection system annunciation. These procedures provide different levels of response based on whether there is an actual fire or an annunciation (e.g., a single zone annunciation in a cross zoned area will not carry the same level of response as a cross zone annunciation in the same area). An annunciation may or may not carry the same level of response as the report of a fire by site personnel. Prefire plans are not intended to establish a procedure or step-by-step process but to provide guidance, depending upon the particular circumstances, to aid in firefighting efforts. It is recognized that many different firefighting techniques or strategies exist which are acceptable for fire suppression efforts.

Prefire plans are developed to support firefighting activities in safety-related areas, in fire safe shutdown system areas, and areas which may present a hazard to safety-related or FSSD equipment inside the boundaries of the Site Perimeter. The prefire plans include the following information, as appropriate:

- Identification of plant equipment
- Access and egress routes for fire areas
- Firefighting strategy and tactics
- Location of fire protection features
- Identification of special fire, toxic material, and radiological hazards
- Special consideration of hazards
- Ventilation methodology

Safe shutdown procedures are available in the event a fire occurs in safety-related or FSSD equipment areas of the plant.

10.0 CONTROL OF COMBUSTIBLES

Combustibles are controlled to reduce the severity of a fire which might occur in a given area and to minimize the amount and type of material available for combustion.

The use and application of combustible materials at WBN are controlled utilizing the following methods:

- Instructions/guidelines provided during general employee training/orientation programs
- The chemical traffic control program
- Periodic plant housekeeping inspections/tours by management and/or the plant fire protection organization

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- Design/modification and installation process review
- Administrative procedures (e.g., NPG-SPP-18.4.7 (Ref. 4.2.68) Control of Transient Combustibles)

The fire protection organization performs a periodic fire safety inspection of the safety-related areas of the plant to identify and minimize potential fire hazards.

The use and handling of combustible materials such as fire retardant-treated lumber, paper, plastic, and flammable/combustible gases and liquids are controlled in safety-related areas. The use of untreated lumber in safety related and selected power production structures requires specific approval of the fire protection organization.

Combustible materials generated as a result of work activities are removed/cleaned up from the work area at the end of the shift or at the conclusion of the work activity, whichever is sooner.

The storage of combustible materials within safety-related areas is controlled by the fire protection organization.

The control of hazardous waste and hazardous materials is conducted in accordance with the chemical control and hazardous material processes.

Design considerations in the control of combustibles are utilized when appropriate. These considerations include the application of noncombustible or limited combustible construction materials or components, use of noncombustible fluids in operating equipment, provision of dikes or containments for equipment containing combustible liquids, etc.

Combustible Control Zones (CCZs) are established at WBN to strictly control or prohibit the placement of transient combustibles. Transient combustibles brought into CCZs require an evaluation in accordance with site administrative procedures. The strict control or prohibition of combustibles by site procedures within the combustible control zone provides reasonable assurance that a fire will not propagate and jeopardize redundant FSSD equipment. CCZs are shown on the compartmentation drawings (Figures II-27A through II-46A excluding 37A).

11.0 CONTROL OF IGNITION SOURCES

The use of ignition sources such as welding, flame cutting, thermite welding, brazing, grinding, arc gouging, torch applied roofing, and open flame soldering within safety-related areas is controlled through the approval and issuance of an ignition source permit. Permits are reviewed and approved by appropriate plant personnel. The ignition source permit is valid for one job. Job area inspections shall be performed and documented at the start of each shift that ignition source activities are being performed. If no ignition source activities are performed, then re-inspection is not required.

Designated ignition source activity areas are reviewed and approved by the fire protection organization. A fire watch system shall be established for all ignition source work activities that are performed in safety-related areas of the plant except for specific non-risk ignition source activities of underwater welding, outside areas (fences, light poles, etc.), and electric soldering. These fire watches remain with the work activity in accordance with the requirements stated in NPG-SPP-18.4.8 (Ref. 4.2.69).

Smoking is not allowed in any safety-related or power production area.

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12.0 DESCRIPTION OF FIRE PROTECTION SYSTEMS AND FEATURES

Fire protection systems and related features consist of the following subsystems:

- water supply
- standpipes, hoses, and hydrants
- automatic and manual fire suppression
- fire detection
- lightning protection, emergency lighting, and communications
- reactor coolant pump lube oil collection, and
- fire-rated assemblies.

The following subsections are summary discussions of these fire protection systems and related features.

Those portions of the fire protection systems and features within Seismic Category I structures, whose failure during a seismic event may result in damage to safety-related equipment, have been designed and installed to Seismic Category I(L) requirements. Those portions that satisfy safety-related functions have been designed and installed to Seismic Category I requirements if needed due to the design basis. Piping in the Annulus is Seismic I(L)A, pressure retention. This has been analyzed to ensure the primary safety function of maintaining secondary containment isolation boundary.

For information in addition to the following on water based suppression see System Description WBN-SDD-N3-26-4002 (Reference 4.2.72), on carbon dioxide based suppression see System Description N3-39-4002 (reference 4.2.73), on fire detection see System Description N3-13-4002 (reference 4.2.71).

Drainage for water based suppression systems, automatic and manual, is addressed in calculation EPM-RAC-032392, "Evaluation of Suppression System Discharge." (Reference 4.2.10a)

12.1 Water Supply

The High Pressure Fire Protection (HPFP) system water supply is common to both units and consists of four, ASME Section III, seismic Category I, high pressure, vertical turbine motor-driven pumps and one horizontal, centrifugal diesel fire pump. Each electric pump is rated at 1590 gpm at 300-foot head (130 psig). The diesel pump is rated at 2500 gpm at 288-foot head (125 psig). Electric fire pump capabilities are evaluated by testing at the rated head and at two diverse points, one above and one below the rated head. The diesel fire pump capability is evaluated by testing at three points on the fire pump curve. They are: 1) not to exceed 140% of rated pressure (175 psig/404-foot head) at shutoff capacity 2) develop a minimum 100% capacity (2500 gpm) at rated pressure (125 psig/288-foot head), and 3) develop a minimum 150% capacity (3750 gpm) at not less than 65% rated pressure (81 psig/187-foot head). The

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electric pumps are located in the seismic Category I Intake Pumping Station (IPS). A three-hour fire-rated barrier is provided to separate two electric fire pumps from the other two. The diesel fire pump is remotely located in the Yard adjacent to the Unit 1 cooling tower.

The WBN fire protection system has four electric driven pumps and one diesel driven pump. As defined in Section 14.2.a below, fire protection functionality is based on only two of the four electric pumps and the diesel driven pump. The other two electric driven pumps are considered spares for fire protection purposes. The four electric pumps and associated main piping headers are ASME Section III, seismic class I available for supplying auxiliary feedwater during a design basis event (i.e., Flood Mode). During Flood Mode two electric pumps are aligned to each train header. Details of the Flood Mode are documented in several places in the FSAR such as Section 2.4.14.2, "Plant Operation During Floods Above Grade". The ASME and seismic requirements are beyond the requirements of the NFPA Code and are not required for fire protection purposes.

The electric pumps are automatically started by activation of the fire detection systems associated with the automatic water-based suppression systems. The electric pumps can be started manually from either the main control room or the respective 480V shutdown board. The diesel pump is auto-started on low system pressure, manually from the Main Control Room or manually locally.

Each electric fire pump motor is powered from a separate 480V shutdown board. In the event of loss of offsite power, each shutdown board is powered by an emergency diesel generator. Indications of fire pump motor running and loss of line power on the line side of the switchgear are provided in the Main Control Room (MCR). Required annunciation signals for the diesel fire pump and its controller are automatically transmitted to the MCR.

Inspection of the strainers for the electric pumps is included in the WBN Preventative Maintenance Program. A single, automatic, motor-driven, self-cleaning strainer is provided for each power train to filter the discharge flow of the two electric pumps on that train. Each strainer is capable of straining 100 percent of the rated flow of two pumps. The strainers are located in the IPS. The strainers conform to the requirements of ASME Section III, Seismic Category I components. Mechanical screens are provided in the suction of the diesel fire pump and a strainer on the discharge.

Water supply for the electric fire pumps is taken from the Tennessee River and is considered unlimited for fire protection purposes. The diesel fire pump takes suction from the Unit 1 cooling tower basin, which has sufficient capacity for the diesel fire pump to run at 150% capacity for two hours. A fire protection water distribution system is provided to serve both units. Sectional isolation valves are provided so that maintenance may be performed on portions of the loop while maintaining firefighting capability. The sectional isolation valves in the underground and building loops are locked or sealed in position and surveillance is performed to ensure proper system alignment. The fire protection water distribution system is crosstied between units. The HPFP system is normally pressurized by the raw cooling water (RCW) system when the fire pumps are not running. The RCW system is automatically isolated when a fire pump starts.

The high pressure fire protection system is shared with the raw service water (RSW) system. Automatic isolation valves are provided to isolate selected large raw service water loads from the HPFP system when any fire pump is started. Specific RSW loads are automatically isolated from the fire protection water system when the fire pump(s) start due to a fire in safety-related areas to reduce the RSW load on the fire protection system to ensure adequate flow and pressure is available.

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The electric fire pumps are also used for supplying auxiliary feedwater during a design basis event (i.e. Flood Mode) at which time two pumps are aligned to each train. Details of the Flood Mode operations are documented in the FSAR.

Measures were taken to account and compensate for the effects of corrosion on piping due to biological growth, such as microbiologically induced corrosion (MIC) nodules by designing normally raw water wetted, unlined carbon steel pipe using calculations that:

1. reduced the pipe diameter to account for diameter reducing inclusions, and
2. lowered the C-factor to C=55 in the Hazen-Williams formula to account for the added roughness.

The water used in both the HPFP and RCW system is chemically treated to address concerns resulting from the use of raw water. WBN has a comprehensive chemical treatment program for treating raw water systems. This treatment is a major part of WBN Raw Water Corrosion Program as specified by site procedures. The chemical treatment is used to control corrosion to control organic fouling, including slime, to minimize the effect of MIC and inhibit growth of Asiatic clams in carbon steel. Buried piping portions of the HPFP system are monitored by the buried piping program in accordance with NEI 09-14, "Guideline for the Management of Underground Piping and Tank Integrity," (Reference 4.3.7) which provides for the risk ranking of buried piping relative to installed conditions (e.g., design and construction practices, as well as soil) and consequences of a failure and testing of the piping.

Silt from river water is addressed for fire protection in two methods. One method is the design of the IPS. For the fire pumps, water has to travel up two elevations, traverse the basin area that is just under one half the size of the IPS between elevation changes, and there is a weir at the entrance to the fire pumps wet wells. This relative movement of water to reach the fire pump wet wells allows for the majority of the silt to drop out. The other method is the design of the Raw Cooling Water (RCW) system, which provides normal makeup for the HPFP system. The RCW system pumps draw water remotely from the water's entrance to the IPS allowing for silt settlement. The cross tie of the RCW and HPFP is in the Turbine Building close to the service water load on the HPFP system. Thus, silt drawn into the HPFP system is in the paths of these service water loads.

The water used in both the HPFP and RCW system is chemically treated to address concerns resulting from the use of raw water. In 1995 (at licensing of Unit 1), a three year evaluation program was implemented to monitor the performance of the HPFP system by yearly testing of the HPFP distribution system. The results of this evaluation determined that testing on a three year basis (instead of yearly) was adequate (Reference 4.2.55). Actions taken to improve the program include the addition of the buried pipe program with the associated risk ranking and testing using advanced technology, such as guided wave testing.

The chemical treatment for raw water systems, including HPFP, is consistent with other nuclear facilities and includes oxidizing biocide, non-oxidizing biocide, phosphate, and zinc. On the existing HPFP piping, the phosphate is used to sequester iron from existing corrosion products, the zinc is used to passivate the carbon steel surfaces, and the oxidizing and non-oxidizing biocide controls slime, which helps prevent MIC growth. This provides the most effective treatment that a nuclear plant may use to prevent corrosion in raw water systems.

12.2 Standpipes, Hose Stations, and Hydrants

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Hydrants are located around the yard loop and provide coverage for exterior portions of significant structures. Normally open key operated curb valves or post indicating valves are provided for isolation of each hydrant off the yard loop. Motorized apparatus at WBN is provided with sufficient equipment to effectively fight fires in the yard area.

Interior manual hose installations are provided throughout the plant typically as back up for the area automatic suppression systems and, in some cases, as the primary suppression system. Selected hazards in the Reactor Buildings have automatic suppression systems as primary protection. These hazards include closed head water spray systems installed for each reactor coolant pump (RCP) and preaction sprinklers in the annulus that serve as water spray on select cable concentrations and prevent specific cable interactions. These automatic suppression systems are the primary suppression for these hazards with standpipes as the backup. For other general areas in the Reactor Buildings the primary suppression system is the Reactor Buildings' standpipes with the Auxiliary Building standpipes serving as the backup system. Selected areas in the Intake Pumping Station have automatic preaction sprinkler systems as primary protection with the standpipe system serving as the backup system in these areas. In areas of the IPS without automatic preaction sprinklers the standpipe system serves as the primary system, with yard hydrants providing the backup system.

Selected areas in the Diesel Generator Building (DGB) have automatic CO₂ and preaction sprinkler systems as primary protection with the standpipe system serving as the backup system in these areas. In areas of the DGB without automatic suppression, the standpipe system serves as the primary system, with yard hydrants providing the backup system. The primary and backup for the Diesel Generator Building's Conduit Interface Room is from yard hydrants. The design of manual hose stations were hydraulically verified per the guidelines of NFPA 14 (Part II, Reference 4.4.13). The Diesel Generator Building (DGB) has two feeds from the fire protection water distribution system. One line feeds the fire suppression system and the other line feeds the standpipe and hose system.

Hose stations in safety-related areas of the plant are supplied from risers separate from those for the preaction sprinkler systems providing general area protection serving the same area. One exception is the Reactor Buildings in which both the hose station flow control valves and the automatic suppression system flow control valves are supplied from a single header for the systems in the respective Reactor Building.

Class II and III Hose stations are equipped with nozzles rated for the hazards present and with a sufficient amount of hose to support firefighting needs in that area. Hose station equipment may, alternatively, be staged adjacent to or at the access to areas/locations to facilitate equipment availability. This may be necessary to address equipment concerns relative to life safety and ALARA practices.

Most of the buildings are provided with a wet standpipe system. These systems have supply valves open and water pressure to the hose rack isolation valve. The Reactor Buildings (including the Annulus) is provided with a dry standpipe system. The standpipe systems within the Reactor Buildings are normally dry and are arranged to admit water into the systems through manual operation of push buttons located at each hose station. The systems are controlled by electrically or manually operated deluge valves which are located in the Auxiliary Building. The systems for each Reactor Building' RCP preaction sprinkler and dry standpipe are provided with automatic containment isolation capabilities for primary containment to address nuclear safety concerns. In case a fire in primary containment causes a spurious containment isolation signal, administrative controls have been established to address reestablishing flow to these systems.

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12.3 Automatic Fire Suppression

The automatic fire suppression systems are designed to extinguish a fire or control and minimize the effects of a fire until the fire brigade can respond and extinguish it. The automatic suppression systems consist of water based systems and total flooding CO₂ systems. In addition, manually actuated fixed water suppression systems are also addressed in this section. There are typically three types of automatic suppression systems provided in safety-related areas at WBN:

- a. automatic preaction sprinkler systems
- b. automatic fire suppression systems with closed water spray heads
- c. automatic total flooding CO₂ systems

The annulus area of the Reactor Building has automatic preaction sprinklers that serve as water spray on select cable concentrations and prevent specific cable interactions.

Transformers in the Yard and specific hazards in the Turbine Building are protected with automatic fixed open head water spray systems.

12.3.1 Preaction Sprinkler Systems

Automatic preaction sprinkler systems generally are provided in areas where it is important to prevent accidental discharge of water. In a preaction sprinkler system, the piping network is maintained dry until water is needed for fire suppression. A deluge valve (sometimes referred to as a preaction valve when used in a preaction system) is used to control when the water is introduced into the piping network.

Operation of the preaction sprinkler system is initiated by a signal from a detection system in the protected area. This signal starts two electric fire pumps and causes the preaction valve to open to fill the piping network. Actuation can also be initiated manually by mechanical operation at the preaction valve. Manual initiation does not automatically start the electric fire pumps. In accordance with 0-AOI-30.1, "Plant Fires" (Reference 4.2.59), the Operations staff ensures the fire pumps are running when notified of a fire. Selected preaction sprinkler systems have manual actuation stations at strategic locations remote from the preaction valve.

Water is then applied to the fire when the heat from the fire melts the fusible element in the sprinkler head. Water flow is stopped by manually closing the associated isolation valve.

12.3.2 Fire Suppression Systems with Closed Water Spray Heads

Automatic fire suppression systems with closed water spray heads are provided for charcoal type filter units, the reactor coolant pumps, and cable tray interactions in both Annulus areas. The actuation of the deluge valves is the same as that described for the preaction sprinkler systems section.

Operation of the fire suppression system is initiated by a signal from a detection system in the protected area. This signal starts two electric fire pumps and opens the deluge valve, filling the piping network with water. Actuation can also be initiated manually by mechanical operation at the deluge valve. Manual initiation does not automatically start the electric fire pumps.

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Water is applied when the heat from the fire melts the fusible element in the closed water spray head. Water flow is stopped by manually closing the associated isolation valve.

12.3.3 Carbon Dioxide Suppression Systems

Automatic total flooding CO₂ suppression systems have been provided for the Auxiliary Instrument Rooms and Computer Room in the Control Building; and the Lube Oil Storage Room, each Diesel Engine Room (4), Fuel Oil Transfer Room, and each 480-V Board Room (4) in the Diesel Generator Building. The design basis for the areas protected by CO₂ are as follows:

- Auxiliary Instrument Rooms - Deep seated fires. Must achieve 30% concentration within 2 minutes, 50% concentration within 7 minutes, and maintain at least 45% concentration for at least 15 minutes.
- Computer Room - Deep seated fire. Must achieve 30% concentration within 2 minutes and 50% concentration within 7 minutes.
- Diesel Generator Engine Rooms - Surface fire (diesel fuel) and rotating electrical equipment. Must achieve 34% concentration within 1 minute and maintain at least 30% concentration for at least 20 minutes.
- Diesel Generator Electrical Board Rooms - Deep seated fires. Must achieve 30% concentration within 2 minutes and 50% concentration within 7 minutes.
- Lube Oil Storage and Fuel Oil Transfer Rooms - Surface fire. Must achieve 34% concentration within 1 minute.

A signal from either the fire detection system or a push button station activates the area alarms, CO₂ discharge timer which actuates the master control valve and the area selector valve permitting the CO₂ to be discharged into the selected area. In addition, the system can be manually operated, even with a loss of power to the system, via the electro-manual pilot valve for each hazard protected

Personnel safety is considered by providing the pre-discharge alarm to notify anyone in the area that CO₂ is going to be discharged and by the addition of an odorizer to the CO₂ to warn personnel that CO₂ has been discharged.

Actuation of the CO₂ system causes selective closure of dampers and doors to the area protected and shut down HVAC air flows to the protected area. This prevents spread of the fire and ensures that the minimum concentration of CO₂ is maintained. Full discharge tests for representative rooms in conjunction with door fan pressurization tests have been conducted to validate CO₂ concentration and soak times. The duration of the discharge is determined by the area requirements and is controlled by the discharge timer.

The carbon dioxide system providing protection for the diesel generator building is stored in a tank at the diesel generator building. The diesel generator units are protected from the effects of a postulated failure of this storage tank by an 18-in thick reinforced concrete wall. Therefore, any missiles or pressure buildup generated by a rupture of the carbon dioxide storage tank does not damage safety-related equipment. The vent path for the storage tank compartment is

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through one set of double doors into a stairwell then, if needed, through another set of double doors which open to the atmosphere from the stairwell.

Carbon dioxide for the powerhouse areas is supplied from another storage tank in an underground vault in the yard; therefore, rupture or explosion of the tank cannot pose a threat to any safety-related structure. This part of the carbon dioxide suppression system has a non-seismic portion. The rupture of the non-seismic portion of the carbon dioxide system cannot result in the total depletion of the carbon dioxide supply to areas protecting safety-related and FSSD equipment. A pneumatic timer is located in the carbon dioxide supply line to hazards in non-seismic areas. This timer allows only the discharge equivalent to that required for the greatest hazard in a non-seismic area to be discharged from the system. After this specified length of time, the timer causes closure of the master control valve on the supply line to non-seismic hazards.

12.4 Manual Suppression Systems and Features

12.4.1 Portable Extinguishers

Portable fire extinguishers of a size and type compatible with specific hazards are located throughout the plant (Reference 4.2.38).

12.4.2 Manual Sprinkler Systems

Manually activated sprinkler systems are provided for the 125-volt vital battery and battery board rooms I, II, III, and IV. The piping network isolation valve is maintained in the closed position. Personnel are alerted to a problem in these areas by the fire detection system. After confirming there is a fire, personnel then open the appropriate isolation valve to allow water to the system. Water is applied to the fire when the heat from the fire melts the fusible element in the sprinkler head.

12.5 Fire Detection Systems

Fire detection is installed to provide for prompt detection of a fire in its incipient stage and provide early warning capability. Prompt detection of a fire reduces the potential for damage to structures, systems and equipment and is an important part of the overall fire protection program at WBN. The fire detection systems at WBN are designed to be functional with or without offsite power.

The fire detection systems consist of initiating devices, proprietary protective signaling devices, local control panels, remote transmitter/receiver units which provide remote multiplex (MUX) functions, and computerized multiplex central control equipment.

The system processes the following signal types:

1. Alarm - A signal indicating the actuation of smoke or heat detectors or the sensing of flow through fire suppression systems. Also, some suppression supervision monitoring devices transmit an alarm signal.
2. Trouble - A signal indicating the occurrence of a fault condition in the proprietary protective signaling system. Normally suppression supervision monitoring devices transmit a trouble signal.

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A central processor unit (CPU) of the computerized multiplex central control equipment communicates with the local control panels via the remote transmitter/receiver units over looped circuits. The transmitting equipment allows the processor to interrogate each local control panel in turn and to receive data from the panels. When an initiating device changes from normal to a trouble or alarm status, it is detected at the local control panel and, when next interrogated, the remote transmitter/receiver transmits this status change. The status change is evaluated by the CPU and visual and audible indications are provided. The computerized multiplex central control equipment is located in a constantly attended location.

Where detection is provided for the protection of safety-related or FSSD equipment, Class A, four wire, supervised circuits link the fire detectors to the local control panels. These circuits are used to annunciate status change to a constantly attended location.

A status change generally results in the following system responses:

1. Audible and visual annunciation by the computerized multiplex central control equipment. This annunciation includes identification of the location and the time of receipt of the status change on a monitor and a printer.
2. Illumination of indicating lamps on the local control panel indicating the status change.
3. Actuation of local control panel circuits for the control of automatic suppression systems, fire pumps, fire dampers, or ventilation equipment as appropriate for selected alarm status changes.
4. Printer annunciation is not automatic. A printout is available on demand.
5. An alarm status change can be reset at the local control panel. Local control panel reset, in safety-related areas, can also be achieved through the computerized multiplex central control equipment.

A second CPU is provided in a constantly attended location as an alternate for the primary processor.

The fire detection system for safety-related areas is comprised of different types of devices, components, or parts that provide the system functions of detection, annunciation, and/or activation of automatic suppression systems. The devices used are:

1. Smoke Detectors
 - a. Ionization
 - b. Photoelectric
2. Thermal Detectors

The thermal detectors are the rate compensation/fixed temperature type and are self restoring. They have temperature ratings appropriate for the area environment.

3. Air Duct Detectors

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The smoke-type air duct detectors are specifically designed to sense the presence of smoke or combustion products in HVAC ducts.

4. Monitoring Devices

The fire detection system utilizes the following devices to monitor the fire suppression systems status.

- a. Pressure Switch - piping integrity
- b. Pressure Switch - for water flow
- c. Pressure Switch – CO₂ discharge
- d. Status Switch - diesel fire pump running

5. Manual Pull Stations

6. Power Supply

Two sources of 120V AC power are provided to the portion of the fire detection system protecting the safety-related equipment. The primary power supply is from Class 1E power sources with a high degree of reliability and adequate capacity for the intended service. The standby power is from a diesel generator. An interim power supply is provided when the transfer from the main power supply to the standby power source takes longer than 30 seconds. The interim power supply consists of batteries that provide power to the remote transmitter/receiver modules only. Electrical isolation is provided between the fire detection system and the Class 1E power source from which it is supplied.

12.6 Lightning Protection

The basic principle to protecting life and property from damage or loss due to lightning is to provide a direct low impedance path for the lightning to travel to ground rather than through structures and/or equipment (Reference 4.2.33).

The lightning protection system consists of three basic parts which provide the low impedance path:

1. The air terminals on roofs and other elevated locations.
2. The ground grid.
3. The conductors connecting the air terminals to the ground grid.

Overhead shield wires and lightning arrestor protection is provided for the transmission lines, the switchyard, and the transformers.

12.7 Emergency Lighting

The plant design includes three lighting systems classifications:

1. Normal - powered only from offsite power,

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2. Standby - powered from offsite or onsite power, and
3. Emergency - powered from 125V vital batteries or individual battery packs.

Normal and standby lighting are energized during normal plant operation. 125V emergency lighting comes on automatically during the transition from offsite to onsite power. The individual emergency battery pack lights come on automatically upon loss of voltage to the normal lighting circuit serving the area.

Standby and emergency lighting is designed to provide essential lighting to accomplish safe shutdown and for personnel access/egress. However, since fire damage may disable portions of the standby and 125V DC emergency lighting systems, and in accordance with the requirements of 10 CFR 50 Appendix R, Section III.J, eight-hour emergency battery pack lighting is provided in areas required for manual operation of safe shutdown equipment and in the access/egress routes thereto in all areas except the Turbine Building, Yard Area, and Containment.

Emergency Diesel Generator backed standby lighting is available and maintained for the Turbine Building. Diesel generator backed security lighting is provided and maintained for the Yard. Additionally, portable hand-held lighting is carried by the Nuclear Assistant Unit Operators (NAUO) to provide task-lighting capability (e.g., breaker tripping) in these areas. Portable powered battery lights are used for the Containment. Deviation 2.7 in Part VII, "Deviations and Evaluations," provides TVA's justification for the lighting available for these areas.

The illumination provided by emergency lighting in access routes to and in areas where shutdown functions must be performed is sufficient to enable a qualified operator to perform the shutdown functions. Illumination levels are adequate for personnel to perform their intended task(s).

Additional portable, hand-held lighting is available at predetermined locations for use by Operations personnel in those areas where emergency lighting is temporarily out of service for maintenance or repair or for entry into rooms in which the fire occurred and disabled the installed emergency light.

12.8 Communications

There are several means of communication available to the Operations staff such as telephones, code alarm and paging, sound powered phones, and two-way radios. The in-plant radio signal will be the primary means of communication for performing manual actions and for the fire brigade use.

The trunked in-plant radio system consists of radio repeaters, portable radios (including tri-band), and redundant in-plant distributed antenna systems. To ensure communication availability, one of the radios and associated power cabling is located in a separate fire zone or is separated by minimum of 20 feet. The radio repeaters are located at floor elevation 772.0 of the Auxiliary Building within the 480V Board Room 2A and the 480V Transformer Room 2A. The radios (multiple frequencies) are available for use by the fire brigade and for operations personnel for performing safe shutdown manual actions. The radio equipment features redundant diesel and battery backed power supplies. Antennas for the radios are located on the Aux Building exhaust stack (above elevation 814.75) to transmit and receive the radio

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signal. In addition to the antennas on the exhaust stack, the internal distributed antenna systems (Radiax) are located in the control and turbine buildings and two widely separated trunk lines feed the radio signal to redundant distributed antenna systems located throughout the auxiliary building.

Adequate radio communications are provided for areas of the plant that contain equipment that must be manually operated in the event of a fire. In some rooms such as the RHR heat exchanger room, two-way radio communications may not be adequate in the room; however, adequate communications are available immediately outside this room. The action to be performed does not require that communication be established at the device (e.g., for example open/close valve or breaker).

A sound powered phone system connects the auxiliary control room and various local control stations to supplement the radios during alternative shutdown. Control of communication equipment outages are via the normal work control program. Fire protection impairment permits are not used to control this type of outage.

12.9 Reactor Coolant Lube Pump Oil Collection

The major fire hazard within the containment is the reactor coolant pump (RCP) lube oil system. To prevent a fire as a result of oil leakage WBN has provided an oil collection system for each RCP. The oil collection system includes enclosing the RCP oil lift pump and providing an oil collection basin at the access platform elevation of each pump to collect and drain away any combustible liquid and/or suppression system discharge. Any discharge is drained from the collection basin into the containment floor and equipment drain sump located inside primary containment. See Part VII for the deviation associated with the RCP oil collection system. Each RCP is provided with a heat collection hood to reduce the response time of the thermal detectors and the thermal-actuated closed head water spray nozzles installed below the heat collector hood.

12.10 Fire-Rated Assemblies

Fire rated assemblies at WBN are part of the passive fire protection features which ensure that the function of one set of redundant fire safe shutdown components necessary to achieve and maintain FSSD remains free of fire damage. Fire rated assemblies consist of fire barriers, raceway protection, equipment hatches and stairwells, fire doors, fire dampers, and penetration seals. Fire barriers and fire doors are identified on the compartmentation drawings in Part II of the FPR.

In general, the fire barriers are of either reinforced concrete or reinforced concrete block construction. The concrete barriers are normally a minimum of 12-inch thick (some are 8-inch thick) and the block barriers are normally 8-inch thick. National Fire Protection Association Handbook, 17th Edition Section 6, Chapter 5, Figure 6-5G (Reference 4.4.1) provides a correlation between the thickness of reinforced concrete and its fire resistance. Figure 6-5G shows that six inches of reinforced concrete has a fire resistance of approximately four-hours. Based on this, the 8-inch thick concrete barriers far exceed the maximum three-hour rating assigned to these barriers at WBN. The UL Fire Resistance Directory identifies similar concrete block barriers (designs U904, U905, U906, and U907) as two-hour to four-hour fire-rated barriers. The 8-inch thick concrete block barriers are only used when barriers are required to have a fire rating of 2-hours or less.

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12.10.1 Walls, Floors, and Ceilings

Fire areas are separated by 2- or 3-hour equivalent fire barriers that are bounded by UL rated designs. Rooms within each fire area may be separated from other rooms in the same area by regulatory or nonregulatory fire barriers. (Only regulatory fire barriers are relied on for the fire safe shutdown separation analysis.) Where fire barriers are used to separate rooms in the same area, the barriers have equivalent 2-hour fire ratings, except for portions of the main control room elevation complex which is 1-hour rated. If the separation between rooms in the same fire area is less than 3-hour, then automatic suppression and detection systems are provided or deviations justified (see Part VII for the discussion of deviations).

12.10.2 Raceway Protection

Cable raceways that require separation by Electrical Raceway Fire Barrier Systems (ERFBS) are provided with one-hour rated ERFBS and automatic suppression and detection in the area, or three-hour rated ERFBS. Inside the reactor building, which includes primary containment (Unit 1 only) and secondary containment (i.e., annulus), radiant energy shields or automatic detection and suppression are used to obtain separation where a fire may damage redundant safe shutdown components. Note that radiant energy shields are not installed inside the Unit 1 crane wall or in Unit 2 inside primary containment.

The radiant energy shields used in Unit 1 are constructed primarily of 3M M20A or M20C (see Part VII, section 2.2). During the 2012 refueling outage, radiant shields were added to the Unit 1 Annulus and were constructed of 3M E54C (M20 is no longer available and E54C is a replacement). The radiant energy shields used in the Unit 2 Annulus are constructed of 3M E54C (no radiant energy shields are used in Unit 2 Primary containment). The E54C material is non-combustible and has a minimum 30-minute fire resistive rating (Reference 4.2.13). This is in compliance with Appendix R, section III.G.2.f.

The ERFBS for WBN was tested to the guidance provided in GL86-10, Supplement 1 (Reference 4.1.17) and GL92-08 (Reference 4.1.19) and the associated Information Notices (Reference 4.1.22 thru 4.1.33) which have established the industry standards for acceptable ERFBS. Mechanical Design Standard DS-M17.2.2 (Reference 4.2.54) and General Engineering Specification G-98 (Reference 4.2.50) document the testing, design, installation, quality control and maintenance requirements of the ERFBS. The design standard also provided the guidelines for evaluating unique ERFBS configurations to ensure that a unique design is within the important parameters that keep it bounded by tested configurations. NRC previously reviewed and approved this program (References 4.1.40 and 4.3.4).

From 1992 through 1995 TVA performed numerous fire tests on a large variety of ERFBS configurations (cable trays, conduits, junction boxes, air drops, etc.) to ensure the fire resistive rating assigned to the ERFBS was in accordance with the established industry/NRC standards. These tests also provided sufficient information to establish the bounding parameters (thickness of material, attachment methods, etc.) and thereby develop the design standards for the ERFBS at TVA. In addition to the fire testing, TVA also tested the ERFBS to ensure it may withstand a seismic event; ampacity derating requirements for the various ERFBS applications; and quality assurance standards for the acceptance of the ERFBS material from the vendor, material handling, and installation of the ERFBS.

Standard drawings (References 4.2.40 and 42) document the ERFBS configurations used at WBN. These drawings identify such critical attributes as material thickness, pre-buttering with

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trowel grade Thermo-Lag, scoring and folding requirements, tie wire/banding spacing, raceway support protection, interfering item protection, attachment of ERFBS to concrete barriers, etc.

The installation of ERFBS is by a modification package (design change notice). If during the installation of an ERFBS, it cannot be installed as per the DCN, a field change request is generated to document the unique configuration. Each unique ERFBS configuration is evaluated per DS-M17.2.2 (Reference 4.2.54), Appendix H, "Guidelines for Evaluation Unique Thermo-Lag 330-1 ERFBS Configurations", by personnel cognizant of the important parameters. These people must be knowledgeable of the impact these important parameters have on the overall performance of the ERFBS assemblies. The evaluator judges the synergistic effects that may be experienced when one or more important parameter(s) is (are) different and ensures compensating design measures are incorporated into the unique ERFBS to overcome these differences. This evaluation ensures that the unique configuration is designed and installed within the list of important parameters that were communicated to utilities in Generic Letter 92-08 (Reference 4.1.19). The installed configuration is therefore ensured of being bounded by the acceptable parameters of a rated fire barrier.

The ERFBS are designed, procured and installed in accordance with the requirements of NPG-SPP-18.4.5, Fire Protection Quality Assurance (Q07), (Reference 4.2.66). TVA inspects the Thermo-Lag at the manufacturer to ensure chemical composition, material thickness and appearance, etc. are in accordance with TVA requirements. The installation of the ERFBS is monitored in accordance with the TVA Quality Assurance Program. This overall program ensures that the design, procurement, installation and maintenance of the ERFBS meets the requirements for adequate separation as stated in Appendix R, Section III.G.2.

12.10.3 Equipment Hatches and Stairwell

Equipment hatches in floor or ceiling fire barriers fall into three categories:

- a) Precast concrete plugs which overlap mating surfaces for support--These plugs are usually associated with radiation shielding and provide a fire barrier equivalent to the floor or ceiling in which they are located.
- b) Steel covers that overlap mating surfaces for support--These covers are of substantial construction and provide an effective barrier to prevent fire from propagating from one side of the barrier to the other. However, since they are not fire rated, they are either provided with a draft stop and water curtain around them or redundant safe shutdown components on either side have been separated from each other by a cumulative horizontal distance of 20 or more feet. In either case, automatic fire suppression and detection are provided on both sides of the equipment hatch cover, if appropriate, or an engineering evaluation has been performed. See Part VII for justifications for deviations and/or evaluations.
- c) Open hatches and stairwells - Redundant safe shutdown components located on each side of the opening have been identified. If separated by less than a cumulative distance of 20 feet horizontally, either the hatch/stairwell has been provided with a water curtain to separate elevations, or a one hour fire barrier has been provided on the cables for one of the redundant paths. In either case, automatic fire suppression and detection has been provided on both sides of the opening, except for the refueling area and the 676 ft elevation of the Auxiliary Building. See Part VII for justifications for deviations and/or evaluations.

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12.10.4 Fire Doors

Fire door assemblies (doors, frames, and hardware) are generally provided for door openings in required fire barriers. These assemblies are UL listed as either "A" label (3-hour rated) or "B" label (1-1/2 hour rated). "A" label doors are provided in 3-hour or less rated fire barriers and "B" label doors are provided in some barriers that require a 2-hour or less fire rating.

Sliding fire doors are provided in selected locations. These sliding fire doors are closed by heat melting a fusible link, and in CO₂ protected areas, when a CO₂ system pressure-activated release occurs.

In some cases, such as air lock doors, equipment doors, submarine type doors, etc., the doors cannot be purchased as labeled fire doors. These doors have been evaluated by a Fire Protection Engineer for their ability to prevent the propagation of a fire. These evaluations are either kept on file for review or are documented in Part VII, Deviations.

Repairs on fire door assemblies require the approval of a Fire Protection Engineer except when replacing a like item for a like item as specified on design output.

12.10.5 Fire Dampers

Fire dampers are provided in HVAC ducts that penetrate required fire barriers to prevent the propagation of a fire through the duct. Some duct penetrations do not have fire rated dampers and are shown on the compartmentation drawings as unprotected openings. In some cases, the fire damper is also used to isolate an area prior to CO₂ discharge. Fire dampers are provided with appropriately rated fusible links based on the ambient temperatures in the location. The fire dampers provided with CO₂ suppression system isolation capability are actuated by CO₂ system pressure activated release mechanism and/or by thermal link. Fire dampers in safety-related HVAC systems may have double fusible links installed if required by a single failure analysis.

12.10.6 Penetration Seals

When plant commodities (i.e., pipe, cable trays, conduits, etc.) must pass through required fire barriers, the openings are provided with seals that meet or exceed the fire protection requirements of the barrier. The mechanical and electrical penetration seals used at Watts Bar have been bounded by fire tests conducted at independent testing laboratories that are experienced in fire testing (e.g., Underwriters Laboratories, Omega Point Laboratories, Construction Technologies Laboratories, etc.). The testing labs were required to conduct the test using the standard temperature-time curve as described in ASTM E-119. The critical attributes of an acceptable mechanical and electrical seal are defined below. The most important attribute is that the penetration seal has withstood the fire endurance test without passage of flame or gases hot enough to ignite cable or other fire stop material on the unexposed side for a period equal to the required fire rating. In addition, these seals may be required to meet other plant design bases requirements such as radiation shielding, HVAC pressure differential, and/or flood. Engineering Report for Penetration Seal Program Assessment (Reference 4.2.44) documents the testing acceptance parameters and design standards for fire rated penetration seals at WBN. This document along with General Engineering Specification G-96 (Reference 4.2.49) and drawing series 45A883 (Reference 4.2.34), 45W883 (Reference 4.2.35) and 47A472 (Reference 4.2.37) control the penetration seal program at WBN.

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(A) Mechanical Pipe Penetrations

A 1-hour, 2-hour, or 3-hour Fire rating in accordance with ASTM E-814-83, section 10.1, and 1-hour, 2-hour, or 3-hour T rating in accordance with ASTM E-814-83, section 10.2 is established for mechanical penetration seals. The T rating acceptance criteria is limited to a temperature rise of 325° F above ambient for cold side seal surface temperatures. Cold side surface temperatures are defined by thermocouples required to be on the fire stop surface (field) per section 10.2 of ASTM E-814-83. A T rating is not required on the penetrant(s). In addition to the above listed criteria of fire rating, differential pressure, etc., the seal must be able to accommodate the service temperature and any thermal or mechanical movement of the pipe.

(B) Electrical Penetrations

A 1-hour, 2-hour, or 3-hour rating in accordance with IEEE 634-1978, section 6.1 was established for electrical penetration seals. Transmission of heat through the penetration seal was limited to 700° F or the lowest auto-ignition temperature of cable in the penetration, whichever is lower.

Conduit penetrations typically require only internal seals since most conduit penetrations were poured-in-place during plant construction. Internal seal materials, design, and locations in walls and floor/ceiling assemblies have been evaluated as equivalent to tested configurations. If a conduit requires an external seal (e.g., the conduit passed through a sleeve larger than the conduit), the external seal meets the same criteria as stated in the above paragraph. The criteria for internal conduit seals that were reviewed and approved by the NRC are based on the information presented in an RAI response from July 1, 1994 (ML073230669) (Reference 4.2.51). The following information is from that submittal. The internal conduit seal criteria is documented on drawing series 45W883 and is as follows.

Smoke and gas seals shall have a (min) 3 inch RTV silicone foam and 1 inch ceramic fiber damming at the bottom/back side of the foam. The fiber damming may or may not exist in the front/top side of the foam. The silicone foam shall be installed at the first available opening. Conduits that terminate in junction boxes or other non-combustible enclosures need no additional sealing except for Auxiliary Building secondary containment envelope boundaries. See table below for sealing instructions. A closed electrical cubical similar to a motor control center or switchgear cabinet is not considered a non-combustible enclosure.

CONDUIT	TOTAL LENGTH OF CONDUIT FROM BARRIER					
SIZE	CONTINUOUS THRU AREA	<1'	≥1' - <3'	≥3' - <5'	≥5' - <22'	≥22'
<1"	NSR	F	NSR	NSR	NSR	NSR
1"	NSR	F	S	S	NSR	NSR
>1" - <2"	NSR	F	S	S	NSR	NSR
2"	NSR	F	F	S ⁴	NSR	NSR
>2" - ≤4"	NSR	F	F	F ⁴	S ⁴	NSR
>4"	NSR	F	F	F	S	NSR

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Notes:

1. NSR – No Seal Required
2. S – Smoke and Hot Gas Seal Required
3. F – Fire Seal Required
4. NSR if cable fill exceeds 40%

C. Hose Stream Test for Penetrations

Hose stream test requirements are in accordance with IEEE 634-1978 or ASTM E-814-83. The penetration seal configurations at Watts Bar have withstood a hose stream test without the hose stream causing an opening through the penetration seal that permits a projection of water beyond the unexposed side.

13.0 FIRE PROTECTION SYSTEM IMPAIRMENTS AND COMPENSATORY ACTIONS

Fire protection impairments are controlled to maximize the availability of the active and passive fire protection systems and features.

Fire protection systems and features are intended to remain fully operational to the maximum extent possible. However, it is expected for outages or impairments to occur to support plant or fire protection-related modifications or maintenance. As a minimum, fire protection systems and features are to remain functional whenever the equipment they protect is required to be functional, or appropriate compensatory actions are established as prescribed in the associated ORs.

WBN "Regulatory Required" (REG) fire protection systems and features, although not classified as safety related, provide fire protection capabilities in those areas where protection of safety-related or FSSD equipment is deemed necessary. In the event a REG fire protection system or feature becomes non-functional, compensatory actions have been developed to minimize the effects of the impaired equipment on safe plant operations and safe shutdown. To ensure the maximized availability of REG fire protection systems and features, processes are in place, through administrative procedures, to keep fire protection system and feature non-functionality as short in duration as possible.

13.1 Compensatory Actions

Compensatory actions for impaired REG fire protection systems or features generally consist of fire watches as defined in the applicable sections of this plan. Alternate compensatory actions such as additional/alternative fire protection equipment, temporary/portable detection systems, temporary alternate feeds to suppression systems, or closed circuit television may be utilized on a case by case basis. These alternative actions are considered when they provide equal or better protection and/or when the primary methods are too restrictive, create further hazards, or represent personnel safety concerns.

A summary of each of the primary and alternate actions are as follows:

A. **Fire Watch - Continuous (Primary)**

The locations that a continuous fire watch is required are based on plant conditions existing at the time the fire watch is in place and modified as needed. Continuous fire watches are restricted to patrolling one fire area except as noted below.

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Continuous fire watches are only required when the affected unit is in Modes 1 (Power Operation) to 4 (Hot Shutdown), inclusive. A “roving” fire watch covers the designated areas on an hourly basis in areas where only the unit in Modes 5, 6, or core empty may be affected by a fire. If a fire in an area may affect both units, then a Continuous fire watch is required.

Specific patrol locations are selected to accommodate plant features such as locked doors, security card readers, contaminated areas, etc., so that patrol access is not unduly impeded under existing conditions. The patrol routes are specified such that the fire watch can routinely accomplish the route within 15 minutes with a thorough review of the route, with a margin of 5 minutes to accommodate and handle unforeseen circumstances and to report and/or resolve potential fire hazards in a location.

There are locations where one or more rooms are in different fire areas but their proximity and limited size warrant allowing them to be combined for one continuous fire watch to address. Time study information is used to identify the rooms, in different fire areas, that can be covered in 15 minutes without putting undue exertion on the person. The below listed rooms have been identified as an exception to the definition of a continuous fire watch. The specific patrol locations requires approval of the Fire Protection Supervisor or his designee to ensure the conditions that formed a basis for the time study have not changed such as to invalidate the time study. The routes with more than one fire area that are exceptions to a continuous fire watch staying in one fire area are:

1. Diesel Generator Building, Elev. 742
2. Diesel Generator Building, Elev. 760
3. Auxiliary Building Rooms (0-FCV-26-143 and 0-FCV-26-322 out of service):

757.0-A2	757.0-A12
757.0-A9	757.0-A21
757.0-A10	782.0-A1
757.0-A11	782.0-A2

4. Auxiliary Building Rooms (0-FCV-26-143 and 0-FCV-26-322 out of service)

772.0-A1	772.0-A9
772.0-A6	772.0-A12
772.0-A7	772.0-A16
772.0-A8	

5. Auxiliary Building Rooms (0-FCV-26-151 and 0-FCV-26-326 out of service)

757.0-A5	757.0-A17
757.0-A14	757.0-A24
757.0-A15	782.0-A3
757.0-A16	782.0-A4

6. Auxiliary Building Rooms (0-FCV-26-151 and 0-FCV-26-326 out of service)

772.0-A2	772.0-A11
772.0-A5	772.0-A15
772.0-A10	

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7. Auxiliary Building Rooms (0-FCV-26-191 out of service)

Covers areas bounded by column lines A1-A8/Q-X

692.0-A1 (partial)	692.0-A10
692.0-A4	692.0-A11
692.0-A6	692.0-A12
692.0-A7	692.0-A13
692.0-A9	692.0-A14

8. Auxiliary Building Rooms (0-FCV-26-191 out of service)

Covers areas bounded by column lines A8-A15/Q-X

692.0-A1 (partial)	692.0-A21
692.0-A17	692.0-A22
692.0-A18	692.0-A23
692.0-A19	692.0-A25
692.0-A20	692.0-A26

9. Auxiliary Building Rooms (0-FCV-26-187 out of service)

Covers areas bounded by column lines
C1-A8/Q-RB Centerline

713.0-A1 (partial)	713.0-A6
713.0-A2	713.0-A7
713.0-A3	713.0-A13
713.0-A4	713.0-A22
713.0-A5	713.0-A27

10. Auxiliary Building Rooms (0-FCV-26-187 out of service)

Covers areas bounded by column lines
A8-A15/Q-RB Centerline

713.0-A1 (partial)	713.0-A20
713.0-A14	713.0-A22
713.0-A19	

11. Auxiliary Building Rooms (0-FCV-26-183 out of service)

Covers rooms on elevation 729.0

729.0-A3	729.0-A8
729.0-A4	729.0-A9
729.0-A5	

12. Auxiliary Building Rooms (0-FCV-26-183 out of service)

Covers rooms on elevation 737.0

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737.0-A1	737.0-A12
737.0-A3	737.0-A15
737.0-A5	737.0-A16
737.0-A9	

13. Auxiliary Building Room (0-FCV-26-147)

Covers Auxiliary Control Room and associated
Instrument Rooms

757.0-A1	757.0-A27
757.0-A25	757.0-A28
757.0-A26	

14. Auxiliary Building Rooms (0-FCV-26-143, 322, 151, 326 out of service)

Covers areas bounded by column lines A1-A15/Q-U

757.0-A2	757.0-A17
757.0-A5	757.0-A21
757.0-A9	757.0-A24

15. Auxiliary Building Rooms (0-FCV-26-143, 322, 151, 326 out of service)

Covers areas bounded by column lines A1-A15/Q-U

772.0-A1	772.0-A9
772.0-A2	772.0-A10
772.0-A5	772.0-A11
772.0-A6	772.0-A12
772.0-A7	772.0-S15
772.0-A8	772.0-A16

16. Auxiliary Building Rooms (0-FCV-26-143, 322, 151, 326 out of service)

Covers areas bounded by column lines A2-A14/U-X

757.0-A10	757.0-A16
757.0-A11	782.0-A1
757.0-A12	782.0-A2
757.0-A14	782.0-A3
757.0-A15	782.0-A4

Situations may arise in which the system or equipment cannot be restored within the time specified by the Fire Protection Systems and Features Operating Requirements (Section 14). In such cases, an augmented compensatory action is taken to ensure that a continuous fire watch does not go to different fire areas. The 15 minute requirement still applies, but the continuous fire watch must remain within the same fire area. This augmented compensatory action is not required for fire locations that only affect the unit that is in Mode 5, 6 or core empty.

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B. Fire Watch - Roving (Primary)

A roving fire watch consists of a trained individual in an affected location at 60 minute intervals with a 15 minute margin to accommodate and handle unforeseen circumstances and to report and/or resolve potential fire hazards in a location. Roving fire watches are required as a compensatory action in all modes of plant operation (i.e., Modes 1 through 6 or core empty).

With a unit in Modes 5, 6, or core empty, locations where a continuous fire watch are required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee) if the location only affects the unit in Modes 5, 6, or core empty.

C. Additional/Alternative Fire Protection Equipment (Alternative)

Additional/alternative fire protection equipment consists of firefighting features such as fire hose and wheeled fire extinguishers, or mobile apparatus. Normal compensatory actions for non-functional fire protection features such as hose stations consist of physical routing and/or staging of backup fire hose capable of supplying water from the nearest functional fire hose station to the area left unprotected by the non-functional hose station. Additionally, the use of wheeled fire extinguishers or mobile apparatus may be considered when physical constraints such as fire barrier integrity preclude breaching the barrier to stage compensatory fire protection equipment. In the event an alternative compensatory action is considered, an evaluation is performed by the plant fire protection staff and documented with the impairment permit or work initiation document to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)."

D. Temporary/Portable Detection Systems (Alternative)

A temporary/portable detection system consists of one or more listed or approved detectors, a power supply and monitor unit, connecting cable, and a method of transmitting an alarm to a constantly attended location. Fire detectors may be placed in more than one room or more than one elevation of the plant. The use of a temporary/portable fire detection system is similar to the industry precedent established by Toledo Edison Company's Davis-Bessel Nuclear Plant, and other utilities, and approved for use by the NRC. An evaluation is performed by the plant fire protection staff and documented with the impairment permit or work initiation document for each type of temporary/portable detection system to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." The area with impaired fire protection equipment of Section 14 as well as the associated temporary/portable detection system monitor unit(s) is observed by fire watch personnel at a frequency consistent with standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." Portable detection systems are used where plant configuration and conditions are acceptable for its use.

E. Closed Circuit Television -CCTV (Alternative)

CCTV equipment consists of CCTV cameras and monitors. Cameras may be placed in more than one room or more than one elevation of the plant. CCTV systems are similar to the ones used by other utilities for monitoring of non-functional fire barriers as well as CCTVs previously utilized at Browns Ferry Nuclear Plant in inaccessible tunnels. An evaluation is performed by the plant fire protection staff and documented with the impairment permit or work initiation document for use of CCTV equipment (cameras and monitors) to demonstrate technical equivalency to standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." CCTV monitors are monitored by fire watch

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personnel at a frequency consistent with standard compensatory actions identified in Section 14, "Fire Protection Systems and Features Operating Requirements (OR)." CCTV may be used in instances where personal safety exceeds OSHA thresholds based on detailed evaluation, operational conditions in high heat areas such as the main steam vault, or ALARA concerns in high radiation areas preclude using a human fire watch in the area.

F. Constantly Manned Location (Alternative)

In plant areas that are continuously manned, credit may be taken for the constant manning in lieu of establishing either continuous or roving compensatory fire watches when the responsible individual(s) are informed and accept this responsibility. All employees receive training annually on proper reporting of fires. Documentation for the fire watch position is not required provided the manned position is documented (e.g., Main Control Room logs or documented security post).

13.2 Exceeding Return to Service Times

Impaired fire protection systems or features are returned to functional condition in the time frame specified in the OR sections. If this restoration is not done, a 10 CFR 50.72 and 10 CFR 50.73 review is performed and documented in accordance with site administrative procedures.

The fire protection organization performs periodic walkdowns to ensure fire protection and compensatory actions are established for those fire protection system impairments or features that are out-of-service.

14.0 FIRE PROTECTION SYSTEMS AND FEATURES OPERATING REQUIREMENTS (ORs)

The ORs established in this section have been developed to ensure adequate fire protection capability is available and maintained, to detect, control, and extinguish fires occurring in any portion of the plant where safety-related or FSSD equipment are located.

Fire protection systems and features at WBN are not assumed to be functional to mitigate the consequences of a Design Basis Accident (DBA) or plant transient. The bases for this assumption are contained in Section I of Appendix R which states that the need to limit fire damage to systems required to achieve and maintain FSSD conditions is greater than the need to limit fire damage to those systems required to mitigate the consequences of DBAs. As a result, Section I identifies that fire protection features must be capable of limiting fire damage so that:

1. One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room, auxiliary control room, or emergency control stations is free of fire damage; and
2. Systems necessary to achieve and maintain cold shutdown from either the control room, auxiliary control room, or emergency control stations can be repaired within 72 hours.
3. Alternate shutdown capability is provided at WBN, when needed, to achieve and maintain cold shutdown within 72 hours.

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Functionality of the fire protection systems and features are required whenever safety-related equipment and fire safe shutdown systems protected by the fire protection systems and features are required to be Functional.

The Fire Protection Report provides applicable action statements and thus does not have a requirement similar to Technical Specification 3.0.3 except for equipment listed in Section 14.10. When a piece of equipment in section 14.10 is out of service, there are mode reduction requirements similar to Technical Specification 3.0.3. However, equivalent methods (documented in an engineering evaluation in accordance with site procedures) that ensure fire safe shutdown can be achieved per the requirements of 10 CFR 50, Appendix R may be used to delay or remove the mode reduction requirements. These equivalent methods once documented by engineering evaluation provide alternatives to the applicable actions statements when equipment listed in this part, Section 14.10 must be declared non-functional.

The Fire Protection Report does not have a requirement similar to Technical Specifications 3.0.4 preventing mode changes while in an action statement.

The Testing and Inspection Requirements (TIRs) for the WBN fire protection systems and features have been developed taking into consideration industry practice (e.g., similar methods approved for use by other licensed nuclear power facilities), NFPA consensus standards, and insurance carrier loss prevention recommendations.

Engineering judgment has also been utilized in the development of testing and inspection frequencies and criteria for the WBN FPP. The following factors or influences are considered when developing the testing and inspection frequencies and criteria:

1. Personal safety is of paramount concern when developing and implementing the fire protection testing and inspection requirements at WBN. Therefore, alternative frequencies and/or criteria may be necessary when operational considerations, equipment accessibility, or other conditions warrant such changes.
2. Good ALARA practices in concert with equipment/component failure histories are considered to ensure "value add" is achieved without undue challenge to system components and/or personnel.
3. Nuclear facilities by nature and design are controlled and structured environments. The importance of fire protection systems and features and the established administrative controls at WBN are reinforced to plant personnel through training, sign posting, procedures, and processes.

The performance of the WBN fire protection testing and inspection plan is driven by a trending philosophy which is used to evaluate the success and/or target the testing and inspection activities needing improvement. This philosophy provides an added level of flexibility to increase or decrease as necessary, the testing and inspecting activities based on empirical data.

Refer to the TIR matrix for operational testing requirements. The specified frequency for each TIR is met if the test/inspection is performed within 1.25 times the interval specified in the frequency, as measured from the last scheduled performance date. This extension facilitates TIR scheduling and considers plant operating conditions that may not be suitable for conducting the TIR (e.g., transient conditions or other ongoing TIR or maintenance activities). The provisions for such extensions are not intended to be used repeatedly merely as an operational

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convenience to extend the TIR testing interval or periodic completion time intervals beyond those specified. The same scheduling policy used for the Technical Specifications is used for each TIR.

Testing of the fire protection systems involve manually disabling portions of them to prevent unwanted responses. These responses can be in the form of excessive starting of deep draft pumps, discharging water in a radiological controlled area, etc. The equipment, generally in the area of the testing, still functions normally once the temporary, intentional impairment is removed. When test personnel are actively performing the test, the compensatory fire watches are not required. This allows for the test personnel to serve as the fire watch for the area in question.

14.1 Fire Detection (Early Warning Fire Detection and Notification Only) (OR)

The minimum number of fire detectors are identified on Table 14.1 and shall be Functional when the safety-related or FSSD equipment in that area is required to be Functional.

NOTE 1: The action statements below apply to only the Function A fire detectors as defined in Table 14.1. The action statements of Section 14.3 and 14.4 apply to the Function B fire detectors that are associated with automatic suppression systems.

NOTE 2: Non-functional fire detectors may cause alarms or troubles on the associated local control panels that cause a masking condition addressed in Section 14.5.

NOTE 3: The central processing unit (CPU) for the fire detection system shall be functional when the fire detection system identified in Operating Requirement 14.1 is required to be functional.

14.1.1 With any of the required Function A fire detectors in a fire detection zone identified on Table 14.1 non-functional in any accessible area, within one hour restore the non-functional equipment

-OR-

establish a roving fire watch once per hour.

14.1.2.a With any of the required Function A fire detectors in a fire detection zone identified on Table 14.1 non-functional inside containment, within eight hours, restore the non-functional equipment

-OR-

either establish a roving fire watch once per 8-hours

-OR-

monitor the air temperature for the area affected once per hour using the following:

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AREA

Upper Containment
Lower Containment
Upper Containment
Lower Containment

INSTRUMENT(S)

U-9019 on Unit 1 Plant Computer
U-9020 on Unit 1 Plant Computer
U-9019 on Unit 2 Plant Computer
U-9020 on Unit 2 Plant Computer

- 14.1.2.b** With any of the required Function A fire detectors in a fire detection zone identified on Table 14.1 non-functional in an inaccessible area outside containment, within eight hours, restore the non-functional equipment

-OR-

establish a roving fire watch once per 8-hours.

- 14.1.3** Restore the non-functional detector(s) to Functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

- 14.1.4** With the CPU non-functional, within one hour establish the following compensatory action:

- a. Fire detection zones containing Function A detectors in accessible areas shall be continuously monitored at the local fire detection panel. Exempted from this action are zones inside the Main Control Room and zones associated with supervisory functions (i.e., pressure switches, valve position, fire door position, etc.).
- b. For fire detection zones containing Function A detectors in inaccessible areas, the air temperature shall be monitored once per hour

-OR-

the local fire detection panel shall be monitored once per hour.

- c. For fire detection zones containing function B detectors or for zones providing a supervisory function in accessible or inaccessible areas, the local fire detection panel shall be monitored hourly.

- 14.1.5** Restore the non-functional CPU to functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.2 Water Supply

The Fire Suppression Water Supply System shall be Functional at all times as follows:

- NOTE 1:** With a unit in Modes 5, 6, or core empty, locations where a continuous fire watch is required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee) if the location only affects the unit in Modes 5, 6, or core empty.

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NOTE 2: Alarms or troubles on the associated local fire detection system control panel (e.g., 0-PNL-13-L631) for the diesel driven pump that may cause a masking condition is addressed in Section 14.5. Section 14.5 is not applicable to the diesel driven pump control panel (e.g., 0-PNL-26-3150A).

- a. Three fire suppression pumps consisting of the diesel driven pump (2500 gpm at 125 psig (288 feet of head)) AND two electric driven pumps, each with a minimum capacity of 1590 gpm at 300 feet of head (130 psig), with their discharge aligned to the fire suppression system header,

AND

- b. An Functional flow path from the suction supplies, through distribution piping, sectionalizing, control or isolation valves up to but not including the first valve off the headers, leading to the yard hydrant (Section 14.7), the fire hose station/standpipes (Section 14.6), and each water based suppression system (Section 14.3).

14.2.1 With at least two electric pumps functional and the diesel driven fire pump non-functional:

- a. Restore the diesel driven fire pump to functional status within 7 days AND within one hour a fire watch is established as follows:

- 1(a). hourly roving fire watch is established In the Auxiliary Building Elevation 713 feet (coordinates Q-U / A10-A15) if the fire detection equipment for the area is functional

-OR-

- 1(b). continuous fire watches are established In the Auxiliary Building Elevation 713 feet (coordinates Q-U / A10-A15) if the fire detection equipment for the area is non-functional.

-AND-

- 2(a). hourly roving fire watch is established In the Auxiliary Building Elevation 737 feet (coordinates Q-U / A8-A13, Q-S / A13-A15) if the fire detection equipment for the area is functional

-OR-

- 2(b). continuous fire watches are established In the Auxiliary Building Elevation 737 feet (coordinates Q-U / A8-A13, Q-S / A13-A15) if the fire detection equipment for the area is non-functional.

-OR-

- b. Ensure at least three electric driven pumps functional AND within one hour a fire watch is established as follows:

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- 1(a). hourly roving fire watch is established In the Auxiliary Building
Elevation 713 feet (coordinates Q-U / A10-A15) if the fire detection
equipment for the area is functional

-OR-

- 1(b). continuous fire watches are established In the Auxiliary Building
Elevation 713 feet (coordinates Q-U / A10-A15) if the fire detection
equipment for the area is non-functional.

-AND-

- 2(a). hourly roving fire watch is established In the Auxiliary Building
Elevation 737 feet (coordinates Q-U / A8-A13, Q-S / A13-A15) if
the fire detection equipment for the area is functional

-OR-

- 2(b). continuous fire watches are established In the Auxiliary Building
Elevation 737 feet (coordinates Q-U / A8-A13, Q-S / A13-A15) if
the fire detection equipment for the area is non-functional.

-OR-

- c. Provide a backup pump with at least the same capacity as an electric fire
pump

- AND-

establish hourly roving fire watch coverage for the areas with common
power supplies. Within 7 days after entry from either 14.2.1.a or 14.2.1.b;

1. either enter 14.2.1.b

-OR-

2. restore the diesel driven fire pump to functional status.

14.2.2 With only one electric driven fire pump functional

- AND-

the diesel driven fire pump functional:

- a. Restore an additional electric driven fire pump to functional status within
30 days.

14.2.3 With no electric driven pumps functional

- AND-

the diesel driven fire pump functional, within 7 days:

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- a. Restore one electric driven pump to functional status |

- AND-

enter 14.2.2.

- 14.2.4** With only one electric driven pump functional |

- AND-

the diesel driven fire pump non-functional, within 24 hours: |

- a. Restore an additional electric driven pump to functional, |

- AND-

enter 14.2.1,

-OR-

- b. Restore the diesel driven fire pump to functional |

- AND-

enter 14.2.2.

- 14.2.5** With no water supply system pumps functional: |

- a. Establish a backup water supply system within 24 hours,

- AND-

restore one electric driven pump to functional within 48 hours |

- AND-

a second electric driven pump to functional with 72 hours, |

- AND-

restore the diesel fire pump to functional within 7 days, |

-OR-

- b. Establish a backup water supply system within 24 hours,

- AND-

restore the diesel driven fire pump within 48 hours

- AND-

enter 14.2.3.

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- c. Perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews in accordance with site administrative procedures

14.2.6 With the Fire Suppression Water supply system non-functional for reasons other than loss of a fire pump:

- a. Within one (1) hour enter the applicable Operating Requirements of Section 14.3 AND/OR 14.6 AND/OR 14.7 for those devices with no flow path available. No other action is necessary.
- b. If the condition involves powering up a normally de-energized valve operator to cycle the valve, then within one (1) hour establish a constant attendant at the breaker.
- c. Restore the system to normal alignment within 30 days. If not restored within 30 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.2.7 With High Pressure Fire Protection (HPFP) or raw service water (RSW) usage's that are not as-designed loads or as-designed loads that have inhibited automatic isolation capability:

- a. Provide isolation capability

- AND-

within one (1) hour establish a constant attendant in communication with the Operations for HPFP/RSW usage's that are not as-designed.

- b. Ensure the inhibited automatic isolation is controlled by procedure.
- c. Remove the non-as-designed HPFP/RSW usage

-OR-

restore the automatic isolation capability within 30 days. If not restored within 30 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.2.8 With three of the electric driven pumps capable of manual starting from the Main Control Room (MCR) or their associated 480V shutdown board but the automatic start circuitry non-functional.

- a. Ensure the inhibited automatic start circuitry is controlled by an approved configuration control method.
- b. Restore the system to normal alignment within 30 days. If not restored within 30 days perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

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14.3 Water Based Fire Suppression

The water based fire suppression systems in the following areas (See Table 14.3 for specific systems) and their associated fire detectors shall be Functional whenever the protected safety-related or FSSD equipment is required to be Functional:

- a. Unit 1 Reactor building - RC pump area, Annulus.
- b. Unit 2 Reactor building – RC pump area, Annulus
- c. Auxiliary building - Elev. 692, 713, 729, 737, 757, 772, and 782.
- d. Auxiliary building - ABGTS filters, EGTS filters, Containment Purge Air Exhaust Filters, 125V battery and battery board rooms.
- e. Control building - Elev. 692, cable spreading room, operator living area.
- f. Control building - MCR air filters.
- g. Diesel building - Corridor area and Cable Chase A and B.
- h. Intake Pumping Station
- i. Turbine Building - Control Building Wall

Note 1: The action statements of this section apply to the Function B fire detectors that are associated with an automatic suppression system. Refer to Table 14.1 for the specific number of fire detectors associated with the water based fire suppression systems in the areas noted below.

Note 2: Non-functional fire detectors may cause alarm or trouble conditions on the associated local control panels that may cause a masking condition addressed in Section 14.5.

Note 3: With a unit in Modes 5, 6, or core empty, locations where a continuous fire watch is required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee) if the location only affects the unit in Modes 5, 6, or core empty.

14.3.1 . With either suppression and/or associated Function B fire detectors non-functional in any of the locations noted above (a-i) in which redundant fire safe shutdown systems or components may be damaged by a single fire, within one hour, restore the non-functional equipment:

-OR-

- a. For accessible areas, within one hour establish the following:
 - 1. A continuous fire watch AND backup suppression equipment for those areas, if detection or both suppression and detection are non-functional,

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-OR-

2. A roving fire watch and backup suppression equipment for those areas, except for 737' elevation of the Auxiliary Building, if only the suppression is non-functional.

-OR-

3. A continuous fire watch and backup suppression equipment for the 737' elevation of the Auxiliary Building if suppression or detection or both are non-functional. This watch shall be limited to the 737' elevation of the Auxiliary Building.

-OR-

- b. For inaccessible areas, as noted below, establish the following within one hour:

1. For either Reactor Building, Lower Containment, establish a continuous fire watch using the alternatives defined in Sub-section D or E of Section 13.1.

-OR-

monitor the air temperature in the area once per hour using U-9020 on Plant Computer.

2. For other inaccessible areas with detection non-functional OR both suppression and detection non-functional, within one hour establish backup suppression equipment:

-AND-

- a. A continuous fire watch using the alternatives defined in Sub-section D and E of Section 13.1.

-OR-

- b. Provide alternate compensatory actions in accordance with an engineering evaluation.

3. For other inaccessible areas with non-functional suppression only, within one hour establish backup fire suppression equipment:

-AND-

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- a. An hourly roving fire watch using the alternatives defined in Sub-section D and E of Section 13.1.

-OR-

- b. Provide alternate compensatory actions in accordance with an engineering evaluation.

14.3.2 With either non-functional suppression or associated Function B fire detectors in any of the locations noted above (a-i) in which redundant fire safe shutdown systems or components are NOT exposed to the damage of a single fire, within one hour establish a roving fire watch AND backup suppression equipment for those areas.

14.3.3 Restore the non-functional suppression and/or associated detection to Functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures. Also, determine if any continuous fire watch routes are to be augmented as specified in Section 13.0.A.

14.4 Carbon Dioxide (CO₂) Suppression Systems

The CO₂ suppression systems in the following areas and their associated fire detectors shall be functional whenever the protected safety-related or FSSD equipment is required to be functional:

NOTE 1: The action statements of this section apply to the Function B fire detectors that are associated with an automatic suppression system. Refer to Table 14.1 for the specific number of fire detectors associated with the CO₂ based fire suppression systems in the locations noted below.

NOTE 2: Non-functional fire detectors may cause alarms or troubles on the associated local control panels that may cause a masking condition addressed in Section 14.5.

NOTE 3: With a unit in Modes 5, 6, or core empty, the locations where a continuous fire watch is required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee) if the location only affects the unit in Modes 5, 6, or core empty.

- a. Auxiliary instrument room (Units 1 and 2).
- b. Computer room.
- c. Diesel generator rooms.
- d. Diesel generator fuel oil pump room.
- e. Diesel generator electrical board rooms.
- f. Diesel generator lube oil storage room.

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- 14.4.1** With either suppression or associated Function B fire detectors non-functional in any of the locations noted above (a-f) in which redundant fire safe shutdown systems or components may be damaged, within one hour establish a continuous fire watch AND backup suppression equipment for those areas.
- 14.4.2** With either non-functional suppression or associated Function B fire detectors in any of the locations noted above (a-f) in which redundant fire safe shutdown systems or components are NOT exposed to the damage of a single fire, within one hour establish a roving fire watch AND backup suppression equipment for those areas.
- 14.4.3** Restore both the non-functional CO2 suppression and associated detection to functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures. Also determine if any continuous fire watch routes are to be augmented as specified in Section 13.0.A.

14.5 Fire Detection Supervision

The supervision capabilities of the local control panels identified on Table 14.5 shall be Functional when the associated fire detectors identified on Table 14.1 are required to be functional.

NOTE: These action statements apply to both Function A and Function B detectors and the actuation circuits for automatic valves in the flow path.

14.5.1 With the supervisory function of a panel listed in Table 14.5 masked by a panel alarm or trouble, within eight hours:

a. restore the non-functional equipment,

-OR-

b. jumper out the zone(s) providing the masking condition (alarm or trouble)

-AND-

implement the compensatory actions and time limits of Section 14.1, 14.2, 14.3, or 14.4 as appropriate.

14.5.2 If the masking condition cannot be cleared by unmasking out a zone(s), within 8 hours evaluate the condition for effects on the equipment operation and implement the compensatory actions and time limits of Section 14.1, 14.2, 14.3, and 14.4 as appropriate

-AND-

restore the panel to Functional status within 14 days. If not restored within 14 days, continue the established compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

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- 14.5.3** If conditions exist that warrant returning a masked circuit to a functional status prior to the circuit's return to normal, with the supervisory function of a panel listed in Table 14.5 masked by a panel alarm or trouble, defeat the alarm or trouble masking condition while maintaining the circuit's functional capability, verify the circuit's functional capability,

-AND-

establish the controls to monitor the circuit's functional capability periodically. Restore the panel to Functional status within 30 days. If not restored within 30 days, continue the established compensatory actions -AND- perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.6 Fire Hose Stations/Standpipes

The fire hose stations listed in Table 14.6 have been provided to support manual firefighting efforts in safety-related or FSSD buildings, areas, and/or rooms at WBN. The fire hose stations also provide backup suppression when the automatic suppression systems are non-functional. The fire hose stations listed in Table 14.6 shall be Functional whenever the safety-related or FSSD equipment in the areas protected by the fire hose stations is required to be Functional.

- 14.6.1** With one or more of the fire hose stations listed in Table 14.6 non-functional, within eight hours:

a. restore the non-functional equipment

-OR-

b. provide alternate protection for the area served by the non-functional hose station(s).

- 14.6.2** Restore the fire hose station(s) to Functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.7 Fire Hydrants

Two fire hydrants listed in Table 14.7 have been provided to support manual firefighting efforts in the Diesel Generator Building's Conduit Interface Room. One fire hydrant listed in Table 14.7 is also provided as backup for hose stations in the Intake Pumping Station. The fire hydrants listed in Table 14.7 shall be Functional whenever the safety-related or FSSD equipment in the areas protected by the fire hydrants is required to be functional. An additional fire hydrant is included in Table 14.7 as an alternate for a situation in which one of the other hydrants becomes non-functional. The relevant fire hydrants are specified in the table.

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14.7.1 With any of the fire hydrants identified on Table 14.7 non-functional, within eight hours:

- a. restore the non-functional equipment

-OR-

- b. provide alternate suppression capabilities for the area served by the non-functional fire hydrant(s).

14.7.2 Restore the fire hydrant to Functional status within 28 days. If not restored within 28 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.8 **Fire-Rated Assemblies**

Fire-rated assemblies shall be Functional whenever the safety-related and FSSD equipment on either side of the barrier/assembly is required to be Functional. Fire doors are listed in Table 14.8.1 and fire dampers are listed in Table 14.8.2. Fire barriers are depicted on Fire Compartmentation drawings, Figures II-27A through II-46A excluding 37A.

NOTE: With either a unit in Modes 5, 6, or core empty, locations where a continuous fire watch is required may be combined and patrolled by a roving fire watch when approved by the Fire Protection Supervisor (or designee) if the location only affects the unit in Modes 5, 6, or core empty.

14.8.1 With one or more of the required fire-rated assemblies/fire barriers, electrical raceway fire barrier systems, or electrical raceway radiant energy shields non-functional, restore the non-functional equipment:

-OR-

Within one hour:

- a. If no fire detection (as listed in Table 14.1) is designed to protect both sides of the non-functional barrier then, post a continuous fire watch.

-OR-

- b. If fire detection (as listed in Table 14.1) is designed to protect only one side of the non-functional barrier, then post a roving fire watch once per hour for the side without detection.

-OR-

- c. If suppression (as listed in Section 14.3 and 14.4) and fire detection (as listed in Table 14.1) is designed to protect both sides of the non-functional barrier, then no compensatory actions are required (not applicable to ERFBS or radiant energy shield raceway protection).

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- 14.8.2** Restore the non-functional fire-rated assembly/fire barrier to Functional status within 30 days. If not restored within 30 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures. Also determine if any continuous fire watch routes are to be augmented as specified in Section 13.0.A.

14.9 Emergency Battery Lighting Units

Emergency battery lighting units provided for FSSD (required in Modes 1, 2 or 3) shall be Functional whenever the illuminated associated fire safe shutdown equipment is required.

- 14.9.1** With any of the emergency battery lighting units provided for FSSD non-functional, within 24 hours:

a. restore the non-functional units to Functional status

-OR-

b. ensure alternate lighting is available.

- 14.9.2** Restore the non-functional emergency battery lighting unit to Functional status within 14 days. If not restored within 14 days, continue the compensatory actions AND perform 10 CFR 50.72 and/or 10 CFR 50.73 reviews per site administrative procedures.

14.10 Fire Safe Shutdown Equipment

The equipment listed on Table 14.10 is required for Fire Safe Shutdown (FSSD) and shall be Functional or in its FSSD condition when it supports FSSD for a unit in modes 1, 2, and 3. The non-System 26 valves noted on the plants mechanical flow diagrams as being administratively locked in the open, closed, or throttled position (with breaker open) for Appendix R shall be maintained in that condition when the applicable unit is in Modes 1, 2 and 3.

- 14.10.1** With one or more required equipment in Table 14.10 non-functional (or not in its FSSD condition), restore to functional status (or its FSSD condition) within 30 days.

- 14.10.2** With one or more of the breakers and/or valves specified in design output documents not in the noted position or condition, return the breakers and/or valve to the required position within 30 days.

- 14.10.3** If required action and associated completion time cannot be met,

a. place the equipment in the condition required for FSSD,

-OR-

b. provide a back-up means of instrumentation monitoring for the equipment in Table 14.10,

-OR-

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- c. perform an evaluation to justify using alternate means to provide FSSD,

-OR-

- d. be in Mode 3 within 6-hours and Mode 4 within the following 12-hours.

14.10.4

With any of the below listed Pressurizer Block valve closed in Modes 1, 2 or 3:

Block Valve Closed	Fire Watch in Room
1-FCV-68-332-B	757-A1
	757-A10
2-FCV-68-332-B	757-A16
2-FCV-68-333-A	737-A1B
	757-A21

- a. Restore the Pressurizer Block valve to OPEN status as soon as possible, but not longer than the next refueling outage:

-AND-

- b. Establish a fire watch within one hour as follows:

1. If the fire detection equipment for the above affected area is functional, an hourly roving fire watch is established in the Auxiliary Building according to the above table:

-OR-

2. If the fire detection equipment for the above affected area is non-functional, a continuous fire watch is established in the Auxiliary Building according to the above table:

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TESTING AND INSPECTION REQUIREMENTS (TIR)

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.1.a	NOTE: The TIRs specified by Section 14.1 apply to all input devices listed in Table 14.1. Fire Detection Instrumentation (refer to Table 14.1)	6 months	Perform a functional test on at least one detector and a minimum of 10% of the detectors on each signal initiating circuit of the restorable heat detectors in any accessible area with all detectors tested within five years.	
14.1.b		6 months	Perform a functional test on each of the required smoke detection instruments in any accessible area.	
14.1.c		REFUELING OUTAGE	For the unit in a refueling outage, perform a functional test on each of the required smoke detection and restorable heat detection instruments which are in any inaccessible area.	

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TESTING AND INSPECTION REQUIREMENTS (TIR)

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.2.a	Water Supply	31 days	Operate each electric motor driven pump for a minimum of 15 minutes on recirculation flow.	
14.2.b		92 days	Visually inspect each testable valve in any accessible area in the flow path to ensure it is in its correct position.	
14.2.c		Twice per year	Perform system flush in conjunction with biocide injection.	
14.2.d		12 months	Cycle each testable valve located in any accessible area in the flow path through at least one cycle.	
14.2.e		18 months	Perform a system functional test with simulated automatic actuation, and: <ul style="list-style-type: none"> a. Verify electric motor driven pump starting logic ability for timing design requirements. b. Verify electric motor driven pumps develop flow ≥ 1590 gpm at a head of ≥ 300 feet (130 psig). c. Verify automatic valves in the flow path actuate to the correct position. d. For the unit in a refueling outage, cycle testable valves in any inaccessible area in the flow path through one cycle. 	
		Refueling Outage		
14.2.f		3 years	Perform a flow test of the system in accordance with the National Fire Protection Association Handbook, 17 th Edition (Reference 4.4.1).	
(continued)				

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TESTING AND INSPECTION REQUIREMENTS (TIR)

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.2.g	The Diesel Fire Pump shall be demonstrated functional:	31 days	Operate the diesel engine driven pump for a minimum of 30 minutes on recirculation flow. The fuel storage tank contains at least a two hour supply of fuel.	
14.2.h		92 days	Verify that the diesel fuel has been sampled and is within the acceptable limits specified in Table 1 of ASTM D975-1990, for viscosity, water and sediment.	
14.2.i		18 months	Inspect the diesel engine per Manufacturer's recommendations.	
14.2.j		18 months	Perform a system functional test with simulated automatic actuation, and: a. Verify diesel engine driven pump starts from a drop in system pressure within design specified set point range. b. Verify that the diesel engine driven pump develops ≥2500 gpm at 125 psig (288 feet of head).	
			(continued)	

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TESTING AND INSPECTION REQUIREMENTS (TIR)

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.2.k	The diesel engine driven fire pump 24 volt battery bank and charger shall be demonstrated functional.	7 days	Verify the following: The electrolyte level of each battery is above the plates. The overall battery voltage is ≥ 24 volts.	
14.2.l		92 days	Verify specific gravity is within tolerance for continued service of the battery.	
14.2.m		18 months	Verify the following: The batteries, cell plates and battery racks show no visible signs of damage or abnormal deterioration. The battery to battery and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.3.a	Water Based Fire Suppression (Refer to Table 14.3)	92 days	Verify by visual inspection that each testable manual, power-operated, or automatic valve in any accessible area, in the spray or sprinkler system flow path is in the correct position.	
14.3.b		12 months	Cycle testable valves in any accessible area in the spray or sprinkler system flow path through at least one cycle.	
14.3.c		18 months Refueling Outage	Perform a system functional test including a simulated automatic actuation of the system and: a. Verify automatic valves in the spray or sprinkler system flow path actuate on test signal. b. For the unit in a refueling outage, cycle testable valves in any inaccessible area in the spray or sprinkler system flow path through at least one cycle.	
14.3.d		18 months Refueling Outage	Perform a general visual system inspection (floor level type observation only) to identify any abnormal conditions and/or physical damage to the riser, sprinkler piping network, and hangers. This includes assurance that sprinkler heads/spray nozzles are not obstructed from providing protection for the hazards present in the areas as follows: a. In any accessible area b. For the unit in a refueling outage in any inaccessible area	
			(continued)	

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TESTING AND INSPECTION REQUIREMENTS (TIR)

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.3.e	Water Based Fire Suppression (Refer to Table 14.3) (continued)	During each COLD SHUTDOWN planned to exceed 24 hours, unless the TIR was performed in the previous 92 days.	For the unit in shutdown, visually inspect each testable valve in any inaccessible area in the flow path to ensure it is in its correct position.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.4.a	CO ₂ Systems	7 days	Verify 24 ton CO ₂ storage tank level \geq 38.1 inches and pressure \geq 270 psig. Verify 6 ton CO ₂ storage tank level \geq 65% and pressure \geq 270 psig.	
14.4.b		92 days	Verify by visual inspection each system's tank shutoff isolation valve and vapor pilot valve is in the correct position.	
14.4.c		18 months	Verify each system's valves, timers, associated ventilation system actions (e.g., fan shutdown and damper closure), and fire door release mechanisms actuate automatically upon receipt of a simulated actuation signal. Verify flow from each nozzle during a "puff test".	
14.4.d		18 months	Perform a visual inspection to verify discharge nozzles are not physically damaged and orifice openings are not externally obstructed.	

ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.5	Fire Detection Supervision		None.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.6.a	Fire hose stations and associated preaction control valves (Refer to Table 14.6)	92 days	Perform visual inspection of the fire hose stations in any accessible area to assure all required equipment is at the station and all required stations are not obstructed.	
14.6.b		92 days	Verify by visual inspection each testable manual and power operated dry standpipe control valve in any accessible area in the flow path is in the correct position.	
14.6.c		12 months	Cycle testable valves in any accessible area in the flow path through at least one cycle.	
14.6.d		12 months	For hose stored in unheated areas, ensure the hose has been hydrostatically tested at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.	
14.6.e		18 months	Perform a system functional test including a simulated automatic actuation of the system and: a. Verify dry standpipe water flow devices, in the hose station flow path, actuate on test signal. b. For the unit in a refueling outage, cycle testable valves in any inaccessible area in the hose station flow path through at least one cycle.	
			(continued)	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.6.f	Fire Hose stations and associated preaction control valves (Refer to Table 14.6) (continued)	Refueling Outages and every 92 days during refueling outages	For the unit in a refueling outage, perform a visual inspection of the fire hose stations in any inaccessible area to assure all required equipment is at the station and all required stations are not obstructed.	
14.6.g		18 months Refueling Outage	Remove each hose for inspections and repacking. Inspect all gaskets and replace any degraded gaskets in couplings in the areas as follows: a. In any accessible area. b. For the unit in a refueling outage, in any inaccessible area.	
14.6.h		3 years	For hose stored in heated areas, ensure the hose has been hydrostatically tested at a pressure 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.	
14.6.i		3 years	Partially open each hose station valve to verify valve functionality and no flow blockage.	
14.6.j		During each COLD SHUTDOWN planned to exceed 24 hours, unless the TIR was performed within the previous 92 days.	For the shutdown unit, visually inspect each testable valve in any inaccessible area in the flow path to ensure it is in its correct position.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.7.a	Fire Hydrants (Refer to Table 14.7)	92 days	Perform a visual inspection of the fire hose equipment dedicated to support the use of fire hydrants to assure all required equipment is available.	
14.7.b		92 days	Verify by visual inspection each testable manual valve in any accessible area in the flow path is in the correct position.	
14.7.c		6 months	Verify by visual inspection that fire hydrants are accessible and there is no physical damage.	
14.7.d		12 months	For hose stored in unheated areas, ensure the hose has been hydrostatically tested at a pressure of 150 psig or at least 50 psig above maximum fire main operating pressure, whichever is greater.	
14.7.e		12 months	Flush hydrants to clear foreign material for more than 1 minute. Confirm automatic drainage.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.8.a	Fire-rated Assemblies	31 days	Perform a visual inspection of the fire doors as follows: a. The door is in the correct position b. The door is free of obstructions c. The door is not damaged and the vision panel (if provided) is intact.	
14.8.b		12 months	For each fire door, verify functionality of all associated release and closing mechanisms and latches by performing a functional test.	
14.8.c		12 months	Verify functionality of the required fire-rated assemblies and penetration sealing devices (including dampers) by performing a visual inspection of approximately 20% of the required fire- rated assembly/fire barriers in accessible areas for cracks, holes, or other evidence of physical damage or degradation. A different approximately 20% is selected each 12 months so all fire-rated assemblies/fire barriers are inspected every 5 years.	
14.8.d		Refueling Outage	For the unit in a refueling outage, verify functionality of the required fire-rated assemblies and penetration sealing devices (including dampers) by performing a visual inspection of approximately 33% of the required fire- rated assembly/fire barriers in inaccessible areas for cracks, holes, or other evidence of physical damage or degradation. A different approximately 33% is selected each outage so all fire-rated assemblies/fire barriers are inspected every 5 years.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.9.a	Emergency battery lighting units (EBL)	92 days	Perform a functional test and visual inspection of each accessible EBL to verify proper function and correct alignment of the lamps of the EBL as a unit by simulating a loss of power.	Annulus
14.9.b		Periodic	Replace batteries of accessible EBL as a function of their service life, environmental condition and as a safety factor.	
14.9.c		Refueling Outage	For the unit in the refueling outage, replace the battery and perform a functional test and visual inspection of each inaccessible EBL to verify proper function and correct alignment of the lamps of the EBL as a unit by simulating a loss of power.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.a	250 V Batteries 0-BAT-239-1 0-BAT-239-2	31 days	Verify battery terminal voltage (range: 210 to 280 VDC) and alignment to its associated DC bus.	
14.10.b	250 V DC Battery Boards 0-BD-239-1 0-BD-239-2 250 V DC Turbine Building Distribution Board 0-DPL-239-1 0-DPL-239-2 250 V DC Battery Chargers 0-CHGR-239-1	31 days	Verify proper breaker alignment for supply of control power to Main Turbine trip circuits and RCP breaker trip circuits.	
14.10.c	Main Steam System Valves (Refer to Table 14.10)	18 months	Verify capability to close valves using the associated hand switch in the Main Control Room.	
14.10.d	Instrumentation (Refer to Table 14.10)	18 months	Perform a channel calibration for each required instrument channel.	
14.10.e	Thermal Barrier Booster Pump 1A Thermal Barrier Booster Pump 1B Thermal Barrier Booster Pump 2A Thermal Barrier Booster Pump 2B	92 days	Verify capability of pumps to provide 40 gpm to each thermal barrier heat exchanger.	
14.10.f	RCS Spray Line Isolation Valves 1-PCV-68-340B 1-PCV-68-340D 2-PCV-68-340B 2-PCV-68-340D	92 days	Verify capability to close valves using the associated controller in the Main Control Room.	
			(continued)	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES	
14.10.g	Control Rod Drive Motor Coolers (Refer to Table 14.10)	18 months	Verify capability of dampers to open and motors to run.	Note 1	
14.10.h	Deleted				
14.10.i	RB Lower Compartment Cooler and Control Rod Drive Cooler System Valves (Refer to Table 14.10)	18 months	Verify capability to open the valves using the associated hand switch in the Main Control Room.		
14.10.j	Nitrogen Supply to SG PORVs (Refer to Table 14.10)	31 days	a. Verify pressure of Nitrogen in tanks is ≥ 1400 psig for S/G PORVs.		
		18 months	b. Verify that the SG PORVs can be operated properly from backup control stations using the compressed nitrogen.		
		31 days	c. Verify dampers will close on loss of air flow.		
14.10.k	Backdraft damper 0-BKD-31-590 0-BKD-31-591 0-BKD-31-592 0-BKD-31-593	92 days	Verify Compressor will automatically start at designed low air pressure set point (78-86 psig) and re-establish and maintain ACA system pressure (≥ 90 psig).		
14.10.l	Deleted	18 months			
14.10.m	Transfer Switch (Refer to Table 14.10)	18 months	Verify switch performs intended function by performance of a continuity check.		

Note 1: Both tanks of each pair are required at or above listed pressure (Reference 4.2.11).

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.n	1-FCV-3-116A, 1-HS-3-116A/C, 1-XS-3-116A, 1-FCV-3-116B, 1-HS-3-116B/C, 1-XS-3-116B, 1-FCV-3-126A, 1-HS-3-126A/C, 1-XS-3-126A, 1-FCV-3-126B, 1-HS-3-126B/C, 1-XS-3-126B 2-FCV-3-116A, 2-HS-3-116A/C, 2-XS-3-116A, 2-FCV-3-116B, 2-HS-3-116B/C, 2-XS-3-116B, 2-FCV-3-126A, 2-HS-3-126A/C, 2-XS-3-126A, 2-FCV-3-126B, 2-HS-3-126B/C, 2-XS-3-126B	18 months	Verify with the hand switch in P-Auto and the transfer switch placed in the Aux position that the FCV will automatically open at the designed low pressure set point.	
14.10.o	Nitrogen Supply (0-TANK-77-2701) to Unit 1 and 2 TDAFW LCVs and MDAFW LCVs and PCVs	7 days	a. Verify nitrogen supply pressure ≥ 120 psig (dual unit operation) or ≥ 100 psig (single unit operation). b. Verify Liquid Nitrogen Storage Tank (0-TANK-77-2701) has ≥ 61 inches level (dual unit operation) or ≥ 50 inches level (single unit operation). c. Verify normal nitrogen flow is ≤ 69.5 scfm (dual unit operation) or ≤ 66.5 scfm (single unit operation)	1
14.10.p	1-HS-70-81BA & 1-HS-70-81EA 2-HS-70-81BA & 2-HS-70-81EA	18 months	Verify MCR capability to block the differential flow leak detection logic for RCP Thermal Barrier Cooling by a functional test or continuity check.	
14.10.q	1-XSV-32-112A1, 1-XSV-32-112A2, 1-XSV-32-112B1, 1-XSV-32-112B2, 1-HS-32-112, 1-XS-32-112, Interlock contact for 1-FCV-32-110-A 2-XSV-32-112A1, 2-XSV-32-112A2, 2-XSV-32-112B1, 2-XSV-32-112B2, 2-HS-32-112A, Interlock contact for 2-FCV-32-111-B	18 months	Functionally check interlock capability to open valves using the associated hand switch in the Main Control Room after isolation of the non-essential control air header by closure of 1-FCV-32-110-A (Unit 1) and 2-FCV-32-111-B (Unit 2). Functional check will test Train A and Train B power via 1-XS-32-112 (Unit 1 only). Light Indicators for Vent Solenoid Valves will be verified functional.	

Note 1. Volume is verified to be ≥ 61 -inches (239,286 scf - dual unit operation) or ≥ 50 -inches (191,543 scf - single unit operation). The required alternate nitrogen gas volume is $\geq 80,826$ scf (dual unit operation) or $\geq 39,923$ scf (single unit operation) when only the Appendix R required portion of the nitrogen system required for operation of the AFW LCVs and PCVs is being served with a minimum pressure of 70 psig at the valves and the rest of the system is isolated from the alternate source of nitrogen.

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.r	<p>1-FSV-77-2561, 1-FSV-77-2562, 1-HS-77-2561A, 1-HS-77-2562A, 1-XS-77-2561, 1-LCV-3-148, 1-LCV-3-156, 1-LCV-3-164, 1-LCV-3-171, 1-LCV-3-172, 1-LCV-3-173, 1-LCV-3-174, 1-LCV-3-175, 1-PCV-3-122, 1-PCV-3-132</p> <p>2-FSV-77-2561, 2-FSV-77-2562, 2-HS-3-164A, 2-HS-3-174A, 2-XS-3-2561, 2-LCV-3-148, 2-LCV-3-156, 2-LCV-3-164, 2-LCV-3-171, 2-LCV-3-172, 2-LCV-3-173, 2-LCV-3-174, 2-LCV-3-175, 2-PCV-3-122, 2-PCV-3-132</p>	<p>18 months</p> <p>92 days</p> <p>18 months</p>	<p>a. Verify capability to operate the solenoid from the associated hand switch in the MCR. Also, verify that 1-XS-77-2561 disables hand switch 1-HS-77-2561A and 2-XS-3-2561 disables hand switch 2-HS-3-164A contacts used to actuate nitrogen sub-header valves for MDAFW LCVs/PCVs with continuity or functional check.</p> <p>b. Verify each APP R N₂ manual, power operated, and automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, that is in an accessible area, from the liquid nitrogen skid to AFW LCVs and PCVs is in the correct position.</p> <p>c. Verify that the AFW LCVs/PCVs can be operated properly with nitrogen by a functional test.</p>	
14.10.s	<p>Safety Injection System Boron Injection Tank Inlet Shutoff Valves: 1-FCV-63-39-A 1-FCV-63-40-B 2-FCV-63-39-A 2-FCV-63-40-B</p>	Refueling Outage	<p>Verify local capability to isolate the BIT path by closing breaker and hand switch on the Control/Auxiliary (C&A) Vent Boards: 1-MCC-214-A2-A 1-MCC-214-B2-B 2-MCC-214-A2-A 2-MCC-214-B2-B</p>	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.t	Nitrogen Supply to CVCS normal charging flow control valve 2-FCV-62-89	31 days	a. Verify pressure in tanks is >800 PSIG for normal charging flow control valve (Reference 4.2.15).	
		18 months	b. Verify the CVCS normal charging flow control valve can be operated properly from the backup control station using the compressed nitrogen.	
14.10.u	Alternative Shutdown Hand switches needed for FSSD 1-HS-67-84C, 1-HS-67-85C, 1-HS-67-92C, 1-HS-67-93C, 1-HS-67-100C, 1-HS-67-101C, 1-HS-67-108C, 1-HS-67-109C, , 1-HS-3-945A-A, 1-HS-30-1080 2-HS-67-84C, 2-HS-67-85C, 2-HS-67-92C, 2-HS-67-93C, 2-HS-67-100C, 2-HS-67-101C, 2-HS-67-108C, 2-HS-67-109C, 2-HS-3-945A-A, 2-HS-30-1080	18 months	Verify each required control circuit and transfer switch is capable of performing the intended function by a switch continuity check or functional Test.	
14.10.v	1-HS-62-69B-A 2-HS-62-69B-A	18 months	Verify local capability to isolate normal letdown by a functional test or continuity check	
14.10.w	0-FCV-70-194 0-FCV-70-197	18 months	Verify that the SFPCS HX Supply Header Control Valves can be closed by functional test from the MCR.	
14.10.x	1B-B CCS Pump 2B-B CCS Pump	92 days	Verify pumps are functional IAW the Section XI testing program and the pumps are aligned to their associated "A" Train CCS Header, except when in compliance with note (-2 and 5) of Table OR 14.10	
14.10.y	Manual Valves listed in table 14.10	5 years	Cycle each manual valve to ensure the valve has freedom of movement and does not need excessive force to operate.	

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ITEM NO.	TYPE OF SYSTEM/COMPONENT	FREQUENCY	TESTING/INSPECTION REQUIREMENT (TIR)	NOTES
14.10.z	0-BD-200-A, 0-BD-206-1, 0-OXF-206-1, 1-DPL-264-1	31 days	Verify equipment is energized and is capable of being the backup power supply to Unit 1 DCS.	
14.10.aa	CARF Transfer switches 1-XS-30-38A 1-XS-30-39A 2-XS-30-38A 2-XS-30-39A	18 months	Verify local capability to isolate the CARF controls (ISOL) by a functional test or continuity check	

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) FIRE DETECTION

B.14.1 Fire detectors are provided within various locations at WBN to ensure adequate warning of fires, detect and locate fires in their early stages to facilitate suppression efforts, and to meet regulatory requirements. Prompt detection of fires reduces the potential for damage to plant equipment and is an integral element in the overall plant FPP. The specific number of required detectors in each room to ensure adequate spatial coverage and the desired level of detector redundancy are specified on Table 14.1. Instrumentation designed to detect smoke as a part of other systems (e.g., smoke detectors in HVAC ducts for main control room habitability) are excluded from Table 14.1 since they were designed for purposes other than fire protection.

This requirement is provided to ensure, as a minimum, the Fire Detection Instrumentation for each Fire Detection Zone shown in Table 14.1 is Functional. The functionality of the Fire Detection Instrumentation ensures that adequate warning capability to a constantly attended location is available for prompt detection of fires and that Fire Suppression Systems that are actuated by fire detectors discharge extinguishing agents in a timely manner. Prompt detection and suppression of fires reduces the potential for damage to safety-related equipment and is an integral element in the overall facility fire protection program.

When detectors are non-functional, an acceptable alternative in lieu of fire watches is the use of a portable fire detection system designed specifically for fire protection use. Placement of the detectors for the portable system is at the approximate location of the non-functional permanent detector on a one-to-one basis. The cables from the detectors to the portable system panel are not installed in conduits or cable trays but are routed and secured so as not to interfere with routine plant operations. The system would not interface with any existing fire detection systems.

Outputs from the Fire Detection system also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is beyond the scope of this Fire Detection OR for Function A detectors since this automatic shutdown does not affect the function of the system as exhibited by the annunciation of the affected Fire Detection equipment. Manual actions can be used to compensate for this automatic shutdown.

The testing of the fire detection system is based on the codes in place when the system was designed and purchased. As such, the testing of internal circuit supervisory functions (e.g., trouble due to an open circuit or ground on a detection circuit) of the equipment on a periodic basis is not required. The confirmation of the Functionality of such supervisory functions is confirmed as applicable upon a component's initial installation.

B.14.1.1 With any Function A Fire Detection Instrumentation shown in Table 14.1 non-functional in an accessible area, the non-functional instrument(s) must be restored within 1 hour. The Completion Time of 1 hour to establish a fire watch is reasonable considering that it is consistent with Standard Technical Specifications (Reference 4.1.37). If the non-functional instrument(s) cannot be restored within 1 hour, a fire watch patrol must be established to inspect the zone(s) with non-functional instrument(s), and thereafter, inspect the zone(s) once per hour. The establishment of frequent fire watch patrols in the affected areas is required to provide detection capability until the non-functional instrumentation is restored to Functionality. The Completion Time of one hour to

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perform a roving fire watch is reasonable and based upon the typical time necessary to establish a fire watch patrol and perform an inspection.

- B.14.1.2.a** With any Function A Fire Detection Instrumentation shown in Table 14.1 non-functional in any inaccessible area in either containment, the non-functional instrument(s) must be restored within 8 hours. The Completion Time of 8 hours is based on containment access considerations. If the non-functional instrument(s) cannot be restored within 8 hours, the zone(s) with non-functional instrument(s) must be inspected once per 8 hours, or the air temperature must be monitored in the affected area once per hour. The Completion Times of once per 8 hours required for a roving fire watch and once per hour required for monitoring of the air temperature are reasonable.

Furthermore, the 1-hour frequency for air temperature monitoring is considered adequate in view of other indications available in the control room, including alarms, to alert the operator to abnormal containment temperature conditions.

Fire detection instrumentation is not assumed to be functional to mitigate the consequences of a design accident or transient. In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the design basis event (DBE) or transient. Therefore, observing the same instruments that are used by SRs 3.6.5.1 and 3.6.5.2 once per hour along with the other indications available in the Main Control Room, including alarms to alert the operator of abnormal containment temperature conditions, provides an equivalent level of fire safety without exposing personnel to unnecessary radiation exposure. Additionally, this method of compensatory actions for non-functional detection systems in the RB is consistent with industry standard technical specification requirements. If the Technical Specification instrumentation is not available to support this monitoring, then other appropriately maintained and tested instrumentation are used after evaluation.

- B.14.1.2.b** With any function A Fire Detection Instrumentation shown in Table 14.1 non-functional in any inaccessible area outside of either containment, the non-functional instrument(s) must be restored within 8 hours. The Completion Time of 8 hours is based on access considerations to these hazardous areas to ensure personnel safety. If the non-functional instrument(s) cannot be restored within 8 hours, the zone(s) with non-functional instrument(s) must be inspected once per 8 hours. The completion Times of once per 8 hours required for a roving fire watch is reasonable to ensure protection of personnel and the confined areas (relatively small rooms with heavy concrete wall bounding the areas and limited combustibles) that are involved for areas outside of containment.

- B.14.1.3** The restoration of equipment to Functional in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with standard Technical Specifications.

- B.14.1.4.a** The CPU is considered Functional when it is capable of notifying the constantly attended location personnel of fire alarms for Operating Requirement (OR) detection zones. With the CPU non-functional, for zones containing Function A Fire Detection Instrumentation shown in Table 14.1 in an accessible area, the local detection panel shall be monitored within 1 hour. If the non-functional CPU cannot be restored within 1 hour, a continuous monitor patrol must be established. The establishment of a continuous monitor patrol for the affected panels is required to provide detection capability and notification to a constantly attended location until the non-functional CPU

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is restored to Functionality. The Completion Time of one hour to establish a continuous roving monitor is reasonable and based upon the typical time necessary to establish a monitor patrol and to perform an inspection. These actions are consistent with the standard Technical Specifications requirements if the detectors are declared non-functional. The Main Control Room (MCR) is exempted from this action since the MCR is the constantly attended location that is normally notified.

- B.14.1.4.b** With the CPU non-functional, for zones containing Function A Fire Detection Instrumentation shown in Table 14.1 in an inaccessible area, the monitoring of the air temperature for the affected area once per hour or the monitoring of the local detection panel once per hour is established within one hour. The time frame of one hour to establish one of the compensatory actions is reasonable considering that it is consistent with standard Technical Specifications. The establishment of temperature monitoring or monitor patrols for the affected panels is required to provide detection capability to a constantly attended location until the non-functional CPU is restored to Functionality. The time frame and actions are reasonable and based upon the necessary times and actions that are required if these devices are declared non-functional.
- B.14.1.4.c** With the CPU non-functional, for zones containing Function B Fire Detection Instrumentation shown in Table 14.1 in an inaccessible or accessible area, the local detection panel shall be monitored hourly within one hour. The establishment of a monitor patrol once per hour for the affected panels is required to provide detection notification to a constantly attended location until the non-functional CPU is restored to Functionality. The automatic actuations are still functional so the more restrictive compensatory action of a continuous fire watch is not needed. The completion time of one hour to establish an hourly roving monitor is reasonable and is consistent with the standard Technical Specifications when annunciation to a constantly attended location is non-functional such as in OR-14.1.1.
- B.14.1.5** The restoration of equipment to Functional in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with standard Technical Specifications.

PART II – FIRE PROTECTION PLAN

BASES – TESTING AND INSPECTION REQUIREMENTS (TIR)

FIRE DETECTION

- B.14.1.a** TIR 14.1.a is the performance of a functional test (excluding confirmation of setpoint accuracy) on one or more of the required accessible thermal detection instruments in each signal circuit which are accessible during plant operation. At least one detector and a minimum of 10% on each signal initiating circuit shall be tested semi-annually such that all are tested within five years. The frequency of six months is based on NFPA consensus standard 72E (code of record) and has been shown acceptable through industry operating experience.
- B.14.1.b** TIR 14.1.b requires a functional test be performed on each of the required accessible smoke detection instruments. The associated frequency for this surveillance is 6 months which is based on NFPA consensus standard 72E criteria and is consistent with standard Technical Specification requirements.
- B.14.1.c** TIR 14.1.c is the performance of a functional test on each of the required smoke detection and restorable heat detection instruments which are in any inaccessible area. This test is performed for the unit in a refueling outage. The expected frequency for this testing is each unit's Refueling Outage and is based on operating experience.

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BASES – OPERATING REQUIREMENTS (ORs) WATER SUPPLY

B.14.2 This requirement is provided to ensure, as a minimum, the water supply is Functional. The water for firefighting is supplied by four vertical turbine, high pressure, motor driven pumps, and one centrifugal diesel driven fire pump. The pumps are required to provide the flow for the most hydraulically demanding area in a safety-related structure.

The water suppression system is a prime element of the overall plant fire suppression capability and is not mode dependent; therefore, its availability is maximized.

Three fire suppression pumps (the diesel and two electric driven pumps) are required to be Functional. With one of the three required pumps non-functional, 100 percent of the required flow can still be provided by the two remaining Functional pumps. The flow path through the distribution piping and valves to each supply terminal are also required to be Functional. In the section of standard Technical Specifications for water supplies, two 100% pumps are addressed. WBN has taken the option allowed by BTP 9.5-1 to provide three pumps; however in place of being three 50% capacity pumps as addressed in the BTP, WBN has a 100% capacity diesel fire pump and two 50% capacity electric motor driven pumps. Since standard Technical Specifications provide action statements when one pump is non-functional and does not cover the three pump installation, the capacity of functional pumps was taken into account in determining the action statements and associated times for action statement completion in Section 14.2.

The Water Supply consists of a flow path from the water source to the using devices (i.e., water based fire suppression systems, the fire hose station/standpipes, and the fire hydrants). The normal configuration is such that the Water Supply piping is looped, meaning it is fed from two directions. Alternately, the pipe that goes to the using devices is only fed from the point of attachment to the Water Supply piping. WBN identifies piping, valves, fittings, and other appropriate items associated with the Water Supply in Section 14.2 as follows:

- 1) The piping, valves, fittings, and other appropriate items, starting at the water supply, through the fire pumps and up to the first valve on the pipe going to the using devices are included in Section 14.2. The piping, valves, fittings and other appropriate items downstream of this first valve are included under Section 14.3 and 14.6 as appropriate.
- 2) The isolation of a single valve on the supply/looped piping, covered by Section 14.2, does not preclude water from getting to the using devices.
- 3) The isolation of a single valve on the using device piping, covered by Section 14.3 and 14.6, does prevent water from getting to the using devices. Separating the water supply piping/features from the using device piping/features eliminates the confusion presented when comparing WBN's design to the standard Technical Specifications which may lead to entering two action statements.

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B.14.2.1 With two electric pumps functional and the diesel driven fire pump non-functional, compensatory actions must be taken. These actions consist of:

(a) Restoring the diesel fire pump within 7 days, (b) ensuring that three of the electric motor driven pumps are functional or (c) ensuring two electric fire pumps are functional and a backup pump, either electric or diesel driven, of at least equal capacity to an electric driven fire pump. For action (b), the three electric motor driven pump option, a fire watch, continuous or hourly roving based on fire detection equipment status in the areas, is established in the Auxiliary Building elevations listed in the table below. For cases involving a continuous fire watch, one continuous fire watch is assigned in the Auxiliary Building elevations listed in the table below. The areas are as noted below:

Building/Elevation	Room Number (Analysis Volume)	Column Line
Auxiliary Building Elevation 713	713.0-A1 (AV-026)	Q to U and A8 to A15
Auxiliary Building Elevation 737	737.0-A1 (AV-038)	Q to U and A8 to A13, plus Q to S and A13 to A15

For action (c), the two electric fire pumps and a backup fire pump, either a hourly roving or continuous fire watch is established in areas containing common power supplies. The determination of the fire watch(es) frequency and area of coverage are based on information provided in action (b) (e.g. Hourly fire watch(es) in areas with functional detection).

Either Action (a) or (b) is taken within 7 days so that three pumps are available. This provides 150% pump capacity to safety-related areas. The completion time of 7 days is reasonable considering that 100% of the required pumping capacity to safety-related areas is still provided, and the time required to identify the problem and to take the corrective actions. This is consistent with the standard Technical Specifications.

The Auxiliary Building areas requiring either an hourly roving or continuous fire watch are areas where the Diesel Fire Pump (DFP) is the only fire pump credited in Fire Protection Report (FPR) Part VI, "Fire Hazards Analysis." In these areas, the Electric Driven Fire Pumps (EDFP) are not credited as a possible source of water to the fire protection suppression systems and enhancement measures must be taken to assist in detecting a general fire at its incipient stage to prevent the fire from becoming an Appendix R fire. Additionally, all areas where the DFP and one EDFP are credited In FPR Part VI were evaluated in Reference 4.2.58 and it was demonstrated one EDFP in these areas can supply the required flow and pressure to the fire protection suppression systems. Therefore these areas where one EDFP remains available do not require the enhancement action.

Action (c) is anticipated for planned outage activities where normally an entry is made into (a) or (b) and then enter (c) for 7 days before re-entry into (a) or (b). While in cases of unplanned outages, it is anticipated an entry is made into (a), (b), or OR 14.2.2, 14.2.3, 14.2.4 or 14.2.5 as appropriate. The backup pump for Action (c) also provides a measure of diversity by the general nature of how the existing electric pumps are installed. The backup pump would be located on another water source, with another energy source and a diverse location to provide a tie-in for supplying the fire protection system. Compliance with Action (c) requires the two electric fire pumps, a backup fire

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pump, and an hourly roving fire watch is established in areas containing common power supplies. The determination of the fire watches' area of coverage is based on information provided in Action (b) and additional areas where the power supplies for the backup pump are not separated by at least a one hour fire barrier from the cables associated with the Functional electric fire pumps. The provision of fire watches in areas of power supply interaction between the available electric fire pumps as well as the backup pump is consistent with other actions of OR-14.2.1.b. The completion time of 7 days to restore the 150% pump capacity (i.e., entering OR-14.2.1.b or restoration of the diesel fire pump) is reasonable and is consistent with other existing actions to ensure there is 150% pump capacity.

A backup pump is available which meets the following criteria to ensure that the pump is operated within the HPFP design limits.

1. The pump driver is a diesel engine capable and with fuel oil capacity for two hours of continuous operation.
2. The pump provides a minimum 1590 gpm at 300 ft. head as demonstrated by a flow test.
3. Suction supply for the pump is from the Tennessee River, a cooling tower basin, the 35 acre pond, the lined pond or other pond with a minimum of two hour supply at 1590 gpm.
4. A maximum pressure capability of 135 psig at elevation 729 feet. This maximum can be controlled manually provided the pump is constantly attended.
5. The pump is connected to the High Pressure Fire Protection system via a non-OR fire hydrant using one 5 inch and two nominal 2½ inch hoses that are in current hydrostatic test requirements.
6. Manual start and control of the pump is acceptable provided the pump is constantly attended when required to be available.

When both units are in Modes 5, 6, or core empty, the locations where a continuous fire watch is required may be combined and patrolled by one or more roving fire watch(es). While the plant is in cold shutdown or refueling, there are fewer systems needed for maintaining cold shutdown and more people present that could detect and report a fire (General Employee Training includes how to report a fire). Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner to prevent fires, or if a fire were to occur, ensuring that timely action is taken.

B.14.2.2 With only one electric driven fire pump functional and the diesel driven fire pump functional, compensatory actions must be taken. These actions consist of:

Restore an additional electric motor driven pump (to ensure a total of three functional pumps) within 30 days. The condition with the diesel fire pump and only one electric motor driven pump functional provides 150% pump capacity to safety-related areas. The action of restoring an additional electric motor driven pump in 30 days is reasonable given that 150% of the required fire pump capacity is functional.

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- B.14.2.3** With no electric driven pumps functional and the diesel driven fire pump functional, compensatory actions must be taken. These actions consist of:
- Restoring one electric motor driven pump to functional within 7 days. This provides 150% pump capacity to safety-related areas. The diesel fire pump alone connected to the fire protection system provides 100% pump capacity to safety-related areas. This is consistent with the requirements of 14.2.2 and of standard Technical Specifications.
- B.14.2.4** With only one electric driven pump functional and the diesel driven fire pump non-functional, compensatory actions must be taken. These actions consist of:
- Restore an additional pump to functional within 24 hours. This provides a minimum 100% pump capacity to safety-related areas. Restore the third required pump to functional in accordance with either 14.2.1 or 14.2.2, as applicable. The time frames are consistent with standard Technical Specification time allowance for related equipment out of service conditions.
- B.14.2.5** With no water supply pumps functional, compensatory actions must be taken. These actions consist of:
- a.
 1. Establish a backup water supply within 24 hours, and
 2. Restore one electric driven pump within 48 hours, and
 3. Restore a second electric driven pump within 72 hours. This provides a 100% pump capacity to safety-related areas, and
 4. Restore the diesel fire pump to functional within 7 days. With a backup pump available and two electric driven pumps Functional, fire watches are not required.
 - b. An alternative to the above is to establish a backup water supply within 24 hours and restore the diesel fire pump within 48 hours. Once the diesel is functional, it provides a 100% capacity to safety-related areas and the backup water supply can be secured. Restore one of the two required electric driven pumps within 7 days, and the second required electric drive pumps within 30 days.
- This provides a backup supply within 24 hours as required by standard Technical Specifications. This also returns WBN to 100% pump capacity within 72 hours or less. Either method provides a 100% pump capacity to safety-related areas within 72 hours and the time (72 hours) is reasonable considering the seriousness of the situation.
- B.14.2.6** The closing of multiple sectional valves in the water supply piping of Section 14.2 can isolate the flow path to the using devices of Section 14.3, 14.6 and 14.7.
- a. In such a situation, the more restrictive requirements of Section 14.3, 14.6 or 14.7 apply. The requirements of 14.3, .6 or .7 although more restrictive, address the specifically affected area(s). The entering of compensatory actions for the isolated using devices is reasonable.
 - b. Specific valve operators that have had power removed due to Appendix R concerns require re-energizing to perform periodic testing such as cycling of

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valves to meet other regulatory requirements. The establishment of an attendant at the breaker allows prompt action to be taken if a fire condition occurs during this time period.

- c. The restoration time of thirty (30) days is reasonable based on the equipment involved and the limited impairment to the Fire Suppression System.

B.14.2.7

Specific usages are supplied by the HPFP/RSW system and are required to be functional during normal plant operation. A calculation determined the limits for the total HPFP/RSW usage and is as follows:

- a. Selected as-designed RSW loads to remain unisolated during a fire condition (e.g., chiller packages and plant processes required during plant operation).
- b. Manual RSW isolation valves to be locked closed to preclude non-as designed RSW loads being added.
- c. Selected as designed RSW loads to automatically isolate during a fire condition.

This provides control of HPFP/RSW usage to ensure an adequate water supply is available for fire protection when needed.

RSW was originally designed to be used for multiple usages (e.g., supply various chiller units and plant processes, cleaning of plant areas and other miscellaneous uses). Therefore when HPFP/RSW is needed outside the bounds of the established calculation, it is acceptable to establish compensatory actions employing isolation capability that allows for prompt isolation of additional usage without requiring a temporary modification as controlled by NPG-SPP-09.5, "Temporary Modifications, Temporary Configuration Changes" (Reference 4.2.65).

- a. For HPFP/RSW usage that automatically isolates, it is not necessary to have the isolation point constantly attended with the attendant in communication with the Main Control Room (MCR). In the case where non-as designed HPFP/RSW loads are needed, a manual isolation capability is required and an attendant established in the area within one (1) hour. The attendant is in communication (e.g., radio, telephone, PA, etc.) with the MCR.
- b. For those as designed RSW usage's that are designed to automatically isolate on a fire pump start, there are times when this automatic isolation capability will need to be inhibited (e.g., during fire pump testing). During hot weather, there are chillers that are needed for plant operations and since the inhibiting of the automatic isolation is procedurally controlled, this allows the plant to continue to operate normally during testing and still provide adequate compensatory actions to ensure an adequate supply of water for firefighting if needed.
- c. Thirty (30) days is reasonable based on the actions required by Operating Requirement (OR) 14.10, which requires restoration of equipment required for 10 CFR 50, Appendix R within that time limit.

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B14.2.8

The electric driven pump start circuitry, including the buffer relays, may be temporarily inhibited during maintenance/testing to prevent the fire pumps from starting automatically. The excessive starting of the deep draft electric motor driven fire pumps is an industry concern, therefore, limiting the starting of the electric driven fire pumps is a good practice. This action does not require additional compensatory measures for the following reasons:

- a. Taking the circuitry out of service and returning it to service is administratively controlled by the testing documentation.
- b. The manual starting of the electric motor driven fire pumps from the Main Control Room (MCR) or their associated 480V shutdown board is not impaired. Additional administrative controls and abnormal operating instructions exist that ensure fire pumps are started upon the discovery of a fire.
- c. The system is normally pressurized without the operation of the fire pumps.

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIRs) WATER SUPPLY

- B.14.2.a** TIR 14.2.a verifies that the electric driven pumps operate as designed. Every 31 days, the pumps are tested by starting each pump and letting it operate for a minimum of 15 minutes on recirculation flow. A test frequency of 31 days is reasonable for pumps which are not normally in operation and is consistent with standard Technical Specification requirements.
- B.14.2.b** TIR 14.2.b verifies every 92 days that each testable valve in any accessible area is visually inspected to be in its correct position. This applies to testable valves that are manual, power-operated, and automatic valves in the flow path. Verification of valve position is not required for valves that are not part of the main flow path which feed branch headers to form a train separation boundary, or which have capped or blind flanges downstream of the valves, or if inadvertently opened/left open leads to a visible, noticeable discharge which may be corrected. Valves which are not part of the main flow path which are normally closed and feed to branch headers to closed station drains are included in the verification of position, since if left mispositioned could lead to undetected leakage. Verification of valve position is not required for the pressure control valve which has a designed orifice plate downstream to limit the effect, to within design parameters, of the valve failing. Valves that are locked, sealed or otherwise secured in position need only be verified to be locked, sealed, etc., since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.
- B.14.2.c** TIR B.14.2.c requires the fire protection water distribution system be flushed twice per year in conjunction with biocide injection. The frequency of twice per year is needed to support chemical treatment requirements for biocide injection and meets the intent of standard Technical Specification requirements.
- B.14.2.d** TIR 14.2.d requires that valves in any accessible area, which are testable, are cycled every 12 months. This verifies that each valve operates properly. Verification of the position of valves every 12 months is based on industry operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.
- B.14.2.e** TIR 14.2.e consists of a fire suppression water system functional test every 18 months, which includes the electric motor driven pumps and major valves. The electric motor driven pumps start circuitry uses a time delay to ensure the associated emergency diesel generator is not overloaded and/or a combination of the time delay and pressure demand to start additional pumps if system pressure falls below predetermined setpoints.

Only two of the four pumps are needed to satisfy the requirements of OR 14.2. Normally, the first two pumps start based on time delay and the remaining pumps start on pressure demand and time delay. However, there are possible pump alignments where one of the two pumps needed for the OR requirement will have a start logic based on time and pressure delay. The electric motor driven pumps start logic is verified for proper normal function by verifying pump time delay starts. TVA does not test the time and pressure delay aspects of the start circuitry because:

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1. Testing this circuitry involves extensive plant configuration changes in order to minimize the number of pump starts.
2. The pressure switches are periodically maintained and calibrated in accordance with the WBN preventive maintenance program.
3. Plant instructions for responding to fires include verification measures to ensure that at least two electric motor driven pumps are operating.
4. Minimize the number of starts on deep draft pumps.

There are numerous sets of contacts that are associated with the physical fire pump start circuit. These points do not affect the logic beyond providing a start signal for the logic. When there is a set of contacts that provides an automatic start for the logic, it is tested with the associated equipment (e.g. preaction sprinkler system).

Devices that are manual in nature such as hose stations, except as noted in 14.6, do not need the automatic start input because plant personnel are trained to report all fires before trying to fight them. Additional administrative controls are in place to ensure that a fire pump(s) is running after a fire is reported. Testable valves in any inaccessible area are cycled during the refueling outage for the applicable unit. Automatic valves are checked for correct position and function each 18-months. The functional test frequency of 18 months/refueling outage is based on industry operating experience, gives acceptable assurance that the system is Functional at all times, and is consistent with standard Technical Specification requirements.

B.14.2.f TIR 14.2.f specifies a flow test every three years of the system in accordance with Reference 4.4.1. Underground and exposed piping is flow tested to determine the internal condition of the piping at minimum three-year intervals. Flow tests are made at flows representative of those expected during a fire, for the purpose of comparing friction loss characteristics of the pipe with that expected for the particular type of pipe involved, with due consideration given to the age of the pipe and to the results of previous flow tests. Any flow test results that indicate unacceptable deterioration of available water flow and pressure shall be fully investigated. The test frequency of three years is based on industry experience and NFPA consensus standard 25 and is considered acceptable.

B.14.2.g TIR 14.2.g verifies that the diesel engine driven fire pump operates as designed and has an adequate fuel supply to provide fuel for the running time (i.e. minimum 2 hours). Every 31 days, the pump is tested by starting the pump and letting it operate for a minimum of 30 minutes on recirculation flow. A test frequency of 31 days is reasonable for pumps which are not normally in function and is consistent with standard Technical Specification requirements.

B.14.2.h TIR 14.2.h verifies that the quality of the diesel fuel is within the acceptable limits of Table 1 of ASTM-D975-1990. This either uses the documentation from the fuel in the main diesel fuel storage tanks, when filled from the source, or testing performed on the fuel in the diesel fire pump storage tank. Testing on the fuel in the diesel fire pump fuel oil tank is performed on a bottom sample as defined by ASTM-D40507-1990. Additional samples from the midpoint or top of the fuel tank per ASTM-D-40507 are not needed since the main concern is water and sediment in the tank. A bottom sample is sufficient for detecting water and sediment. The test frequency of 92 days is

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reasonable based on the limited consumption during the 31 day runs and is consistent with standard Technical Specification requirements.

- B.14.2.i** TIR 14.2.i subjects the diesel engine driver to an inspection as specified by the manufacturer for the class of service. The extent of the inspection is based on performance factors of the engine and pump.
- B.14.2.j** TIR 14.2.j verifies that the diesel engine driven fire pump performs in accordance with the proper normal operation start logic based on plant design of pump. The pump is tested to verify that it starts from a drop in system pressure \leq the design specified set point and that the performance of the pump meets the following criteria:
- $\geq 150\%$ of rated flow at 65% of rated head,
- $\geq 100\%$ of rated flow at rated head, and
- Shutoff flow $\leq 140\%$ of rated head
- The frequency of 18 months is consistent with standard Technical Specifications.
- B.14.2.k** TIR 14.2.k verifies (1) the electrolyte level of each battery in the 24 volt battery bank; and (2) the charger is functional by measuring the voltage at the battery to ensure that it is ≥ 24 volts. The test frequency of 7 days is consistent with standard Technical Specifications.
- B.14.2.l** TIR 14.2.l verifies that the specific gravity of each battery is within tolerance to ensure continued service of the battery. The frequency of 92 days is consistent with standard Technical Specifications.
- B.14.2.m** TIR 14.2.m verifies that there is no visible physical damage to the batteries, cell plates and battery racks and that the battery to battery connections are clean, tight, free of corrosion and coated with anti corrosion material. The frequency of 18 months is consistent with standard Technical Specifications.

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BASES – OPERATING REQUIREMENTS (OR) WATER BASED FIRE SUPPRESSION

B.14.3 Water based fire suppression systems and their associated fire detectors are required to be Functional whenever safety-related or FSSD equipment protected by the suppression/detection system is required to be Functional. This is necessary to minimize the adverse effects of fires on structures, systems, and components important to safety.

This water based suppression equipment and associated fire detection equipment is provided as a means to directly detect and annunciate to a constantly attended location, and automatically actuate systems to suppress or control fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown by protecting the fire safe shutdown equipment.

The main emphasis is on early detection to a constantly attended location and automatic actuation of the system for the suppression of a fire while the fire is easily controlled and quickly suppressed before it is capable of damaging fire safe shutdown systems. Two levels of actions are provided in recognition of the varying fire safe shutdown impact depending on the location of the fire. The determination whether a single fire can affect redundant FSSD systems or components is based on whether both FSSD paths are in the same fire area with less than a 3-hour fire barrier separating them. This is consistent with Appendix R in that when 3-hour separation is provided within the same fire area, then suppression and detection are not required. Backup suppression equipment is normally the installed hose stations as discussed in Part II, Section 12.2.

When a unit is in Modes 5, 6, or core empty, the locations where a continuous fire watch is required may be combined and patrolled by one or more roving fire watch(es) provided the area only affects the unit in Modes 5, 6, or core empty. While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown and more people present that could detect and report a fire (General Employee Training includes how to report a fire). Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner to prevent fires, or if a fire were to occur, ensuring that timely action is taken.

Outputs from the associated fire detection equipment also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is beyond the scope of this OR for Function B detectors since this automatic shutdown does not affect the function of the system as exhibited by the annunciation of the associated fire detection equipment. Manual actions can be used to compensate for this automatic shutdown.

B.14.3.1 More restrictive compensatory actions are appropriate where water based suppression equipment or associated fire detection equipment are provided to protect redundant fire safe shutdown systems or components that may be damaged if a fire occurred. With any fire suppression shown in Table 14.3 non-functional in any accessible or inaccessible area, the non-functional equipment must be restored within one hour. If both the suppression and associated detection are non-functional in an area containing both trains of fire safe shutdown equipment, then it is appropriate to provide continuous

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fire watch coverage except as modified below. The completion time of one hour is based on the standard Technical Specifications.

- a. When detection or both suppression and the associated detection are non-functional in an area, then the more stringent compensatory actions are needed. If only the water based suppression is non-functional, then the early warning detection system provides more extensive coverage of the area and faster notification than can be provided by a fire watch. Therefore, it is appropriate to provide a lesser degree of fire watch coverage (i.e., Hourly roving fire watch). When the detection is non-functional and the associated suppression is still functional then the more restrictive compensatory action is required. In this situation, not only is the early warning capability lost, but so is the automatic actuation capability of the suppression system.
- b. The non-functional suppression is restored within one hour. If the area is in the Reactor Buildings' Lower Containment, then special consideration is needed due to the radiological conditions, building construction, and hazards present. In this case the area with non-functional suppression and/or detection must have a continuous fire watch established using the alternatives defined in Subsection D or E of Section 13.1, or the air temperature must be monitored in the affected area once per hour. The completion time of one hour to establish continuous fire watch or hourly monitoring of the air temperature is reasonable. Either of these compensatory actions and associated time frequency is acceptable based on the air supervision for the Reactor Coolant Pump (RCP) sprinkler systems, the RCP oil collection system and the capability to monitor RCP bearings temperatures in the MCR. Furthermore, the one hour frequency for air temperature monitoring is considered adequate in view of other indications available in the MCR, including alarms to alert the operator to abnormal containment temperature conditions. This is also consistent with the standard Technical Specification on the loss of detection in an inaccessible area such as Lower Containment.

Fire suppression is not assumed to be functional to mitigate the consequences of a design accident or transient. In designing the accident sequence for theoretical hazard evaluation, fires are not assumed to take place simultaneously with the design basis event (DBE) or transient. Therefore, observing the same instruments that are used by SRs 3.6.5.1 and 3.6.5.2 once per hour along with the other indications available in the main Control Room, including alarms to alert the operator of abnormal Containment temperature conditions provides an equivalent level of fire safety without exposing personnel to unnecessary radiation exposure. Additionally, this method of compensatory actions for non-functional suppression systems in Lower Containment was approved by NRC for Sequoyah Nuclear Plant's TS 3.3.3.8 that was current at the time Watts Bar Nuclear Plant's FPR was written. This approval was also contained in Sequoyah Nuclear Plant's FPR when Sequoyah's fire protection was removed from TS and placed in the FPR.

If this Technical Specification instrumentation is not available to support this monitoring, then other appropriate maintained and tested instrumentation is used after evaluation.

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The 737' elevation of the Auxiliary Building is to have a dedicated continuous fire watch when the water based suppression system equipment or associated fire detection equipment is out of service. In such a situation, the continuous fire watch is limited to the 737' elevation due to the FSSD sensitivity of the area. The continuous fire watch is not allowed to cover areas in other elevations that this sprinkler system protects.

Alternate compensatory actions are generally defined in Section 13.1. In selected cases the established compensatory measures may be inadequate or present a concern such as in the areas of personnel safety or radiological safety. In such situations engineering evaluations will be used to define and accomplish adequate compensatory measures. Guidance for these engineering evaluations are provided in regulatory guidance as issued by the NRC in Regulatory Issue Summary (RIS) 2005-07 regarding compensatory measures applicable to Fire Protection Program (FPP) requirements. The purpose of the RIS was to allow licensees with the standard fire protection license condition to make changes to the approved FPP (i.e., WBN FPR) to use alternate compensatory measures. It was specified that if a licensee were to choose to implement alternate compensatory measures as otherwise required by the approved FPP, the licensee must document an evaluation to determine the impact of the alternate measures and the adequacy of those measures relative to those specified by the FPP. Examples of acceptable alternate compensatory measures include operator briefings, additional administrative controls, interim shutdown strategies, temporary procedural requirements, temporary fire protection features, etc. The evaluation must demonstrate that the implementation of alternate actions does not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire, and should incorporate aspects of risks due to fire hazards, presence of ignition sources, installed fire protection features (manual and automatic), and human error probabilities where applicable.

In addition to the actions in Section 13.1 is the alternate compensatory action for the two Reactor Building Equipment Hatch Rooms (757.0-A11 & A15). The Reactor Bldg Equipment Hatch Rooms (757.0-A11 & A15) are inaccessible by the placement of the Reactor Building hatch and the shield blocks during plant operation. Due to the construction and thus inaccessibility, an evaluation (see Part VII, section 6.1) has been performed to determine the applicability of the compensatory actions of OR 14.3.1. The results show that this room has such limited fire hazards that the compensatory actions can be omitted without reducing nuclear safety or the fire safe shutdown capability of the plant.

- B.14.3.2** Where redundant FSSD systems or components are not damaged by a single fire, the least restrictive compensatory actions are required for non-functional water based suppression equipment or associated fire detection equipment would necessitate.
- B.14.3.3** The restoration of the equipment to Functional in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with the standard Technical Specifications.

PART II – FIRE PROTECTION PLAN

BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) WATER BASED FIRE SUPPRESSION

- B.14.3.a** TIR 14.3.a verifies the correct alignment for testable valves that are manual, power-operated, and automatic valves in any accessible area in the spray/sprinkler systems flow paths and provides assurance that the proper flow paths exists for spray/sprinkler system function. Testable valves do not include deluge valves for preaction systems. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned and preventing or inhibiting fire suppression activities are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.
- B.14.3.b** TIR 14.3.b ensures that testable valves in the flow path in any accessible area travel through at least one cycle. This is necessary to ensure valves are Functional in the event of a fire. A frequency of 12 months has been shown to be acceptable through operating experience and is consistent with NFPA consensus standard 25 criteria.
- B.14.3.c** TIR 14.3.c ensures that each automatic spray/sprinkler system valve actuates to its correct position. These deluge valves for preaction systems have limited means to ensure a cycle of travel is achieved. Industry practice on cycling these valves by closing the isolation valve all but a few turns until the deluge valve opens and then completing the closing of the isolation valve is used. This TIR also ensures that each testable valve in any inaccessible area travels through at least one cycle. Any pushbuttons provided at deluge valves for manual start of the fire pumps are not tested as a part of this TIR. These pushbuttons are provided for when the deluge valve is manually activated. Upon discovery of a fire, plant personnel are trained to report all fires before trying to fight them. Additional administrative controls are in place to ensure that a fire pump(s) is running when a fire is reported. A unit's Refueling Outage frequency was developed considering that many surveillances can only be performed during an outage. Standard Technical Specification requirements and operating experience has shown these components routinely pass the TIR when performed on the 18 months/Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint.
- B.14.3.d** TIR 14.3.d performs a general, floor level visual inspection of each spray or sprinkler system once every 18 months for accessible areas and for the unit in a Refueling Outage for inaccessible areas. This general inspection identifies any abnormal conditions and/or physical damage to the riser, sprinkler piping network, and hangers. This inspection includes assurance that spray/sprinkler head discharge patterns are not obstructed from providing protection from the hazards present. This inspection is not intended to perform a field verification of the design of the installed spray/sprinkler system. The 18 months/Refueling Outage frequencies have been established and are consistent with standard Technical Specification requirements. Design and modification controls exist to prevent improper fire protection system installation or permanent impairment of function through improper installation of plant equipment.

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- B.14.3.e** TIR 14.3.e verifies during outages that each testable valve in any inaccessible area is visually inspected to be in its correct position. The test is performed during each cold shutdown exceeding 24 hours unless the TIR was performed in the previous 92 days. The verification is performed each 92 days during extended outages. The frequency for the TIR is based on the assumption that the required valves cannot be tested until the plant is in cold shutdown for more than 24 hours. Valves that are locked, sealed, or otherwise secured in position need only be verified to be locked, sealed, etc. since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days during outages has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc. The expected frequency for this testing is each unit's Refueling Outage and is based on operating experience.

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) CARBON DIOXIDE (CO₂) SUPPRESSION SYSTEMS

B.14.4 Carbon Dioxide based fire suppression systems and their associated fire detectors are required to be Functional whenever safety related or FSSD equipment is required to be Functional. The low pressure CO₂ equipment and associated fire detection equipment is provided as a means to directly detect and suppress fires with particular emphasis on preserving the ability to achieve and maintain safe plant shutdown by protecting the fire safe shutdown equipment.

The main emphasis is on early detection to a constantly attended location and automatic actuation of the system for the suppression of a fire while the fire is easily controlled and quickly suppressed before it is capable of damaging fire safe shutdown systems. Two levels of actions are provided in recognition of the varying FSSD impact depending on the location of the fire. The determination whether a single fire can affect redundant FSSD systems or components is based on whether both FSSD paths are in an area with less than a 3-hour fire barrier separating them. This is consistent with Appendix R in that when 3-hour separation is provided, then suppression and detection are not required. Backup suppression equipment is normally the installed hose stations as discussed in Part II, Section 12.2.

The Functionality of the total flooding CO₂ systems is dependent on the discharge areas' compartment integrity provided by the enclosing civil structure. This structure may or may not be a fire-rated assembly. A penetration of such a non-fire-rated or fire-rated assembly invokes compensatory actions for an inoperative CO₂ system only.

Outputs from the associated fire detection equipment also provide for the automatic shutdown of selected plant fans/air movers and dampers. This output is within the scope of this OR for Function B detectors. This automatic shutdown can directly affect the function of the total flooding CO₂ system since the original testing was performed with this automatic shutdown. Manual actions may be used to compensate for this automatic shutdown but the delay is unacceptable.

When a unit is in Modes 5, 6, or core empty, the locations where a continuous fire watch is required may be combined and patrolled by one or more roving fire watch(es) provided the area only affects the unit in Modes 5, 6, or core empty. While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown and more people present that could detect and report a fire (General Employee Training includes how to report a fire). Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner to prevent fires, or if a fire were to occur, ensuring that timely action is taken.

B.14.4.1 More restrictive compensatory actions are appropriate where the total flooding CO₂ system equipment or associated fire detection equipment are provided to protect redundant fire safe shutdown systems or components that may be damaged if a fire occurred.

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- B.14.4.2** Where redundant fire safe shutdown components are not damaged if a fire occurs, the least restrictive compensatory actions are required for non-functional total flooding CO₂ system equipment or associated fire detection equipment. |
- B.14.4.3** The restoration of the equipment to Functional in 14 days is reasonable based on the type of equipment that is out of service. The time frame is consistent with the standard Technical Specifications. |

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) CARBON DIOXIDE (CO₂) SUPPRESSION SYSTEMS

- B.14.4.a** TIR 14.4.a verifies that each of the carbon dioxide storage tank level is greater than the capacity needed to provide two normal timed discharges to the single largest hazard, and that each tank pressure is greater than 270 psig. This surveillance ensures that the quantity of carbon dioxide and the pressure in the tanks are adequate for fire suppression. The frequency of seven days has been established based on consensus standard NFPA 12, and has been shown to be acceptable through operating experience and is consistent with standard Technical Specification requirements.
- B.14.4.b** TIR 14.4.b requires that each valve is visually verified to be in its correct position. This applies to each system's tank shutoff valve and vapor pilot valve. Valves that are locked, sealed, or otherwise secured in position need only be verified to be in the correct position prior to locking, sealing, or securing. No further testing to confirm the valve's position is required to be performed due to the associated hazard of a CO₂ discharge. This surveillance does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned are in the correct position. No NFPA consensus standard requires CO₂ valve position verification on a routine basis. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc.
- B.14.4.c** TIR 14.4.c requires that the system be demonstrated Functional by verifying that the system's valves, timers, associated ventilation system actions (e.g., fans shutdown and damper closure), fire dampers, and fire door release mechanisms actuate automatically upon receipt of a simulated actuation signal. Manual manipulation of this equipment does not need to be tested since the associated actions are demonstrated during the automatic actuation (e.g., opening of an HVAC fan breaker to stop a fan and shut down a damper is accomplished when the fan is shut down by the automatic actuation). A "puff test" is performed to ensure that flow from each nozzle can be achieved. Pneumatic actions/responses are demonstrated by the "puff test" as opposed to the automatic actuation discussed above to provide a more representative test. A pneumatic full flow "puff test" is accomplished using nitrogen or other suitable gas. The 18 month frequency has been shown to be acceptable through operating experience and is consistent with standard Technical Specification requirements.
- B.14.4.d** TIR 14.4.d requires that a visual inspection be performed to verify that discharge nozzles are not physically damaged and that the nozzle orifice openings are not externally obstructed. No actual discharge of carbon dioxide (pneumatic full-flow) is required unless inspection results indicate its advisability. The 18 month frequency is based upon the need to keep CO₂ equipment functional during unit operation, and is consistent with standard Technical Specification requirements.

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BASES – OPERATING REQUIREMENTS (OR) FIRE DETECTION SUPERVISION

B.14.5 The supervisory function of a zone is masked in one of two ways:

1. An Alarm condition on a local panel causes any existing Trouble conditions to clear locally and at the central alarm location. It also prevents any additional Trouble conditions from being annunciated locally and at the constantly attended location.
2. A Trouble condition on a local panel prevents additional Trouble conditions from being annunciated at the constantly attended location. Additional Trouble conditions on other zones or circuits are, however, annunciated on the local panel.

With the supervisory function of a zone listed in Table 14.1 masked by a panel Alarm or Trouble, the supervision must be restored within 8 hours. The 8 hours is reasonable considering: 1) The probability of a zone going into Trouble is minimal; 2) If a zone goes into Trouble, the probability of it being the type of problem that disables the Alarm function of a Class A circuit is minimal; 3) If a zone did have the type of problem that disables the Alarm function, the probability of a fire in that zone is minimal.

If the supervisory function is masked by an annunciation and cannot be unmasked within 8 hours, the zone(s) causing the masking is jumpered out using appropriate plant procedures and compensatory actions and time limits of Section 14.1, 14.2, 14.3, or 14.4, as appropriate, are established. A zone(s) jumpered out, that is addressed by Section 14.1, 14.2, 14.3, or 14.4 will have time limitations to establish compensatory measures, defined compensatory measures, time limitations to address the cause of the masking condition, and reporting requirements to address failure to meet the final repair of the zone(s) of 14.1, 14.2, 14.3, and 14.4. Thus additional time limitations and reporting requirements are not needed in OR 14.5 when an OR related zone(s) is jumpered out. A zone(s) not addressed by Section 14.1, 14.2, 14.3, or 14.4 has controls addressed by the plant's loss prevention program and are outside the scope of this OR.

Masking conditions can be caused by equipment defects that cannot be cleared/ removed by jumpering out a zone(s). In such a case, an evaluation must be made to determine the affect the masking condition has on the OR related equipment. Based on this evaluation, then compensatory measures and time limits of Section 14.1, 14.2, 14.3, or 14.4 are established as appropriate. If the masking condition can not be cleared by jumpering but did not cause an entry into an OR for Section 14.1, 14.2, 14.3, or 14.4, then it is appropriate to ensure a panel listed in Table 14.5 is returned to normal within 14 days.

Normally a circuit that causes an alarm or trouble condition that results in a masking condition is repaired within 8 hours or taken out of service. Due to special situations, it may be desired to clear this masking condition while maintaining the circuit's functional capability to actuate (i.e., alarm) and to detect grounds and to monitor for internal module failures (i.e., trouble) but not the Class A supervision to detect conductor failure. In such special conditions, the resulting temporary modification as controlled by NPG-SPP-09.5 provides the advantage of the circuit remaining alarm functional which is preferable to the lifting of the field wiring, jumpering the monitoring module out

PART II – FIRE PROTECTION PLAN

of service, and thus completely removing any capability of the circuit. An example of this situation is a problem such as a cable between two devices on a circuit must be removed for operational purposes and this causes a trouble but due to the Class A design of the system the devices remain functional. If the circuit field wiring is lifted at the controlling module and the devices taken completely out of service then the resulting compensatory measures is an hourly or continuous fire watch. There is an advantage of having the equipment functional for normal automatic function in lieu of the manual actions of a fire watch and the subsequent fire brigade. The module providing the supervision continues to monitor itself and report trouble conditions of the module and grounds on the circuit. The propose of OR-14.5.3 is to address the masking concern by applying jumpers to the controlling module to clear the trouble and cause the loss of supervision of the field wiring for a break in the conductors but the circuit actuation capability remains functional to provide actuation as well as the circuits ability to detect grounds and internal failures of the monitoring module. The device(s) on either side of this lifted cable are functionally tested for actuation capability at the time the temporary modification is first installed to ensure the functional actuation capability then periodically tested to ensure the continued integrity of the remainder of the circuit. When the portion of the circuit taken out of service includes an initiating device, then the appropriate OR-14.1, -14.3, or -14.4 is entered for the device taken out of service and OR-14.5.3 is entered for the balance of the circuit that is actuation functional. Periodic testing of the circuit is expected every 7 days for detection circuits and every 6 months for suppression system actuation circuits for automatic valves in the flow path. These frequencies are reasonable due to the configuration and work control processes provided at WBN along with the problem reporting process (e.g., corrective action program) which investigates any condition that might have endangered a circuit. In addition, the 6 month testing frequency for the suppression system actuation circuits for automatic valves in the flow path, is reasonable since the associated detection circuits are still available to alert plant personnel of any fire. The frequency of 6 months is the same frequency SQN tests similar suppression system actuation circuits for automatic valves in the flow path. The 30 days to correct this condition is reasonable since the problem is of such a nature that the desire for the continued function of the circuit is of sufficient importance that a temporary modification was generated in lieu of using the 14 day limits of the other ORs referenced. This includes the advantage of maintaining equipment in an automatic mode instead of the reliance on manual actions coupled with the reliability of the administrative controls to prevent damage to the equipment. The need for the extra time may be caused by such factors as inaccessibility due to radiological or personnel safety reasons. The physical action, lifting the field cable in the above example, is a temporary modification and is addressed by appropriate site procedures which are prepared to establish the requirements to address this condition in advance of its implementation.

The temporary, unique configuration addressed in OR-14.5.3 is not applicable to the zones that report the diesel fire pump (DFP) annunciations to the Main Control Room since these DFP zones are Class B and not Class A in accordance with NFPA-72D.

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) FIRE HOSE STATIONS/STANDPIPES

- B.14.6** Fire hose stations listed in Table 14.6, as part of the water suppression system, ensure that adequate manual fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety-related or FSSD equipment is located and to provide backup to primary suppression systems.
- B.14.6.1** With one or more of the fire hose stations non-functional, the degree of fire protection provided to safety related equipment and fire safe shutdown equipment is degraded. Consequently, a backup source of fire hose protection must be supplied from the nearest functional fire hose station. This can be accomplished by routing additional fire hose from an Functional water source (hydrant, hose station, etc.) to the affected area; by staging fire hose immediately outside the affected area; or by providing alternate fire suppression equipment commensurable with the fire hazards present. Normally the method to do this is by providing a gated wye(s) and additional fire hose at the nearest functional fire hose station. In some instances, the physical routing of fire hoses from the Functional hose station to the non-functional hose station may result in a recognizable hazard to operating technicians, plant equipment (e.g., breaching a fire barrier), or the hose itself. In such cases, the hose is appropriately stored at the functional hose station. The completion time of eight hours is reasonable since normally the responding fire brigade brings additional fire hose. In addition, this hose is not for occupant use but restricted for use by trained firefighting personnel.
- The hose stations in the Reactor Buildings' Lower Containment require special consideration. To provide protection during outages (during Modes 5, 6, or core empty), appropriate lengths of hose and nozzles are provided at the fire protection Siamese connection located at the entrance to Lower Containment. In Modes 1 through 4 these hoses are not required since occupancy and access is limited, thus personnel are normally not available locally to use this manual means of firefighting. The hose station valves and water supply are maintained functional. Extra hose and nozzles are available in the Fire Equipment Cages in the plant in case of an emergency.
- B.14.6.2** Restoration of the equipment to Functional status within 14 days is reasonable considering the equipment involved. The time frame is consistent with the standard Technical Specifications.

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) FIRE HOSE STATIONS/STANDPIPES

- B.14.6.a** TIR 14.6.a requires performance of a visual inspection of the fire hose stations in any accessible area to assure all required equipment is at the station and the station is not blocked or obstructed. The frequency of 92 days is considered reasonable in view of the infrequent problems found with hoses and is based on operating experience.
- B.14.6.b** TIR 14.6.b verifies the correct alignment for testable valves (except hose valves) in any accessible area in the fire hose station/standpipe system flow paths and provides assurance that the proper flow paths exists for hose station function. Testable valves do not include deluge valves for normally dry standpipe systems. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves capable of being mispositioned and preventing or inhibiting fire suppression activities are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria established for primary systems valves that are locked, sealed, etc.
- B.14.6.c** TIR 14.6.c ensures that each testable valve (except hose valves) in any accessible area travels through at least one cycle. This TIR is necessary to ensure the valves are Functional in the event of an actuation for fire suppression needs. A frequency of 12 months has been established based on operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.
- B.14.6.d** TIR 14.6.d requires that fire hose, associated with fire hose stations identified in Table 14.6 and stored in unheated areas, undergo a hydrostatic test once every 12 months. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of 12 months is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements.
- B.14.6.e** TIR 14.6.e ensures that each dry standpipe water flow device actuates to its correct position upon an initiation signal. The dry standpipe control valve is a deluge valve for which there is limited means to ensure a complete cycle of travel is achieved. For cycling these valves, the industry practice of closing the isolation valve all but a few turns until the deluge valve opens and then completing the closing of the isolation valve. Also, each testable valve in any inaccessible area travels through at least one cycle. The pushbuttons associated with these hose stations in the Reactor Buildings not only provide a means to open the deluge valve that allows water into the normally dry standpipe system as discussed in Section 12.2 but also start the fire pumps. Although these Reactor Building hose stations are manual and plant personnel are trained to report a fire before fighting it, there are no administrative controls to ensure the deluge valve is activated as there are for the start of the electric motor driven fire pump(s). Therefore, these push buttons are tested. Any other pushbuttons provided

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at hose stations other than the Reactor Buildings for manual start of the fire pumps are not tested as part of this TIR. The 18 month frequency for accessible areas and each unit's Refueling Outage frequency for inaccessible areas was developed considering the scope and requirements of some tests and inspections can only be performed during a unit outage. Operating experience has shown these components routinely pass the TIR when performed on the 18 month/Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint, and is consistent with standard Technical Specification requirements.

- B.14.6.f** TIR 14.6.f requires performance of a visual inspection of the fire hose stations that are in any inaccessible area to assure all required equipment is at the station and the station is not blocked or obstructed. The Refueling Outage frequency was developed considering that many tests and inspections can only be performed during a unit outage. Operating experience has shown these components routinely pass the TIR when performed on each unit's Refueling Outage frequency. Therefore, the frequency was concluded to be acceptable from a reliability standpoint, and is consistent with standard Technical Specification requirements.
- B.14.6.g** TIR 14.6.g requires removal of each fire hose for inspection of the hose condition and gaskets in the hose couplings. Degraded gaskets and/or hoses require replacement. Following inspection and gasket and/or hose replacement, the fire hose must be reracked, preferably at different folds. The 18 month or Refueling Outage frequency was developed considering that some areas can only be accessed during a unit outage, and is consistent with standard Technical Specification requirements.
- B.14.6.h** TIR 14.6.h requires that fire hose, associated with fire hose stations identified in Table 14.6 and stored in a heated area, undergo a hydrostatic test once every three years. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of three years is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements.
- B.14.6.i** TIR 14.6.i verifies the Functionality of each fire hose station valve by partially opening the hose station valve with limited water flow. In the case of selected areas such as the Reactor Building, this flow test can use air in order to address the ALARA concerns. The period of three years between tests is reasonable because the infrequent use of the fire hoses provides for little opportunity for physical degradation or buildup of silt or other obstructions. This surveillance frequency and criteria is consistent with standard Technical Specifications.

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B.14.6.j

TIR 14.6.j verifies correct alignment during outages for each testable valve (except hose valves) in any inaccessible area in the fire hose station/standpipe system flow path and provides assurance that the proper flow paths exists for hose station function. The test is performed during each cold shutdown exceeding 24 hours unless the TIR was performed in the previous 92 days. The verification is performed each 92 days during extended outages. The frequency for the TIR is based on the assumption that the required valves cannot be tested until the plant is in cold shutdown for more than 24 hours. Valves that are locked, sealed, or otherwise secured in position need only be verified to be locked, sealed, etc. since these were verified to be in the correct position before locking, sealing, or securing. A frequency of 92 days during outages has been established and is more conservative than the inspection criteria established for primary system valves that are locked, sealed, etc. The expected frequency for this testing is each refueling outage and is based on operating experience.

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) FIRE HYDRANTS

- B.14.7** Fire hydrants listed in Table 14.7, as part of the water suppression system, ensure that adequate fire suppression capability is available to provide coverage for selected portions of safety-related structures.

The Intake Pumping Station uses fire hydrants as a backup water source for fire hoses used in manual firefighting. For the Diesel Generator Building's Conduit Interface Room, the fire hydrants are the primary and backup water source for fire hoses used in manual firefighting.

Although the specific fire hydrants in Table 14.7 are to remain functional while the safety related or FSSD equipment in the areas is required to be functional, one hydrant (specified in the table) may be non-functional as long as the alternate hydrant remains functional in its place. In the case that the specified hydrant becomes non-functional, it is acceptable for this hydrant to remain such for as long as necessary, since adequate fire suppression capability is provided by the alternate hydrant.

- B.14.7.1** With one or more of the fire hydrants non-functional, the degree of fire protection provided to safety-related equipment and fire safe shutdown systems is degraded. Consequently, a backup source of water must be supplied from the nearest Functional water supply whether it is another Functional fire hydrant or a hose station. This is done by providing a gated wye(s) at the nearest Functional water source. In some instances, the physical routing of fire hoses from the Functional water source to the non-functional fire hydrant may result in a recognizable hazard to operating personnel, plant equipment (e.g., breaching fire barriers), or the hose itself. In such cases, the hose is appropriately stored at the Functional water source with the hose dedicated for hydrant use. The completion time of eight hours is reasonable since normally the responding fire brigade brings additional fire hose. In addition, this hose is not for occupant use, but restricted for use by trained firefighting personnel.

- B.14.7.2** Restoration of the equipment to Functional status within 28 days is reasonable considering the restraints to getting to (i.e., digging up) and restoring (i.e., cure time for concrete thrust blocks) the equipment involved.

PART II – FIRE PROTECTION PLAN

BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) FIRE HYDRANTS

- B.14.7.a** TIR 14.7.a requires performance of a visual inspection of the fire hose equipment dedicated to support the use of fire hydrants for manual firefighting. This assures all required equipment is at the assigned location and is available for use. The frequency of 92 days is considered reasonable in view of the infrequent use of the hose, and is consistent with operating experience.
- B.14.7.b** TIR 14.7.b verifies the correct alignment for testable valves in any accessible area in the fire hydrant flow path and provides assurance that the proper flow paths exists for fire hydrant function. Valves that are locked, sealed, or otherwise secured in position need only be verified to still be locked, sealed, etc., since these were verified to be in the correct position prior to locking, sealing, or securing. This inspection does not require any testing or valve manipulation. Rather, it involves verification that those valves, capable of being mispositioned and preventing or inhibiting fire suppression activities, are in the correct position. A frequency of 92 days has been established and is more conservative than the inspection criteria in standard Technical Specifications for safety system valves that are locked, sealed, etc.
- B.14.7.c** TIR 14.7.c this visual inspection ensures accessibility and condition of the fire hydrants. Fire hydrants are more likely subject to mechanical damage due to their normal locations. The six-month frequency is needed to ensure continued Functionality. The frequency of six months is based on industry operating experience and is consistent with standard Technical Specification requirements.
- B.14.7.d** TIR 14.7.d requires that fire hose dedicated to support fire hydrant use undergo a hydrostatic test once every 12 months. This hose is normally located on a motorized apparatus and is periodically exposed to uncontrolled environmental conditions, mainly atmospheric temperature extremes. This hydrostatic test ensures that the hose is reliable and can withstand the working fire main pressure. Appropriate manufacturers' markings or initials and date by test personnel are sufficient to document this hydrostatic test. The manufacturers' markings are done in accordance with industry consensus standards. Initials and date by test personnel are sufficient to ensure proper controls are maintained. The frequency of 12 months is based upon regulatory guidelines, has been shown to be acceptable through operating experience, and is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.
- B.14.7.e** TIR 14.7.e requires that fire hydrants be inspected and operated once every 12 months to ensure proper function and to flow water from the hydrant until perceptible foreign material has cleared. The frequency of 12 months is consistent with standard Technical Specification requirements and NFPA consensus standard 25 criteria.

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) FIRE-RATED ASSEMBLIES

B.14.8 Fire-rated assemblies/fire barriers (including walls, floors, ceilings, penetration seals, fire doors, electrical raceway fire barrier systems [ERFBS] and radiant energy shields, and fire dampers that comprise the fire boundaries separating redundant safe shutdown components) or separating systems important to safe shutdown within a fire area ensure that fires are confined or adequately retarded from spreading to adjacent portions of the facility prior to detection and extinguishment. Fire-rated assemblies/fire barriers are used in conjunction with other fire protection features such as fire detection and fire suppression systems. Thus, the completion times and compensatory action requirements vary based on the Functionality of the other fire protection features. With the exception of electrical raceway fire barrier systems and radiant energy shields, fire-rated assemblies/fire barriers are depicted on drawings in Part II of the FPR. Cables that require protection are routed in raceways enclosed with fire barriers or radiant energy shields and are identified in Part VI of the FPR.

When a unit is in Modes 5, 6, or core empty, the locations where a continuous fire watch is required may be combined and patrolled by one or more roving fire watch(es) provided the area only affects the unit in Modes 5, 6, or core empty. While the plant is in cold shutdown or refueling there are fewer systems needed for maintaining cold shutdown and more people present that could detect and report a fire (General Employee Training includes how to report a fire). Roving fire watches provide an adequate level of coverage for these systems by ensuring that potential fire hazards are detected and corrected in a timely manner to prevent fires, or if a fire were to occur, ensuring that timely action is taken.

Additionally, during Modes 5, 6, or core empty, it is necessary to breach some fire barriers for longer than 30 days. These breaches are excluded from the 10 CFR 50.72 and 10 CFR 50.73 reviews. The fire barrier components that are breached are as follows:

Reactor Building Equipment Hatch Shield Blocks for the unit in outage.

Doors:

Unit 1 outages: A65, A94, A95, A156, A164, A165,

Unit 2 outages: A78, A97, A98, 157, A166 and A167

Either unit outage: A155

The exemption of the 10 CFR 50.72 and 10 CFR 50.73 reviews for those identified components that are breached to facilitate the outage for longer than 30 days is consistent with other nuclear station practices. Roving fire watches are used until the breaches are restored.

Other than that specified above, the time requirements for correcting equipment problems of OR 14.8 remains the same.

In addition, those fire rated assemblies/fire barriers that are not accessible due to being in long-term high radiation areas are evaluated in Part VII.

PART II – FIRE PROTECTION PLAN

- B.14.8.1** The fire-rated assemblies/fire barriers are provided as a part of the defense-in-depth concept of fire protection. The degradation of an assembly/barrier is reviewed in concert with the other fire protection features available. Thus, this review produces the following:
- a. When the assembly/barrier is degraded and there is no fire detection designed to protect both sides of the assembly/barrier, the continuous fire watch is reasonable.
 - b. When the assembly/barrier is degraded and there is fire detection designed to protect one side of the assembly/barrier, then a roving fire watch is reasonable.
 - c. When the assembly/barrier is degraded and there is suppression and fire detection designed to protect both sides of the assembly/barrier, then no compensatory action is reasonable.

The Functionality or non-functionality of the suppression or fire detection does not need to be addressed in the cases of degraded assemblies/barriers. This is because of the fact that an non-functional suppression or fire detection system/feature that protects Functional safety-related and FSSD equipment has its own compensatory actions.

- B.14.8.2** The completion time of 30 days is reasonable based on the curing time of common fire barrier materials.

PART II – FIRE PROTECTION PLAN

BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) FIRE-RATED ASSEMBLIES

B.14.8.a TIR 14.8.a ensures that fire doors are in the correct position, free to close, and the door is not damaged. NFPA consensus standards do not delineate specific frequencies for visual inspections of fire doors. Plant personnel are provided training in General Employee Training of the importance of maintaining fire doors closed and Functional. Plant fire doors are conspicuously identified as fire doors. Therefore, the 31 day frequency is considered acceptable.

B.14.8.b TIR 14.8.b requires a functional test of all associated release and closing mechanisms and latches on fire door assemblies to ensure fire door Functionality. The frequency of 12 months is consistent with the guidance found in NFPA 80 (Reference 4.4.30).

B.14.8.c TIR 14.8.c requires visual inspections of the surface areas of fire-rated barriers to verify Functionality. Approximately twenty percent of the barriers are inspected every 12 months to ensure that all barriers are inspected at least once every five years. Inspection of bellows, metal plates, ERFBS, or insulation covering a penetration seal, provides verification of the fire-rated assembly/fire barrier integrity, provided there is no apparent change in appearance or abnormal degradation. Inspections validate their functional integrity and ensure that fires are confined or adequately retarded from spreading to adjacent portions of the facility.

The exposed surfaces of the fire-rated assembly/fire barrier are visually inspected to ensure the integrity of the assembly. Fire dampers are part of the fire-rated assembly/fire barrier. Damper inspections are performed in accordance with Fire Operating Requirement instruction 0-FOR-304-3, "Fire Damper (Internal) Visual Inspection-Auxiliary, Control and Diesel Generator Building." There is no disassembly of equipment (e.g., removal of damming material, junction box covers, or conduit fitting covers) to perform this visual inspection. Documentation of these inspections is based on the acceptability of the barrier or barrier portion (i.e., individual sign-offs for each penetration are not required). The barrier acceptability is used since a failed assembly leads to the barrier being declared non-functional not just the assembly. The surveillance frequency and criteria are considered to be adequate since they are consistent with current industry practice of ensuring all barriers are inspected within 5 years. Although the Standard Technical Specifications call for the inspection of the exposed surfaces of each fire rated assemblies every 18 months, it only required 10% of the penetration seals to be inspected. This results in a delay of 15 years to review all penetration seals. These penetration seals are more susceptible to damage than concrete walls and thus fire safety is increased with the additional inspections.

B.14.8.d TIR 14.8.d requires each unit's Refueling Outage frequency visual inspection of the surface area of approximately 33 percent of fire rated assemblies/fire barriers to determine Functionality. Inspection of bellows, metal plates, ERFBSs, radiant energy shields, or insulation covering a penetration seal, provides verification of the fire rated assembly/fire barrier integrity, provided there is no apparent change in appearance or abnormal degradation. Inspections validate their functional integrity and ensure that fires are confined or adequately retarded from spreading to adjacent portions of the facility.

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The exposed surfaces of the fire-rated assembly/fire barrier is visually inspected to ensure the integrity of the assembly. There is no disassembly of equipment (e.g., removal of damming material, junction box covers, or conduit fitting covers) to perform this visual inspection. Documentation of these inspections is based on the acceptability of the barrier or barrier portion (i.e., individual sign-offs for each penetration are not required). The barrier acceptability is used since a failed assembly leads to the barrier being declared non-functional not just the assembly. The surveillance frequency and criteria are considered conservative since they exceed current industry practice of ensuring all barriers are inspected within 5 years. The frequency for inaccessible areas follows the criteria set out for inspections in accessible areas but adapted to the special circumstances associated with inaccessible areas.

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BASES – OPERATING REQUIREMENTS (OR) EMERGENCY BATTERY LIGHTING UNITS

B.14.9 Emergency battery lighting units are required to support a unit shutdown in the event of a fire and coincident loss of offsite power.

An ability to access and operate fire safe shutdown systems is required as well as the protection of such systems. This ability must be capable of being performed in conjunction with the loss of offsite power. To achieve this, emergency battery lighting units with 8 hour lighting capacity are provided.

B.14.9.1 Section 14.9.1 uses the term "alternate battery lighting" for a temporary substitute for installed emergency battery lighting units. This "alternate battery lighting" generally refers to portable, hand-held lighting as addressed in Section 12.7, "Emergency Lighting" of this report. |

B.14.9.2 The restoration of the equipment to Functional in 14 days is reasonable based on the type of equipment that is out of service. |

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) EMERGENCY BATTERY LIGHTING UNITS

- B.14.9.a** TIR 14.9.a verifies proper function of Emergency Battery Lighting (EBL) units by simulating a loss of power. When manually actuated, normal AC power is interrupted to the EBL at the primary or secondary side of the step-down transformer. Thus, the EBL's ability to go from the float charge mode to the discharge mode is fully exercised. This functional test also demonstrates:
- 1) The EBL is configured for automatic operation and is not in the standby mode
 - 2) The load transfer circuitry is functional
 - 3) The lamps are functional
 - 4) Continuity exists between the battery and all lamps
 - 5) The battery is functional
 - 6) The charging circuit is functional
 - 7) The status indicators are functional
- A visual inspection to assess the general condition of the EBL, to detect obvious signs of degradation, and to detect any damage to the unit that may affect Functionality is included. The visual inspection can identify degradation mechanisms at an early stage, and in many cases, can warn personnel of an impending failure. Included is a visual inspection to identify electrolyte leakage, and for vented cells, to determine whether water addition is needed. Early detection of battery leakage allows battery replacement before the leakage results in complete battery failure or in severe damage to other EBL components.
- The frequency of 92 days for accessible EBLs is based upon vendor recommendations and industry practice. Over time, the optimal inspection frequency is driven by trending data.
- The turbine building standby lighting is not tested as a part of the TIR.
- B.14.9.b** TIR 14.9.b requires that a battery is replaced periodically as a function of its service life, the environmental conditions the battery experiences, and a safety factor. The service life and the environmental factors are based on information from the manufacturer. This manufacturer's information plus the safety factor results in the frequencies as shown in chart below.
- B.14.9.c** TIR 14.9.c requires that the EBL in inaccessible areas inside the Unit 1 and 2 Annulus be replaced each refueling outage for that unit and that the tests and inspection described under bases 14.9.a be performed to ensure EBL functionality. This is being done due to the ALARA considerations in the Reactor Building and the limited accessibility during plant operation. The surveillance frequency and battery replacement are considered conservative and reasonable based on the fact that the batteries' life is greater than 18 months that are being replaced on a refueling outage frequency.

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) EMERGENCY BATTERY LIGHTING UNITS

Type of Battery	Environmental Conditions* (ambient temperature)	Service Life (Years)	Replacement Frequency (Years)
Sealed lead acid and calcium alloy	constantly below 95°F	5	3
		15	8
		20	11
Sealed lead acid and calcium alloy	constantly above 95°F	5	1.5
		15	6
		20	8
Sealed lead acid and calcium alloy	Unit 1 and 2 Annulus	15**	Refueling Outage
Solid gel	constantly below 95°F	4	3
Solid gel	constantly above 95°F	4	2

* Based on site environmental drawings for average temperature during normal operation.

**The 15 year service life is for the existing Exide LEC-36. Replacement battery (Sentry PM 6420) has a service life of 5 years. Replacement EBL (Lightguard F-100 w/LC-361 battery) has a service life of 20 years. Regardless of the battery/EBL combination used, the replacement frequency is every refueling outage for batteries in that unit's Annulus.

Type of Battery	Environmental Conditions* (ambient temperature)	Service Life (Years)	Replacement Frequency (Years)
UB 6420	below 84°F	3-5	3
UB6420	above 84°F and below 95°F	<3	1.5
UB 6420	above 95°F	<2	1

* Based on site environmental drawings for average temperature during normal operation.

The replacement method is preferred for the accessible EBL since a periodic, deep discharge (8 hour) test is not recommended by the manufacturer. The refueling outage replacement for inaccessible EBLs is preferred due to ALARA considerations and very limited access to the Reactor Building during operations which means that inspection and testing is only practical during outages. The frequency and criteria is based on vendor recommendations. The turbine building standby lighting is not tested as a part of the TIR.

PART II – FIRE PROTECTION PLAN

BASES – OPERATING REQUIREMENTS (OR) FIRE SAFE SHUTDOWN EQUIPMENT

B.14.10 A minimum set of plant systems and components has been identified at WBN to ensure that the plant can achieve and maintain safe shutdown in the event of plant fires (see Part III, Safe Shutdown Capabilities). In the majority of cases the identified plant systems and components are addressed by WBN Technical Specifications and Technical Requirements Manual which list surveillance requirements for verifying the Operability of the systems and components. This OR lists the systems and components which are not included as part of a Technical Specification or Technical Requirement. The exception to this rule is the 1B-B and 2B-B CCS pumps, this is due to the FSSD analysis for the CCS pumps during different APP R fire scenarios. The 1B-B and 2B-B CCS Pumps are credited to be always available for the 1A and 2A CCS Headers for APP R fire scenarios, when this alignment is not met the associated unit will enter OR 14.10 for that unit. Tech Spec 3.7.16 requires the 1B-B and 2B-B CCS Pumps to be configured to their associated “B” Train CCS systems to mitigate RCS heat loads during specific plant Modes and conditions for Unit 1 and 2. The allowance and note in table 14.10 for the 1B-B and 2B-B CCS Pumps removal from the associated units “A” train CCS alignment within 8 hours of entering Mode 4 from Mode 3 is reasonable, considering time for system re-alignment with low Risk to the associated Unit for an APP R fire to occur within this time limit while still in the applicable APP R Mode. This is the only allowance that would not require entering OR 14.10 conditions actions when the 1B-B or 2B-B CCS Pumps are not aligned to their associated “A” train CCS Header when in Modes 1-3.

This OR is provided to ensure that systems and components which are required for safe shutdown are maintained functional and tested to ensure functionality. The intent of this OR is to ensure the equipment listed in Table 14.10 is capable of performing its FSSD function for the specific unit or both units. To ensure this, equipment listed in Table 14.10 shall satisfy the applicable TIR listed by being Functional, capable of achieving its FSSD Condition, or in its FSSD Condition. The equipment listed in Table 14.10 is considered non-functional when it is not in or cannot achieve its listed Applicable TIR condition. The TIR requirements are based on similar components found in Technical Specifications 3.3.4, Remote Shutdown System.

B.14.10.1 With a safe shutdown component shown in Table 14.10 non-functional, the non-functional component must be restored within 30 days when the unit is in modes 1, 2, or 3.

B.14.10.2 With a breaker and/or valve specified in design output documents as being administratively controlled for Appendix R out of its required position (as noted on the drawing), the breaker and/or valve must be returned to the required position within 30 days when the unit is in Modes 1, 2, or 3. These breakers and/or valves are administratively controlled to prevent inadvertent operation during an Appendix R fire event. There is no TIR associated with the OR since the valves and/or breaker positions are controlled by the applicable System Operating Instruction and the plant’s configuration control program.

B.14.10.3 If the required action and associated completion time are not met, the plant must be placed in a condition where the OR does not apply. If possible, the non-functional or misconfigured component can be placed in the condition required for safe shutdown

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(i.e., close a valve, shutdown a pump, lock open a breaker), or a backup instrument can be provided for monitoring temperature, flow, or pressure. If this cannot be accomplished, an evaluation can be performed to justify using an alternate means to achieve compliance with Appendix R FSSD requirements. The evaluation is performed using the plant's standard review process. The plant's temporary modification process (NPG-SPP-09.5, Reference 4.2.65) can also be used to provide the alternate means of FSSD compliance. If none of the above actions can be accomplished, the unit must be brought to at least Mode 3 within 6-hours and to Mode 4 within the following 12-hours.

B.14.10.4

With a Pressurizer Block Valve is closed in Modes 1, 2, or 3, the Pressurizer Block valve must be restored to OPEN status as soon as possible but not longer than the next refueling outage and an hourly roving or continuous fire watch (see OR 14.10.4) is established within one hour in Auxiliary Building (AB) rooms according to the following table:

Block Valve Closed	Fire Watch in Room
1-FCV-68-332-B	757-A1
	757-A10
2-FCV-68-332-B	757-A16
2-FCV-68-333-A	737-A1B
	757-A21

For a fire in these rooms, the Pressurizer PORV credited for RCS pressure control is the same Train as the CLOSED block valve, and opening of the block valve may not be possible due to the loss of its electrical power source due to cable fire damage. If the block valve is in a CLOSED position, the fire damage may prevent the valve from being opened from the MCR or its auxiliary control switch on its Motor Control Center (MCC) to enable operation of the credited Pressurizer PORV.

WBN procedural guidance (SOI-68.01) directs the operator to close the block valve in the event of a Pressurizer PORV "simmering" excessive leakage to the Pressurizer Relief Tank. Closure of the block valve with power maintained is required under the provisions of Technical Specification 3.4.11 and operation is permitted until the next refueling outage so that maintenance can be performed on the Pressurizer PORV. An Appendix R fire in the rooms listed in the above table damages the power cable or power supply to the block valve, which negates the provision of Technical Specification 3.4.11 to maintain power to the block valve. It also negates the Fire Safe shutdown (FSSD) analysis assumption that the block valve is OPEN or can be opened with a credited Operator Manual Action. In these areas, enhanced measures must be taken to assist in detecting a general fire at its incipient stage to prevent fire growth leading to entry into the Appendix R post fire safe shutdown procedures (0-AOI-30.2 - Reference 4.2.60).

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BASES – TESTING AND INSPECTION REQUIREMENTS (TIR) FIRE SAFE SHUTDOWN EQUIPMENT

- B.14.10.a** TIR 14.10.a is performance of a terminal voltage check (Reference 4.2.19) and an alignment check of the plant's 250 VDC Batteries 1 and 2. This provides assurance that the batteries are functional and aligned to the appropriate DC bus. This check is performed at least once every 31 days when the plant is in modes 1, 2, or 3.
- B.14.10.b** TIR 14.10.b is performance of a breaker alignment check for the 250 VDC Battery Boards 1 and 2 and Distribution Panels 1 and 2. This check provides assurance that breakers which supply control power to Main Turbine trip circuits and RCP breaker trip circuits are aligned properly. This check is performed at least once every 31 days when the plant is in modes 1, 2, or 3.
- B.14.10.c** TIR 14.10.c verifies every 18 months that main steam system valves are capable of being closed via Main Control Room switch. This verifies that each valve operates properly to ensure the isolation of main steam loads when main steam isolation valves become non-functional in the event of fire damage. The valves are tested every 18 months when the unit is shutdown since operation of the valve via the hand switch during operation can cause a reactor trip.
- B.14.10.d** TIR 14.10.d is performance of a channel calibration on instruments required for safe shutdown. Many of these instruments are required for local operation of plant systems and components during a fire event. The performance of the calibration ensures the accuracy of these instruments if use is required. This calibration is performed once per 18 months.
- B.14.10.e** TIR 14.10.e is performance of in-service testing for the Thermal Barrier Booster Pumps under the augmented in-service testing program. These pumps are needed to support fire safe shutdown requirements. The augmented in-service testing program requires flow verification at least once per 92 days to ensure that the pump is functional.
- B.14.10.f** TIR 14.10.f verifies every 92 days that RCS Pressurizer Spray Valves are capable of being closed from the Main Control Room controller. The valves are tested every 92 days (quarterly) in accordance with the augmented in-service testing program.
- B.14.10.g** TIR 14.10.g verifies every 18 months that the Control Rod Drive Cooler Motors and associated dampers operate properly from MCR controls. The CRDM Coolers and dampers are tested every 18 months when the unit is shutdown since these coolers are normally in operation during unit operation. Also, cycling these coolers on and off during plant operation may have an adverse effect on the Rod Position Indication System.
- B.14.10.h** Deleted
- 18 months **B.14.10.i** TIR 14.10.i verifies every 18 months that the Lower Compartment Cooler and Control Rod Drive Cooler System Temperature Control Valves (TCVs) operate properly from MCR controls. The TCVs are tested every 18 months when the unit is shutdown since these coolers are required for Containment cooling during unit operation.

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- B.14.10.j** TIR 14.10.j.a verifies every 31 days that the nitrogen tanks have the quantity and pressure of nitrogen required for operation of the SG PORVs as determined by EPM-SMC-110292 (Reference 4.2.11). This check is performed at least once every 31 days when the plant is in modes 1, 2 or 3.
- TIR 14.10.j.b verifies every 18 months that the SG PORVs can be operated properly from backup control stations using the compressed nitrogen. The SG PORVs are tested every 18 months when the unit is shutdown since these valves are required to be Operable per plant Technical Specifications when the plant is in operating modes 1 through 4 and testing these valves utilizing the nitrogen system makes the valves non-functional.
- TIR 14.10.j.c verifies every 31 days that the back draft will move to the closed position under no/low air flow conditions. The back draft dampers limit the bulk migration of smoke from a fire in the 6.9 Kv Shutdown Board Room (Rooms 757.0-A2 or 757.0-A24) to the corresponding 480 VAC Shutdown Board Room (757.0-A5 or 757.0-A21) in order to facilitate the operation of the steam generator power operated relief valve (PORV) nitrogen stations in the 480 VAC Shutdown Board Rooms. The dampers are designed to close (not required to be air tight) in conjunction with low air flow between the rooms to limit smoke migration. The normal air flow path is from the 6.9 Kv room, through ducting, to the 480 VAC Shutdown Board Room and back to the 6.9 Kv Shutdown Board Room via the dampers. The HVAC system is shutdown during a fire event as part of 0-AOI-30.1 and the dampers will close when the normal air flow is stopped to limit smoke migration from the 6.9 Kv Shutdown Board Room to the 480 VAC Shutdown Board Room. The dampers are not credited for limiting smoke migration in the opposite direction, from the 480 VAC Shutdown Board Room to the 6.9 Kv Shutdown Board Room. The dampers are considered functional when they will close due to low air flow. The FSSD condition for the individual dampers is closed. A damper can be tested by either blocking the air flow through the damper with the door between the two rooms open or by shutting off the air flow. If the door between the two rooms is open, blocking flow to one damper will not affect the HVAC since the area of the open door will exceed the flow area of the back draft damper. These dampers are not required to be NFPA code compliant fire and/or smoke dampers. These dampers facilitate the feasibility and reliability of operator manual actions in accordance with NUREG 1852 (Part II, Reference 4.1.44).
- B.14.10.k** TIR 14.10.k verifies every 92 days that the Auxiliary Control Air Compressors are capable of starting automatically if the air receiver pressure drops below a pre-established setpoint. Re-establishing and maintaining system pressure ensure adequate capacity to meet the needs of the small set of components credited for remote pneumatic operation during Fire Safe Shutdown.
- B.14.10.l** Deleted
- B.14.10.m** TIR 14.10.m verifies every 18 months that Appendix R transfer switches function as intended by the performance of a functional test or continuity check. This ensures that the desired component is available for local control during an Appendix R fire that takes out the normal control circuit. The continuity test is consistent with the surveillance requirements for other safety-related transfer switches (reference Technical Specification Bases SR 3.3.4.2).
- B.14.10.n** TIR 14.10.n verifies every 18 months the remote switches for P-Auto operate correctly when the associated transfer switch is in AUX. This testing is consistent with the

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surveillance requirements for these switches (reference Technical Specification SR3.3.2, 3.3.3, 3.3.4 and 3.7.5).

- B.14.10.o** TIR 14.10.o verifies every 7 days there is adequate pressure, volume and flow of liquid nitrogen for supplying the Appendix R required components. Pressure leaving the skid is verified to be ≥ 120 psig (dual unit operation) or ≥ 100 psig (single unit operation) by reading 0-PI-77-2785. Volume is verified to be ≥ 61 -inches (239,286 scf - dual unit operation) or ≥ 50 -inches (191,543 scf - single unit operation) by reading 0-LI-77-2701. Flow is verified to be ≤ 69.5 scfm (dual unit operation) or ≤ 66.5 scfm (single unit operation) by taking the difference of the tank volume from one inspection to the next and dividing by the elapsed time to yield the average flow from the tank for that time period. Flow rates above these values are indication of a possible leak. These parameters will conservatively supply the operation of the AFW LCVs and PCVs for 38 hours as determined by Calculation MDQ0000772012000033 (volume and flow) (Reference 4.2.12) and Calculation MDQ00103220120188 (pressure) (Reference 4.2.14). This is reasonable time for Operations to refill the tank or connect an alternate high pressure supply such as a nitrogen gas tube trailer. The required alternate nitrogen gas volume is $\geq 80,826$ scf (dual unit operation) or $\geq 39,923$ scf (single unit operation) when only the Appendix R required portion of the nitrogen system required for operation of the AFW LCVs and PCVs is being served with a minimum pressure of 70 psig at the valves and the rest of the system is isolated from the alternate source of nitrogen. Only the low pressure subsystem of the Liquid Nitrogen skid is required.
- B.14.10.p** TIR 14.10.p verifies every 18 months RCP Thermal Barrier Booster Pump trip and Thermal Barrier isolation function can be blocked from MCR controls by the performance of a functional test or continuity check. This test is performed every 18 months when the unit is shutdown since the flow transmitters are required to operate during normal plant operation. This ensures RCP Seal Cooling is maintained in the event CVCS Seal Injection Flow becomes unavailable during an Appendix R fire condition. In the event this circuit would be disabled (e.g.: circuit de-energized) then OR 14.10 actions would be entered.
- B.14.10.q** TIR 14.10.q verifies every 18 months that the RCP Seal Leakoff valves will fail open on loss of air with the Non-essential Control Air header isolated and vented inside Containment. Non-Essential Air solenoids (1-XSV-32-112A1, -112A2, -112B1 & -112B2 and 2-XSV-32-112A1, -112A2, -112B1, -112B2) vent Non-Essential Air solenoids inside Containment with the use of a single hand switch (1-HS-32-112 or 2-HS-32-112A) in the MCR. The function is to vent non-essential air and fail open the RCP Seal Leakoff Valves in a fire safe shutdown condition. This will ensure the ability to maintain RCP Seal Cooling if an Appendix R fire causes one or more RCP Seal Leakoff valves to spuriously close. This surveillance can be performed as a functional test for each of the solenoid vent valves only, since the RCP Seal Leakoff valves fail safe position (open) are tested under the Augmented In-service Testing Program at a similar frequency of once per Refueling Outage (normally 18 months). Each solenoid vent valve must be tested in conjunction with the close interlock contact with 1-FCV-32-110-A and 2-FCV-32-111-B (Non-Essential Air to Containment).
- B.14.10.r** TIR 14.10.r.a verifies every 18 months that the isolation solenoid valves for nitrogen to the MDAFW LCVs and PCVs and isolation of nitrogen to the TDAFW LCVs can be operated from its associated hand switch in the MCR. Nitrogen is a secondary motive force for the MDAFW level and pressure valves and the TDAFW level valves since control air is not credited during a postulated Appendix R event. The solenoid valves isolate the nitrogen sub-header to prevent blowdown of the nitrogen tank in case of a

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failure of valve actuator diaphragm(s) or positioner(s). TIR 14.10.r.a also verifies that 1-XS-77-2561 disables hand switch 1-HS-77-2561A and 2-XS-3-2561 disables hand switch 2-HS-3-164A contacts used to actuate nitrogen sub-header valves for MDAFW LCVs/PCVs with a continuity check. This is necessary to mitigate the consequences of a postulated Appendix R fire resulting in the assumed short circuit of the hand switch contacts which could inadvertently energize (close) the solenoid valve. This test is performed every 18 months when System 77 is inspected as part of the leak check program (Ref. 4.2.73a [WBN-SDD-N3-77A-4001, section 6.0]).

TIR 14.10.r.b verifies every 92 days that each testable valve, in an accessible area, from the liquid nitrogen skid to the AFW LCVs and PCVs are inspected to be in its correct position. Valves that are locked, sealed or otherwise secured in position need only be verified to be locked, sealed, etc., since these were verified to be in the correct position before being locked, sealed or secured.

TIR 14.10.r.c verifies every 18 months functional valve operation with nitrogen for AFW LCVs and PCVs. This functional check verifies proper control of the AFW LCV or PCV when only nitrogen supplies the valve positioner. The valves are tested every 18 months when the unit is shutdown since they are required to be Operable per plant Technical Specifications and testing these valves using the nitrogen system would make the valves inoperable for normal plant operation and LCO 3.7.5, since the Essential Air supply is the normal mode of operation for these AFW valves.

B.14.10.s TIR 14.10.s verifies every 18 months that the Safety Injection System Boron Injection Tank Inlet Shutoff Valves (1/2-FCV-63-39-A, 1/2-FCV-64-40-B) are capable of being closed from a hand switch on a Control and Auxiliary Building (C&A) Vent board by the performance of a functional test. This verifies that each valve operates properly and can be closed if required to support fire safe shutdown. The valves are tested every RFO when the unit is shutdown or during normal unit operation.

B.14.10.t TIR 14.10.t.a verifies every 31 days that the nitrogen tanks for 2-FCV-62-89 have the quantity and pressure of nitrogen required for operation of the valves as determined by MDQ00206220110382 (Reference 4.2.15). This check is performed at least once every 31 days when the plant is in modes 1, 2 or 3.

TIR 14.10.t.b verifies every 18 months that the CVCS normal charging flow control valve can be operated properly from backup control station using the compressed nitrogen. The CVCS normal charging flow control valve is tested every 18 months when the unit is shutdown since these valves are required to be Operable per plant Technical Specifications when the plant is in operating modes 1 through 4 and testing these valves utilizing the nitrogen system makes the valve inoperable.

B.14.10.u TIR 14.10.u verifies that the Alternate Shutdown Hand switches can place the associated component in its FSSD position. This test can be performed as a continuity check or actual functional test. Inherent in testing the "C" Hand switches, they can not be tested without placing the associated Auxiliary switch for that component in Aux also, so in testing the "C" Hand switch the associated Auxiliary switch will also be tested.

B.14.10.v TIR 14.10.v verifies every 18 months normal letdown can be isolated (close 1/2-FCV-62-69B) via local control by the performance of a functional test or continuity check. This test is performed every 18 months when unit is shutdown or during normal

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unit operation. This will ensure capability is maintained to isolate and control RCS inventory during an Appendix R fire.

- B.14.10.w** TIR 14.10.w verifies that the SFPCS HX Supply Header Control Valves can be closed, since these valves are required to be closed in some APP R Fire scenarios.
- B.14.10.x** TIR 14.10.x verifies that the 1B-B and 2B-B CCS Pumps are functional IAW the Section XI program and the pumps are aligned to their associated Units “A” train CCS Header. This ensures the FSSD analysis will be maintained for the CCS system. Allowance away from this alignment is allowed when in compliance with the notes of table 14.10 for the CCS Pumps.
- B.14.10.y** TIR 14.10.y verifies that the manual valves listed in table 14.10 can be operated to their required position in the event of an APP R fire.
- B.14.10.z** TIR 14.10.z verifies the boards and large electrical components needed as a backup power supply to the Unit 1 DCS systems are energized and are capable of supplying the Unit 1 DCS system if needed in an APP R fire.
- B.14.10.aa** TIR 14.10.aa verifies the CARFs can be stopped locally if a fire causes them to inadvertently start and allows control of the CARFs at the switchboards as needed during APP R MCR abandonment. This test can be performed as a continuity check or actual functional test. The transfer switches are tested every 18 months when the unit is shutdown since these fans are required to be operable per plant Technical Specifications.

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TABLE 14.1 FIRE DETECTION INSTRUMENTATION
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A. Diesel Generator Building		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
1	742.0-7 - Diesel Unit 2B-B	0/5	
2	742.0-7 - Diesel Unit 2B-B	0/5	
3	742.0-6 - Diesel Unit 1B-B	0/5	
4	742.0-6 - Diesel Unit 1B-B	0/5	
5	742.0-5 - Diesel Unit 2A-A	0/5	
6	742.0-5 - Diesel Unit 2A-A	0/5	
7	742.0-4 - Diesel Unit 1A-A	0/5	
8	742.0-4 - Diesel Unit 1A-A	0/5	
9	742.0-2 - Lube Oil Storage	0/1	
10	742.0-2 - Lube Oil Storage	0/1	
11	742.0-8 - Fuel Oil Transfer Room	0/1	
12	742.0-8 - Fuel Oil Transfer Room	0/1	
13	742.0-9 - PIPE GALLERY & CORRIDOR		0/6
14	760.5-14 - Air Intake & 760.5-12 - Exhaust Room 2B, El. 7 60	10/0	
15	760.5-11 - Air Intake & 760.5-9 - Exhaust Room 1B, El. 760	10/0	
16	760.5-8 - Air Intake & 760.5-6 - Exhaust Room 2A, El. 760	10/0	
17	760.5-5 - Air Intake & 760.5-3 - Exhaust Room 1A, El. 760	10/0	
18	Diesel Gen. 2B-B Relay Bd, (in 742.0-7)		3/0
19	Diesel Gen. 1B-B Relay Bd, (in 742.0-6)		3/0
20	Diesel Gen. 2A-A Relay Bd, (in 742.0-5)		3/0
21	Diesel Gen. 1A-A Relay Bd, (in 742.0-4)		3/0
22	760.5-13 - 480V Board Room 2B	0/2	
23	760.5-13 - 480V Board Room 2B		0/2
24	760.5-10 - 480V Board Room 1B	0/2	
25	760.5-10 - 480V Board Room 1B		0/2
26	760.5-7 - 480V Board Room 2A	0/2	
27	760.5-7 - 480V Board Room 2A		0/2
28	760.5-4 - 480V Board Room 1A	0/2	
29	760.5-4 - 480V Board Room 1A		0/2
36	East Cable Tray Room, El. 742		0/1
37	West Cable Tray Room, El. 742		0/1
432	742.0-10 - DGB Conduit Interface Room		9/0
			(continued)

** - See Table Notation, Page 12 of 12

PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 2 OF 12)

B. Control Building		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
30	729.0-C1 - Cable Spreading Room C7-C11		0/15
31	729.0-C1 - Cable Spreading Room C7-C11		0/15
32	729.0-C1 - Cable Spreading Room C7-C11		0/15
33	729.0-C1 - Cable Spreading Room C7-C11		0/15
34	729.0-C1 - Cable Spreading Room C3-C7		0/15
35	729.0-C1 - Cable Spreading Room C3-C7		0/15
48	692.0-C11 - Control Bldg. Corridor		0/4
49	692.0-C11 - Control Bldg. Corridor		0/4
50	692.0-C1 - Mechanical Equipment Room		0/2
51	692.0-C1 - Mechanical Equipment Room		0/2
52	692.0-C2 - Mechanical Equipment Room		0/2
53	692.0-C2 - Mechanical Equipment Room		0/2
54	692.0-C3 - 250V Battery Room No. 1		0/3
55	692.0-C3 - 250V Battery Room No. 1		0/3
56	692.0-C4 - 250V Battery Board Room No. 1		2/0
57	692.0-C4 - 250V Battery Board Room No. 1		2/0
58	692.0-C5 - 250V Battery Board Room No. 2		2/0
59	692.0-C5 - 250V Battery Board Room No. 2		2/0
60	692.0-C6 - 250V Battery Room No. 2		0/3
61	692.0-C6 - 250V Battery Room No. 2		0/3
62	692.0-C7 - 24V & 48V Battery Room		0/3
63	692.0-C7 - 24V & 48V Battery Room		0/3
64	692.0-C8 - 24V & 48V Battery Board & Charger Room		2/0
65	692.0-C8 - 24V & 48V Battery Board & Charger Room		2/0
66	692.0-C9 - Communications Room & 692.0-C12 - Secondary Alarm Station		0/4
67	692.0-C9 - Communications Room & 692.0-C12 - Secondary Alarm Station		0/4
68	692.0-C10 - Mechanical Equipment Room		0/2
69	692.0-C10 - Mechanical Equipment Room		0/2
149	729.0-C1 - Cable Spreading Room		0/15
150	729.0-C1 - Cable Spreading Room		0/15
214	755.0-C1 - Mechanical Equipment Room		0/5
215	755.0-C1 - Mechanical Equipment Room		0/5
216	Control Room Filter. B, Duct Det., (in 755.0-C1)		0/1
217	Control Room Filter. B, Duct Det., (in 755.0-C1)		0/1
			(continued)

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 3 OF 12)

B. Control Building (continued)		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
218	Control Room Filter. A, Duct Det., (in 755.0-C1)		0/1
219	Control Room Filter. A, Duct Det., (in 755.0-C1)		0/1
220	755.0-C12 - Main Control Room		27/0
221	755.0-C14 - Technical Support Center & 755.0-C16 - Conference Room & 755.0-C18 - NRC Office & 755.0-C19 - Corridor		0/6
222	755.0-C14 - Technical Support Center & 755.0-C16 - Conference Room & 755.0-C18 - NRC Office & 755.0-C19 - Corridor		0/6
223	755.0-C20 - D.P.S.O. SHOP		0/1
224	755.0-C20 - D.P.S.O. SHOP		0/1
225	755.0-C13 - Relay Room		11/0
226	Electric Cont. Bds., (in 755.0-C12)		12/0
227	755.0-C2 - Women's Toilet & 755.0-C3 - Corridor & 755.0-C4 - Kitchen & 755.0-C5 - Toilet 7 & 755.0-C6 - Locker Room & 755.0-C9 - Conference Room & 755.0-C10 - Shift Operations Supervisor Office	0/4	0/4
228	755.0-C2 - Women's Toilet & 755.0-C3 - Corridor & 755.0-C4 - Kitchen & 755.0-C5 - Toilet 7 & 755.0-C6 - Locker Room & 755.0-C9 - Conference Room & 755.0-C10 - Shift Operations Supervisor Office		0/8
229	Unit 1 Main Control Boards, (in 755.0-C12)		8/0
267	708.0-C1 - Unit 1 Auxiliary Instrument Room,		0/8
268	708.0-C1 - Unit 1 Auxiliary Instrument Room	0/10	
269	708.0-C3 - Computer Room		0/4
270	708.0-C3 - Computer Room	0/4	
271	708.0-C4 - Unit 2 Auxiliary Instrument Room		0/8
272	708.0-C4 - Unit 2 Auxiliary Instrument Room	0/10	
273	708.0-C2 - Corridor		3/0
297	Unit 2 Main Control Boards, (in 755.0-C12)		8/0
298	Common Main Control Boards & M-15, (in 755.0-C12)		12/0
387	Control/Turbine Bldg. Wall, (708, 729, & 755)	0/26	
412	Duplex Relay Boards, (in 755.0-C13)		4/0
			(continued)

** - See Table Notation, Page 12 of 12

PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 4 OF 12)

C. Auxiliary Building		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
39	676.0-A9 - Containment Spray Pump 1A-A		2/0
40	676.0-A8 - Containment Spray Pump 1B-B		2/0
41	676.0-A14 - Containment Spray Pump 2A-A		2/0
42	676.0-A15 - Containment Spray Pump 2B-B		2/0
43	676.0-A11 - Residual Heat Removal Pump 1A-A Room		2/0
44	676.0-A10 - Residual Heat Removal Pump 1B-B Room		2/0
45	676.0-A12 - Residual Heat Removal Pump 2A-A Room		2/0
46	676.0-A13 - Residual Heat Removal Pump 2B-B Room		2/0
47	676.0-A1 - Corridor & 676.0-A5 - Gas Stripper Feed Pump & HUT Recirc. Pump & 676.0-A6 - Spare Room		11/0
70	A5-A11, Col. W-X(in 692.0-A1 - Corridor & 692.0-A14 - Cask Decon. Coll.Tank Room 692.0-A17 - Maintenance and Test Equipment (M&TE) Hot Tool Room 692.0-A18 - Hot Tool Room		0/6
71	A5-A11, Col. W-X(in 692.0-A1 - Corridor & 692.0-A14 - Cask Decon. Coll.Tank Room 692.0-A17 - Maintenance and Test Equipment (M&TE) Hot Tool Room 692.0-A18 - Hot Tool Room		0/6
72	692.0-A6 - Turbine Driven Aux Feed Pump RM 1A-S Room		0/1
73	692.0-A6 - Turbine Driven Aux Feed Pump RM 1A-S Room		0/1
74	692.0-A26 - Turbine Driven Aux Feed Pump RM 2A-S Room		0/1
75	692.0-A26 - Turbine Driven Aux Feed Pump RM 2A-S Room		0/1
76	692.0-A9 - Centrifugal Charging Pump 1A-A Room & 692.0-A10 - Centrifugal Charging Pump 1B-B & 692.0-A11 - Charging Pump Room 1C Room & 692.0-A12 - Safety Injection Pump 1B-B & 692.0-A13 - Safety Injection Pump 1A-A		0/5
77	692.0-A13 - Safety Injection Pump 1A-A		0/1
78	692.0-A12 - Safety Injection Pump 1B-B		0/1
79	692.0-A11 - Charging Pump Room 1C		0/1
(continued)			

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 5 OF 12)

C. Auxiliary Building		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
80	692.0-A10 - Centrifugal Charging Pump 1B-B Room		0/1
81	692.0-A9 - Centrifugal Charging Pump 1A-A Room		0/1
82	692.0-A19 - Safety Injection Pump 2A-A & 692.0-A20 - Safety Injection Pump 2B-B & 692.0-A21 - Charging Pump 2C Room & 692.0-A22 - Centrifugal Charging Pump 2B-B Room & 692.0-A23 - Centrifugal Charging Pump 2A-A Room		0/5
83	692.0-A19 - Safety Injection Pump 2A-A		0/1
84	692.0-A20 - Safety Injection Pump 2B-B		0/1
85	692.0-A23 - Centrifugal Charging Pump 2A-A Room		0/1
86	692.0-A22 - Centrifugal Charging Pump 2B-B Room		0/1
87	692.0-A21 - Charging Pump 2C Room		0/1
88	692.0-A1 - Aux. Bldg. Corridor A1-A8		0/8
89	692.0-A1 - Aux. Bldg. Corridor A1-A8		0/8
90	692.0-A1 - Aux. Bldg. Corridor A8-A15		0/12
91	692.0-A1 - Aux. Bldg. Corridor A81-A15		0/12
92	692.0-A1 - Aux. Bldg. Corridor U-W		0/4
93	692.0-A1 - Aux. Bldg. Corridor U-W		0/4
94	692.0-A7 - Unit 1 Penetration Room		0/2
95	692.0-A7 - Unit 1 Penetration Room		0/2
96	692.0-A25 - Unit 2 Penetration Room		0/2
97	692.0-A25 - Unit 2 Penetration Room		0/2
98	Unit 1 Containment Purge Air Filter, A & B, Duct Det., El. 713 (in 713.0-A6 - Unit 1 Penetration Room)		0/2
99	Unit 1 Containment Purge Air Filter, A & B, Duct Det., El. 713 (in 713.0-A6 - Unit 1 Penetration Room)		0/2
100	Unit 2 Containment Purge Air Filter A & B (in 713.0-A19 - Unit 2 Penetration Room)		0/2
101	Unit 2 Containment Purge Air Filter A & B (in 713.0-A19 - Unit 2 Penetration Room)		0/2
102	713.0-A6 - Unit 1 Penetration Room		0/4
103	713.0-A6 - Unit 1 Penetration Room		0/4
104	713.0-A19 - Unit 2 Penetration Room		0/4
105	713.0-A19 - Unit 2 Penetration Room		0/4
106	713.0-A1 - Auxiliary Corridor A5-11, Col. T-W		0/8
107	713.0-A1 - Auxiliary Corridor A5-11, Col. T-W		0/8

** - See Table Notation, Page 12 of 12

PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 6 OF 12)

C. Auxiliary Building (continued)		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
108	713.0-A3 - Titration Room & 713.0-A4 - Radiochemical Lab & 713.0-A5 - Counting Room		0/3
109	713.0-A3 - Titration Room & 713.0-A4 - Radiochemical Lab & 713.0-A5 - Counting Room		0/3
110	713.0-A1 - Auxiliary Corridor A1-A8, Col. Q-U		0/24
111	713.0-A1 - Auxiliary Corridor A1-A8, Col. Q-U		0/22
112	713.0-A1 - Auxiliary Corridor A8-A15, Col. Q-U		0/15
113	713.0-A1 - Auxiliary Corridor A8-A15, Col. Q-U		0/15
114	729.0-A3 - Waste Package Area Compact Room & 729.0-A4 - Waste Package Area Drum Storage		0/3
115	729.0-A3 - Waste Package Area Compact Room & 729.0-A4 - Waste Package Area Drum Storage		0/3
116	729.0-A5 - Cask Loading Area	0/2	
117	729.0-A5 - Cask Loading Area	0/2	
118	729.0-A6 - Nitrogen Storage/PASF Air Filter Room		4/0
120	Aux. Bldg. Gas Trtmt. Filter A-A, (in 737.0-A5 - Unit 1 Ventilation & Purge Area)		0/1
121	Aux. Bldg. Gas Trtmt. Filter A-train, (in 737.0-A5 - Unit 1 Ventilation & Purge Area)		0/1
123	713.0-A7 - Unit 1 Volume Control Tank Room		0/3
125	713.0-A7 - Unit 1 Volume Control Tank Room		0/3
126	729.0-A9 - Unit 2 Post Accident Sample Room		0/3
127	729.0-A9 - Unit 2 Post Accident Sample Room		0/3
128	729.0-A8 - Unit 1 Post Accident Sample Room		0/3
129	729.0-A8 - Unit 1 Post Accident Sample Room		0/3
130	737.0-A9 - Unit 2 Ventilation & Purge Area		0/5
131	737.0-A9 - Unit 2 Ventilation & Purge Area		0/5
132	737.0-A3A5 - Unit 1 Ventilation & Purge Area		0/5
133	737.0-A3A5 - Unit 1 Ventilation & Purge Area		0/5
134	737.0-A1 - Corridor, A5-A11, Col. U-W		0/7
135	737.0-A1 - Corridor, A5-A11, Col. U-W		0/7
136	737.0-A3 - Unit 1 Heating & Ventilation Room		0/5
137	737.0-A3 - Unit 1 Heating & Ventilation Room		0/5
138	737.0-A12 - Unit 2 Heating & Ventilation Room		0/5
139	737.0-A12 - Unit 2 Heating & Ventilation Room		0/5
140	737.0-A2 - Hot Instrument Shop		0/1
141	737.0-A2 - Hot Instrument Shop		0/1
142	737.0-A1 - Corridor, A1-A8, Col. Q-U		0/13
143	737.0-A1 - Corridor, A1-A8, Col. Q-U		0/13
144	737.0-A1 - Corridor, A8-A15, Col. Q-U		0/10
			(continued)

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 7 OF 12)

C. Auxiliary Building (continued)		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
145	737.0-A1 - Corridor, A8-A15, Col. Q-U		0/10
146	729.0-A6 - Nitrogen Storage/PASF Air Filter Room		4/0
147	Aux. Bldg Gas Trtmt. Filter B-train, (in 737.0-A9 - Unit 2 Ventilation & Purge Area)		0/1
148	Aux. Bldg Gas Trtmt. Filter B-B, (in 737.0-A9 - Unit 2 Ventilation & Purge Area)		0/1
151	713.0-A20 - Unit 2 Volume Control Tank Room		0/3
152	713.0-A20 - Unit 2 Volume Control Tank Room		0/3
156	757.0-A12 - Unit 1 Reactor Bldg. Access Room		0/2
157	757.0-A12 - Unit 1 Reactor Bldg. Access Room		0/2
158	757.0-A14 - Unit 2 Reactor Bldg. Access Room		0/2
159	757.0-A14 - Unit 2 Reactor Bldg. Access Room		0/2
160	757.0-A10 - Miscellaneous Equipment Room		0/4
161	757.0-A10 - Miscellaneous Equipment Room		0/4
162	757.0-A16 - Emergency Gas Treatment Filter Room		0/3
163	757.0-A16 - Emergency Gas Treatment Filter Room		0/3
164	EGTS Filter A-train (in 757.0-A16 - Emergency Gas Treatment Filter Room)		0/1
165	EGTS Filter. A-train (in 757.0-A16 - Emergency Gas Treatment Filter Room)		0/1
166	EGTS Filter. B-train (in 757.0-A16 - Emergency Gas Treatment Filter Room)		0/1
167	EGTS Filter. B-train (in 757.0-A16 - Emergency Gas Treatment Filter Room)		0/1
168	757.0-A11 - Unit 1 Reactor Bldg. Equipment Hatch		0/1
169	757.0-A11 - Unit 1 Reactor Bldg. Equipment Hatch		0/1
170	757.0-A15 - Unit 2 Reactor Bldg. Equipment Hatch		0/1
171	757.0-A15 - Unit 2 Reactor Bldg. Equipment Hatch		0/1
172	757.0-A9 - Unit 1 Personnel & Equipment Access		0/1
173	757.0-A9 - Unit 1 Personnel & Equipment Access		0/1
174	757.0-A17 - Unit 2 Personnel & Equipment Access		0/1
175	757.0-A17 - Unit 2 Personnel & Equipment Access		0/1
176	757.0-A2 - 6.9KV Shutdown Board Room A (480V Shtdn Bd. 1A1)		0/2
			(continued)

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 8 OF 12)

C. Auxiliary Building (continued)		Total Number of Instruments **	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
177	757.0-A2 - 6.9KV Shutdown Board Room A (480V Shtdn Bd. 1A1)		0/2
178	757.0-A2 - 6.9KV Shutdown Board Room A (480V Shtdn Bd. 1A2)		0/2
179	757.0-A2 - 6.9KV Shutdown Board Room A (480V Shtdn Bd. 1A2)		0/2
180	757.0-A5 - 480V Shutdown Board Room 1B		0/2
181	757.0-A5 - 480V Shutdown Board Room 1B		0/2
182	757.0-A5 - 480V Shutdown Board Room 1B		0/3
183	757.0-A5 - 480V Shutdown Board Room 1B		0/3
184	757.0-A2 - 6.9KV Shutdown Board Room A		0/7
185	757.0-A2 - 6.9KV Shutdown Board Room A		0/7
186	757.0-A24 - 6.9KV Shutdown Board Room B		0/7
187	757.0-A24 - 6.9KV Shutdown Board Room B		0/7
188	757.0-A21 - 480V Shutdown Board Room 2A		0/2
189	757.0-A21 - 480V Shutdown Board Room 2A		0/2
190	757.0-A21 - 480V Shutdown Board Room 2A		0/3
191	757.0-A21 - 480V Shutdown Board Room 2A		0/3
192	757.0-A24 - 6.9KV Shutdown Board Room B (480V Shtdn Bd. 2B1)		0/2
193	757.0-A24 - 6.9KV Shutdown Board Room B (480V Shtdn Bd. 2B1)		0/2
194	757.0-A24 - 6.9KV Shutdown Board Room B (480V Shtdn Bd. 2B2)		0/2
195	757.0-A24 - 6.9KV Shutdown Board Room B (480V Shtdn Bd. 2B2)		0/2
196	757.0-A4 - 125V Vital Battery Board Room I		2/0
198	757.0-A3 - 125V Vital Battery Board Room II		2/0
200	757.0-A23 - 125V Vital Battery Board Room III		2/0
202	757.0-A22 - 125V Vital Battery Board Room IV		2/0
204	757.0-A1 - Auxiliary Control Room		0/2
205	757.0-A1 - Auxiliary Control Room		0/2
206	757.0-A25 - Auxiliary Control 1-L-11A Room		0/1
207	757.0-A25 - Auxiliary Control 1-L-11A Room		0/1
208	757.0-A26 - Auxiliary Control 1-L-11B Room		0/1
209	757.0-A26 - Auxiliary Control 1-L-11B Room		0/1
210	757.0-A27 - Auxiliary Control 2-L-11A Room		0/1
211	757.0-A27 - Auxiliary Control 2-L-11A Room		0/1
(continued)			

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
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C. Auxiliary Building (continued)		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
212	757.0-A28 - Auxiliary Control 2-L-11B Room		0/1
213	757.0-A28 - Auxiliary Control 2-L-11B Room		0/1
230	Auxiliary Control Room Bds. L-4A, 4C, 11A & 10 (in 757.0-A1 - Auxiliary Control Room & 757.0-A25 - Auxiliary Control 1-L-11A Room & 757.0-A27 - Auxiliary Control 2-L-11A Room)		12/0
233	782.0-A3 - Unit 2 Control Rod Drive Equipment Room & 782.0-A4 - Pressurizer Heater Xfmr Room - Train B		0/4
234	782.0-A3 - Unit 2 Control Rod Drive Equipment Room & 782.0-A4 - Pressurizer Heater Xfmr Room - Train B		0/4
235	782.0-A1 - Unit 1 Control Rod Drive Equipment Room & 782.0-A2 - Pressurizer Heater Xfmr Room - Train A		0/4
236	782.0-A1 - Unit 1 Control Rod Drive Equipment Room & 782.0-A2 - Pressurizer Heater Xfmr Room - Train A		0/4
237	772.0-A7 - Mechanical Equipment Room 1A		0/2
238	772.0-A7 - Mechanical Equipment Room 1A		0/2
239	772.0-A10 - Mechanical Equipment Room 2A		0/2
240	772.0-A10 - Mechanical Equipment Room 2A		0/2
241	772.0-A6 - 480V Transformer Room 1A		0/3
242	772.0-A6 - 480V Transformer Room 1A		0/3
243	772.0-A5 - 480V Transformer Room 1B		0/3
244	772.0-A5 - 480V Transformer Room 1B		0/3
245	772.0-A12 - 480V Transformer Room 2A		0/3
246	772.0-A12 - 480V Transformer Room 2A		0/3
247	772.0-A11 - 480V Transformer Room 2B		0/3
248	772.0-A11 - 480V Transformer Room 2B		0/3
249	772.0-A4 - 125V Vital Battery Room I		2/0
251	772.0-A3 - 125V Vital Battery Room II		2/0
253	772.0-A14 - 125V Vital Battery Room III		2/0
255	772.0-A13 - 125V Vital Battery Room IV		2/0
257	772.0-A2 - 480V Board Room 1B		0/4
258	772.0-A2 - 480V Board Room 1B		0/4
259	772.0-A1 - 480V Board Room 1A		0/4
260	772.0-A1 - 480V Board Room 1A		0/4
(continued)			

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PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 10 OF 12)

C. Auxiliary Building (continued)		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
261	772.0-A16 - 480V Board Room 2A		0/4
262	772.0-A16 - 480V Board Room 2A		0/4
263	772.0-A15 - 480V Board Room 2B		0/4
264	772.0-A15 - 480V Board Room 2B		0/4
296	Auxiliary Control Room Bds. L-4B, 4D, & 11B, (in 757.0-A1 - Auxiliary Control Room & 757.0-A26 - Auxiliary Control 1-L-11B Room & 757.0-A28 - Auxiliary Control 2-L-11B Room)		8/0
330	676.0-A16 - Unit 1 Pipe Chase & 692.0-A8 - Unit 1 Pipe Chase & 713.0-A28 - Unit 1 Pipe Chase		20/0
331	676.0-A17 - Unit 2 Pipe Chase & 692.0-A24 - Unit 2 Pipe Chase & 713.0-A29 - Unit 2 Pipe Chase		24/0
441	772.0-A8 - Fifth Vital Battery & Board Room		0/2
442	772.0-A8 - Fifth Vital Battery & Board Room		0/2
455	Unit 1 Post Accident Sample Facility Filter, (in 729.0-A6 - N2 Storage/PASF Air Filter Room)		0/1
456	Unit 1 Post Accident Sample Facility Filter, (in 729.0-A6 - N2 Storage/PASF Air Filter Room)		0/1
487	786.0-5 - 225kVA ESBO Diesel Gen. B	0/2	
488	786.0-5 - 225kVA ESBO Diesel Gen. B	0/2	
489	786.0-6 - 225kVA ESBO Diesel Gen. A	0/2	
490	786.0-6 - 225kVA ESBO Diesel Gen. A	0/2	

** - See Table Notation, Page 12 of 12

PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 11 OF 12)

D. Additional Equipment Building		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
122	729.0-A14 - Unit 1 Upper Head Injection Room		6/0
124	729.0-A15 - Unit 2 Upper Head Injection Room/Air Lock, Add. Eqpt. Bldg. U2 EI 729		6/0
153	763.5-A1 - Unit 1 Ice Bin Equipment Room		4/0
154	763.5-A2 - Unit 2 Upper Head Injection Equipment Room		6/0
231	786.5-A1 - Unit 1 Chiller Package Equipment Room		4/0
232	775.25-A1 - Unit 1 Ice Machine Equipment Room		4/0

E. Intake Pumping Station		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
250	ERCW Pump Room A, El. 741	4/0	
277	ERCW Strainer Room A & ERCW Strainer Room B, El. 722		18/0
278	ERCW Pump Room B, El. 741	4/0	
405	Electrical Board Room, El. 711		0/5
406	Electrical Board Room, El. 711		0/5

F. Containment Unit 1		Total Number of Instruments **	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
352	Lower Compt. Coolers, El. 716		4/0
354	Upper Compt. Coolers, El. 801		4/0
356	RCP 2, El. 716	0/2	
357	RCP 2, El. 716	0/2	
360	RCP 1, El. 716	0/2	
361	RCP 1, El. 716	0/2	
364	RCP 3, El. 716	0/2	
365	RCP 3, El. 716	0/2	
368	RCP 4, El. 716	0/2	
369	RCP 4, El. 716	0/2	
372	Reactor Bldg. Annulus		0/26
373	Reactor Bldg. Annulus		0/25
457	Reactor Bldg. Annulus		0/9
458	Reactor Bldg. Annulus		0/8

** - See Table Notation, Page 12 of 12

PART II – FIRE PROTECTION PLAN

TABLE 14.1 FIRE DETECTION INSTRUMENTATION
(PAGE 12 OF 12)

G. Containment Unit 2		Total Number of Instruments**	
ZONE	INSTRUMENT LOCATION	HEAT (A/B)	SMOKE (A/B)
353	Lower Compt. Coolers, El. 716		4/0
355	Upper Compt. Coolers, El. 801		4/0
358	RCP 2, El. 716	0/2	
359	RCP 2, El. 716	0/2	
362	RCP 1, El. 716	0/2	
363	RCP 1, El. 716	0/2	
366	RCP 3, El. 716	0/2	
367	RCP 3, El. 716	0/2	
370	RCP 4, El. 716	0/2	
371	RCP 4, El. 716	0/2	
374	Reactor Bldg. Annulus		0/26
375	Reactor Bldg. Annulus		0/25
459	Reactor Bldg. Annulus		0/9
460	Reactor Bldg. Annulus		0/8

The fire detection instruments located within the containment are not required to be functional during the performance of Type A containment leakage rate tests.

TABLE NOTATION

- ** **A/B:** A is a number of Function A (early warning fire detection and notification only) instruments.
- B is a number of Function B (actuation of fire suppression systems and early warning notification) instruments.

PART II – FIRE PROTECTION PLAN

TABLE 14.3 WATER BASED FIRE SUPPRESSION
(Page 1 of 1)

OR SECTION	SPECIFIC SYSTEMS
14.3.a	Unit 1 Reactor Building - RC Pump Area, Annulus 1-FCV-026-219 1-FCV-026-223 Unit 2 Reactor Building – RC Pump Area, Annulus 2-FCV-026-219 2-FCV-026-223
14.3.b	Auxiliary Building - EI 692, 713, 729, 737, 757, 772, 782 0-FCV-026-191 0-FCV-026-187 0-FCV-026-183 0-FCV-026-143 and 0-FCV-026-322 0-FCV-026-151 and 0-FCV-026-326 0-FCV-026-147
14.3.c	Auxiliary Building - ABGTS Filters, EGTS Filters, Unit 1 and 2 Containment Purge Air Exhaust Filters, 125V Battery and Battery Board Rooms 1-FCV-026-163 2-FCV-026-171 0-FCV-026-175 0-FCV-026-179 1-FCV-026-159 2-FCV-026-155 0-ISV-026-996 0-ISV-026-997 0-ISV-026-998 0-ISV-026-999
14.3.d	Control Building - EI 692, Cable Spreading Room, Operator Living Area 0-FCV-026-203 0-FCV-026-207 0-FCV-026-211
14.3.e	Control Building - MCR Air Filters 0-FCV-026-215
14.3.f	Diesel Building - Corridor Area 0-FCV-026-167
14.3.g	Intake Pump Station 0-FCV-026-26
14.3.h	Turbine Building - Control Building Wall 0-FCV-026-199

PART II – FIRE PROTECTION PLAN

Table 14.5 FIRE DETECTION PANELS

PAGE 1 OF 1

<u>Panel Number</u>	<u>Building</u>	<u>Elevation</u>
0-PNL-013-L600	Control	741
0-PNL-013-L601	Control	741
0-PNL-013-L602	Control	708
0-PNL-013-L603	Control	692
0-PNL-013-L604	Control	692
0-PNL-013-L605	Auxiliary	772
0-PNL-013-L606	Auxiliary	772
0-PNL-013-L607	Auxiliary	772
0-PNL-013-L608	Auxiliary	713
0-PNL-013-L609	Auxiliary	713
0-PNL-013-L610	Auxiliary	782
0-PNL-013-L611	Auxiliary	782
0-PNL-013-L612	Intake Pump Station	711
0-PNL-013-L613	Auxiliary	757
0-PNL-013-L614	Auxiliary	757
0-PNL-013-L615	Auxiliary	757
0-PNL-013-L616	Auxiliary	757
0-PNL-013-L617	Auxiliary	757
0-PNL-013-L618	Auxiliary	757
0-PNL-013-L619	Diesel Generator	742
0-PNL-013-L620	Diesel Generator	742
0-PNL-013-L621	Diesel Generator	760
0-PNL-013-L622	Diesel Generator	742
0-PNL-013-L623	Auxiliary	737
0-PNL-013-L624	Auxiliary	737
0-PNL-013-L625	Auxiliary	737
0-PNL-013-L626	Auxiliary	692
0-PNL-013-L627	Auxiliary	692
0-PNL-013-L628	Auxiliary	692
0-PNL-013-L629	Auxiliary	676
0-PNL-013-L630	Turbine	729
0-PNL-013-L631	Turbine	729
0-PNL-013-L636	Control	708
0-PNL-013-L637	Control	708
0-PNL-013-L638	Control	708

PART II – FIRE PROTECTION PLAN

TABLE 14.6 FIRE HOSE STATIONS
(PAGE 1 OF 4)

LOCATION	ELEVATION	HOSE RACK #
DIESEL GENERATOR BUILDING		
Corridor	742	0-26-1077
Air Exhaust 2B Room	760	0-26-1082
Entrance to 1A Elec. Bd. Room	760	0-26-1080

LOCATION	ELEVATION	HOSE RACK #
UNIT 1 REACTOR BUILDING		
Reactor Coolant Pumps (*)	702	1-26-1220
Reactor Coolant Pumps (*)	702	1-26-1221
Reactor Coolant Pumps (*)	702	1-26-1222
Reactor Coolant Pumps (*)	702	1-26-1223
Reactor Coolant Pumps (*)	702	1-26-1224
Reactor Coolant Pumps (*)	702	1-26-1225
Standpipe R. Bldg. Annulus	Platform 702	1-26-1216
Standpipe R. Bldg. Annulus	Platform 702	1-26-1217
Standpipe R. Bldg. Annulus	Platform 702	1-26-1218
Standpipe R. Bldg. Annulus	Platform 702	1-26-1219
Standpipe R. Bldg. Annulus	Platform 724	1-26-1212
Standpipe R. Bldg. Annulus	Platform 724	1-26-1213
Standpipe R. Bldg. Annulus	Platform 724	1-26-1214
Standpipe R. Bldg. Annulus	Platform 724	1-26-1215
Standpipe R. Bldg. Annulus	Platform 744	1-26-1208
Standpipe R. Bldg. Annulus	Platform 744	1-26-1209
Standpipe R. Bldg. Annulus	Platform 744	1-26-1210
Standpipe R. Bldg. Annulus	Platform 744	1-26-1211
Standpipe R. Bldg. Annulus	Platform 763	1-26-1204
Standpipe R. Bldg. Annulus	Platform 763	1-26-1205
Standpipe R. Bldg. Annulus	Platform 763	1-26-1206
Standpipe R. Bldg. Annulus	Platform 759	1-26-1207
Standpipe R. Bldg. Annulus	Platform 782	1-26-1200
Standpipe R. Bldg. Annulus	Platform 782	1-26-1201
Standpipe R. Bldg. Annulus	Platform 782	1-26-1202
Standpipe R. Bldg. Annulus	Platform 801	1-26-1196
Standpipe R. Bldg. Annulus	Platform 801	1-26-1197
Standpipe R. Bldg. Annulus	Platform 801	1-26-1198
Standpipe R. Bldg. Annulus	Platform 801	1-26-1199

(*) NOTE: Hoses and nozzles are provided at the Siamese connection (1-26-674 and 1-26-675) at the entrance to Unit 1 Reactor Building Lower Containment for outages.

PART II – FIRE PROTECTION PLAN

TABLE 14.6 FIRE HOSE STATIONS
(PAGE 2 OF 4)

LOCATION	ELEVATION	HOSE RACK #
UNIT 2 REACTOR BUILDING		
Reactor Coolant Pumps (*)	702	2-26-1220
Reactor Coolant Pumps (*)	702	2-26-1221
Reactor Coolant Pumps (*)	702	2-26-1222
Reactor Coolant Pumps (*)	702	2-26-1223
Reactor Coolant Pumps (*)	702	2-26-1224
Reactor Coolant Pumps (*)	702	2-26-1225
Standpipe R. Bldg. Annulus	Platform 702	2-26-1216
Standpipe R. Bldg. Annulus	Platform 702	2-26-1217
Standpipe R. Bldg. Annulus	Platform 702	2-26-1218
Standpipe R. Bldg. Annulus	Platform 702	2-26-1219
Standpipe R. Bldg. Annulus	Platform 724	2-26-1212
Standpipe R. Bldg. Annulus	Platform 724	2-26-1213
Standpipe R. Bldg. Annulus	Platform 724	2-26-1214
Standpipe R. Bldg. Annulus	Platform 724	2-26-1215
Standpipe R. Bldg. Annulus	Platform 744	2-26-1208
Standpipe R. Bldg. Annulus	Platform 744	2-26-1209
Standpipe R. Bldg. Annulus	Platform 744	2-26-1210
Standpipe R. Bldg. Annulus	Platform 744	2-26-1211
Standpipe R. Bldg. Annulus	Platform 763	2-26-1204
Standpipe R. Bldg. Annulus	Platform 763	2-26-1205
Standpipe R. Bldg. Annulus	Platform 763	2-26-1206
Standpipe R. Bldg. Annulus	Platform 759	2-26-1207
Standpipe R. Bldg. Annulus	Platform 782	2-26-1200
Standpipe R. Bldg. Annulus	Platform 782	2-26-1201
Standpipe R. Bldg. Annulus	Platform 782	2-26-1202
Standpipe R. Bldg. Annulus	Platform 801	2-26-1196
Standpipe R. Bldg. Annulus	Platform 801	2-26-1197
Standpipe R. Bldg. Annulus	Platform 801	2-26-1198
Standpipe R. Bldg. Annulus	Platform 801	2-26-1199

(*) NOTE: Hoses and nozzles are provided at the Siamese connection (2-26-674 and 2-26-675) at the entrance to Unit 2 Reactor Building Lower Containment for outages.

PART II – FIRE PROTECTION PLAN

TABLE 14.6 FIRE HOSE STATIONS
(PAGE 3 OF 4)

LOCATION	ELEVATION	HOSE RACK #
AUXILIARY BUILDING		
A9V	676	0-26-691
A8T	676	0-26-663
A3T	692	1-26-668
A13S	692	2-26-668
A7W	692	0-26-680
A8X	692	0-26-681
A8T	692	0-26-662
A3T	713	1-26-667
A13T	713	2-26-667
A8W	713	0-26-690
A8T	713	0-26-661
A1V	716	ABH-5, Valves 1-26-674 and -675
A15W	716	ABH-6, Valves 2-26-674 and -675
A8X	729	0-26-658
A8X	729	0-26-659
A5X (AEB-U1)	729	1-26-686
A11X (AEB-U2)	729	2-26-686
A11Y (in the CDWE Building stairwell)	730	0-26-854
A3T	737	1-26-666
A8W	737	0-26-677
A8T	737	0-26-660
A13T	737	2-26-666
A11Y (in the CDWE Building stairwell)	750	0-26-855
A3T	757	1-26-665
A13T	757	2-26-665
A4U	757	1-26-670
A12V	757	2-26-670
A5X	757	0-26-682
A8T	757	0-26-684
A5U	757	ABH-3, Valves 1-26-671 and -672
A11U	757	ABH-4, Valves 2-26-671 and -672
A5X (AEB-U1)	763.5	1-26-693
A11X (AEB-U2)	763.5	2-26-696
A3T	772	1-26-664
A13T	772	2-26-664
A5X (AEB-U1)	775	1-26-694
A4U	782	1-26-669
A12V	782	2-26-669
A5X (AEB-U1)	786.5	1-26-695

PART II – FIRE PROTECTION PLAN

TABLE 14.6 FIRE HOSE STATIONS
(PAGE 4 OF 4)

LOCATION	ELEVATION	HOSE RACK #
CONTROL BUILDING		
Stairwell C-1	692	0-26-1194
Stairwell C-1	708	0-26-1193
Stairwell C-1	729	0-26-1192
Stairwell C-1	755	0-26-1191
Stairwell C-2	692	0-26-1189
Stairwell C-2	708	0-26-1188
Stairwell C-2	729	0-26-1187
Stairwell C-2	755	0-26-1186

LOCATION	ELEVATION	HOSE RACK #
INTAKE PUMPING STATION		
Electrical Board Room	711	0-26-595
Electrical Board Room	711	0-26-596
A Strainer Room	722	0-26-594
B Strainer Room	722	0-26-597
A Fire Pump Room	741	0-26-1710
B Fire Pump Room	741	0-26-1711

PART II – FIRE PROTECTION PLAN

Table 14.7 FIRE HYDRANTS
(Page 1 of 1)

<u>Hydrant Number</u>	<u>Location</u>
0-HYD-026-574	Intake Pumping Station
0-HYD-026-819	Diesel Generator Building (North-West Corner)
0-HYD-026-535 *	Diesel Generator Building (South-East Corner)
0-HYD-026-1661 **	Diesel Generator Building (North-East Corner)

* - This hydrant may be rendered non-functional as long as hydrant 0-HYD-026-1661 is functional as an alternate hydrant.

** - Hydrant 0-HYD-026-1661 is an alternate hydrant that is to remain functional in the event that hydrant 0-HYD-026-535 becomes non-functional.

PART II – FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS
(PAGE 1 OF 4)

DOOR NUMB	ROOMS	CON	RATING (Hours)	LABEL		REFERENCE	
	ROOM 1	ROO					
A3	676.0-A8	676.0-A1	1.5	B		Ref 1&2	
A4	676.0-A9	676.0-A1	1.5	B		Ref 1&2	
A5	676.0-A10	676.0-A1	1.5	B		Ref 1&2	
A6	676.0-A11	676.0-A1	1.5	B		Ref 1&2	
A8	676.0-A12	676.0-A1	1.5	B		Ref 1&2	
A9	676.0-A13	676.0-A1	1.5	B		Ref 1&2	
A10	676.0-A14	676.0-A1	1.5	B		Ref 1&2	
A11	676.0-A15	676.0-A1	1.5	B		Ref 1&2	
A12	676.0-A17	676.0-A1	1.5	B		Ref 1&2	
A25	692.0-A1	692.0-A6	1.5	B		Ref 1&2	
A26	692.0-A1	692.0-A7	1.5	B		Ref 1&2	
A27	692.0-A7	692.0-A8	1.5	B		Ref 1&2	
A28	692.0-A9	692.0-A1	1.5	B		Ref 1&2	
A29	692.0-A10	692.0-A1	1.5	B		Ref 1&2	
A30	692.0-A11	692.0-A1	1.5	B		Ref 1&2	
A31	692.0-A12	692.0-A1	1.5	B		Ref 1&2	
A32	692.0-A13	692.0-A1	1.5	B		Ref 1&2	
A33	692.0-A14	692.0-A1	1.5	B		Ref 1&2	
A36	692.0-A14	692.0-A1	1.5	B		Note (2) Ref 1&2	
A39	692.0-A19	692.0-A1	1.5	B		Ref 1&2	
A40	692.0-A20	692.0-A1	1.5	B		Ref 1&2	
A41	692.0-A21	692.0-A1	1.5	B		Ref 1&2	
A42	692.0-A22	692.0-A1	1.5	B		Ref 1&2	
A43	692.0-A23	692.0-A1	1.5	B		Ref 1&2	
A44	692.0-A25	692.0-A1	1.5	B		Ref 1&2	
A45	692.0-A25	692.0-A24	1.5	B		Ref 1&2	
A46	692.0-A26	692.0-A1	1.5	B		Ref 1&2	
A57	713.0-A2	713.0-A1	3	Note (3)		Ref 1&3	
A60	713.0-A1	713.0-A30	3	A		Ref 1&2	
A62	713.0-A1	713.0-A6	1.5	B		Ref 1&2	
A63	713.0-A6	713.0-A7	1.5	B		Ref 1&2	
A65	713.0-A8	RB Unit 1	3	Note (3)		Ref 1&3	
A68	713.0-A1	713.0-A11	1.5	B		Ref 1&2	
A69	713.0-A1	713.0-A12	1.5	B		Ref 1&2	
A71	713.0-A1	713.0-A15	1.5	B		Ref 1&2	
A72	713.0-A1	713.0-A16	1.5	B		Ref 1&2	
A75	713.0-A1	713.0-A19	1.5	B		Ref 1&2	
A76	713.0-A19	713.0-A20	1.5	B		Ref 1&2	
				(continued)			

PART II – FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS
(PAGE 1 OF 4)

DOOR NUMBER	ROOMS CONNECTING		RATING (Hours)	LABEL	REFERENCE
	ROOM 1	ROOM 2			
A3	676.0-A8	676.0-A1	1.5	B	Ref 1&2
A4	676.0-A9	676.0-A1	1.5	B	Ref 1&2
A5	676.0-A10	676.0-A1	1.5	B	Ref 1&2
A6	676.0-A11	676.0-A1	1.5	B	Ref 1&2
A8	676.0-A12	676.0-A1	1.5	B	Ref 1&2
A9	676.0-A13	676.0-A1	1.5	B	Ref 1&2
A10	676.0-A14	676.0-A1	1.5	B	Ref 1&2
A11	676.0-A15	676.0-A1	1.5	B	Ref 1&2
A12	676.0-A17	676.0-A1	1.5	B	Ref 1&2
A25	692.0-A1	692.0-A6	1.5	B	Ref 1&2
A26	692.0-A1	692.0-A7	1.5	B	Ref 1&2
A27	692.0-A7	692.0-A8	1.5	B	Ref 1&2
A28	692.0-A9	692.0-A1	1.5	B	Ref 1&2
A29	692.0-A10	692.0-A1	1.5	B	Ref 1&2
A30	692.0-A11	692.0-A1	1.5	B	Ref 1&2
A31	692.0-A12	692.0-A1	1.5	B	Ref 1&2
A32	692.0-A13	692.0-A1	1.5	B	Ref 1&2
A33	692.0-A14	692.0-A1	1.5	B	Ref 1&2
A36	692.0-A14	692.0-A1	1.5	B	Note (2) Ref 1&2
A39	692.0-A19	692.0-A1	1.5	B	Ref 1&2
A40	692.0-A20	692.0-A1	1.5	B	Ref 1&2
A41	692.0-A21	692.0-A1	1.5	B	Ref 1&2
A42	692.0-A22	692.0-A1	1.5	B	Ref 1&2
A43	692.0-A23	692.0-A1	1.5	B	Ref 1&2
A44	692.0-A25	692.0-A1	1.5	B	Ref 1&2
A45	692.0-A25	692.0-A24	1.5	B	Ref 1&2
A46	692.0-A26	692.0-A1	1.5	B	Ref 1&2
A57	713.0-A2	713.0-A1	3	Note (3)	Ref 1&3
A60	713.0-A1	713.0-A30	3	A	Ref 1&2
A62	713.0-A1	713.0-A6	1.5	B	Ref 1&2
A63	713.0-A6	713.0-A7	1.5	B	Ref 1&2
A65	713.0-A8	RB Unit 1	3	Note (3)	Ref 1&3
A68	713.0-A1	713.0-A11	1.5	B	Ref 1&2
A69	713.0-A1	713.0-A12	1.5	B	Ref 1&2
A71	713.0-A1	713.0-A15	1.5	B	Ref 1&2
A72	713.0-A1	713.0-A16	1.5	B	Ref 1&2
A75	713.0-A1	713.0-A19	1.5	B	Ref 1&2
A76	713.0-A19	713.0-A20	1.5	B	Ref 1&2
(continued)					

PART II – FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS
(PAGE 2 OF 4)

DOOR NUMBER	ROOMS	CONNECTING	RATING (Hours)	LABEL	REFERENCE
	ROOM 1	ROOM 2			
A78	713.0-A21	RB Unit 2	3	Note (3)	Ref 1&3
A91	713.0-A13	713.0-A28	1.5	B	Ref 1&2
A92	713.0-A14	713.0-A29	1.5	B	Ref 1&2
A95	713.0-A8	RB U1 Airlock	3	Note (3)	Ref 1&3
A96	RB U1 Airlock	RB U1	3	Note (3)	Ref 1&3
A97	713.0-A21	RB U2 Airlock	3	Note (3)	Ref 1&3
A98	RB U2 Airlock	RB U2	3	Note (3)	Ref 1&3
A111	729.0-A5	729.0-A4	1.5	B	Ref 1&2
A122	737.0-A3	737.0-A4	1.5	B	Ref 1&2
A124	737.0-A1A	737.0-A5	1.5	B	Ref 1&2
A125	737.0-A5	737.0-A6	1.5	B	Ref 1&2
A126	737.0-A1C	737.0-A5	1.5	B	Ref 1&2
A129	737.0-A1C	737.0-A9	1.5	B	Ref 1&2
A130	737.0-A9	737.0-A10	1.5	B	Ref 1&2
A131	737.0-A1B	737.0-A9	1.5	B	Ref 1&2
A133	737.0-A11	737.0-A12	1.5	B	Ref 1&2
A138	757.0-A1	757.0-A25	1.5	B	Ref 1&2
A139	757.0-A1	757.0-A26	1.5	B	Ref 1&2
A140	757.0-A1	757.0-A2	1.5	B	Ref 1&2
A141	757.0-A3	757.0-A2	3	A	Ref 1&2
A142	757.0-A4	757.0-A2	3	A	Ref 1&2
A143	757.0-A5	757.0-A2	1.5	B	Ref 1&2
A145	757.0-A5	757.0-A2	1.5	B	Ref 1&2
A152	757.0-A9	757.0-A13	1.5	Note (3)	Ref 1&3
A154	737.0-A1C	757.0-A13	1.5	Note (3)	Ref 1&3
A155	757.0-A10	757.0-A13	1.5	Note (3)	Ref 1&3
A156	757.0-A12	757.0-A13	1.5	Note (3)	Ref 1&3
A157	757.0-A14	757.0-A13	1.5	Note (3)	Ref 1&3
A158	757.0-A16	757.0-A13	1.5	Note (3)	Ref 1&3
A159	757.0-A17	757.0-A13	1.5	Note (3)	Ref 1&3
A162	757.0-A12	763.5-A1	3	A	Ref 1&2
A163	757.0-A21	757.0-A24	1.5	B	Ref 1&2
A164	757.0-A12	RB Unit 1	3	Note (3)	Ref 1&3
A165	757.0-A12	RB Unit 1	3	Note (3)	Ref 1&3
A166	757.0-A14	RB Unit 2	3	Note (3)	Ref 1&3
A167	757.0-A14	RB Unit 2	3	Note (3)	Ref 1&3
A168	757.0-A21	757.0-A24	1.5	B	Ref 1&2
A169	757.0-A22	757.0-A24	3	A	Ref 1&2
A170	757.0-A23	757.0-A24	3	A	Ref 1&2
A171	757.0-A2	757.0-A24	1.5	B	Ref 1&2
A172	757.0-A1	757.0-A24	1.5	B	Ref 1&2
A173	STAIR #4	757.0-A13	1.5	Note (3)	Ref 1&3
(continued)					

PART II – FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS
(PAGE 3 OF 4)

DOOR NUMBER	ROOMS		RATING (Hours)	LABEL	REFERENCE
	ROOM 1	ROOM 2			
A174	757.0-A1	757.0-A27	1.5	B	Ref 1&2
A175	757.0-A1	757.0-A28	1.5	B	Ref 1&2
A180	772.0-A2	772.0-A1	1.5	B	Ref 1&2
A181	772.0-A2	772.0-A3	3	A	Ref 1&2
A182	772.0-A2	772.0-A4	3	A	Ref 1&2
A183	737.0-A13	737.0-A5	3	A	Ref 1&2
A184	772.0-A2	757.0-A2	1.5	Note (3)	Ref 1&3
A185	772.0-A5	772.0-A6	1.5	B	Ref 1&2
A186	772.0-A1	772.0-A6	1.5	B	Ref 1&2
A187	772.0-A1	772.0-A7	1.5	B	Ref 1&2
A188	772.0-A16	772.0-A10	1.5	B	Ref 1&2
A189	772.0-A16	772.0-A11	1.5	B	Ref 1&2
A190	772.0-A11	772.0-A12	1.5	B	Ref 1&2
A191	772.0-A15	757.0-A24	1.5	Note (3)	Ref 1&3
A192	737.0-A9	737.0-A14	1.5	B	Ref 1&2
A193	772.0-A15	772.0-A16	1.5	B	Ref 1&2
A194	772.0-A13	772.0-A15	3	A	Ref 1&2
A195	772.0-A14	772.0-A15	3	A	Ref 1&2
A196	772.0-A15	772.0-A2	1.5	B	Ref 1&2
A197	772.0-A16	772.0-A1	1.5	B	Ref 1&2
A210	772.0-A1	772.0-A8	1.5	B	Ref 1&2
A212	772.0-A10	772.0-A9	1.5	B	Ref 1&2
A213	772.0-A10	772.0-A9	1.5	B	Ref 1&2
C19	Area 63	708.0-C1	3	A	Ref 1&2
C22	708.0-C1	708.0-C2	1.5	B	Ref 1&2
C23	708.0-C2	708.0-C3	1.5	B	Ref 1&2
C24	708.0-C2	708.0-C4	1.5	B	Ref 1&2
C26A	708.0-C2	Turb. Bldg.	3	A	Ref 1&2
C29A	729.0-C1	Turb. Bldg.	3	A	Ref 1&2
C34A	729.0-C1	Turb. Bldg.	3	A	Ref 1&2
C36A	755.0-C3	Turb. Bldg.	3	A	Ref 1&2
C49	755.0-C12	757.0-A5	3	A	Ref 1&2
C50	755.0-C12	757.0-A21	3	A	Ref 1&2
C54A	755.0-C15	Turb. Bldg.	3	A	Ref 1&2
D8A	742.0-2	742.0-9	3	A	Ref 1&2
D10	742.0-D9A	742.0-4	3	A	Ref 1&2
D11	742.0-D9A	742.0-5	3	A	Ref 1&2
D12	742.0-D9B	742.0-6	3	A	Ref 1&2
D13	742.0-D9B	742.0-D7	3	A	Ref 1&2
D22	760.5-1	760.5-4	3	A	Ref 1&2
D24	760.5-4	760.5-7	3	A	Ref 1&2
D27	760.5-7	760.5-10	3	A	Ref 1&2
D30	760.5-10	760.5-13	3	A	Ref 1&2
(continued)					

PART II – FIRE PROTECTION PLAN

TABLE 14.8.1 FIRE DOORS
(PAGE 4 OF 4)

DOOR NUMBER	ROOMS	CONNECTING	RATING (Hours)	LABEL	REFERENCE
	ROOM 1	ROOM 2			
D35	742.0-D9B	Cable Chase B	3	A	Ref 1&2
D36	742.0-D9A	Cable Chase A	3	A	Ref 1&2
DE2	729.0-A4	CDWE	3	A	Ref 1&2
W3	Stair	ERCW Pump Room B	3	A	Ref 1&2
W5	ERCW Pump Room A	Screen Wash & HPFP A Pump Room	3	A	Ref 1&2
W6	ERCW Pump Room B	HPFP B Pump Room	3	A	Ref 1&2
W8	Screen Wash & HPFP A Pump Room	HPFP B Pump Room	3	A	Ref 1&2
W9	Roof Deck EL. 728	ERCW Pump Room A	3	A	Note (1) Ref 1&2
W10A	ERCW Strainer Room B	ERCW Strainer Room A	3	Note (3)	Ref 1&3
W10B	ERCW Strainer Room B	ERCW Strainer Room A	3	Note (3)	Ref 1&3

TABLE 14.8.1 NOTES:

- (1) See Part VII, Deviation and Evaluations for deviation of door gap criteria.
- (2) Door has been permanently closed by DCN D-51255-A as part of the Site Security Plan. Operation of this door is not required as part of the Testing and Inspection Requirements (TIR). Visual inspection requirements still apply.
- (3) Heavy Equipment Door

TABLE 14.8.1 REFERENCES

1. Drawing Series 47W240 "Fire Compartmentation" (Reference 4.2.39)
2. Calculation WCG11876 "Examination and Documentation of Architectural Doors" (Reference 4.2.21a)
3. WB-DC-40-59, "Personnel Access Doors" (Reference 4.2.32)

PART II – FIRE PROTECTION PLAN

TABLE 14.8.2 FIRE DAMPERS
(PAGE 2 OF 6)

AUXILIARY BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
2-isd-31-3857	692.0-A20	692.0-A24	1.5
2-isd-31-3858	692.0-A21	692.0-A24	1.5
2-isd-31-3859	692.0-A22	692.0-A24	1.5
2-isd-31-3860	692.0-A23	692.0-A24	1.5
2-isd-31-3861	692.0-A24	692.0-A25	3
2-isd-31-2930	692.0-A24	692.0-A25	3
2-isd-31-3929	692.0-A25	713.0-A19	3
2-isd-31-3927	713.0-A19	713.0-A29	3
2-isd-31-3871	713.0-A1B	713.0-A19	3
2-isd-31-5447A	713.0-A1B	737.0-A1B	3
2-isd-31-5447B	713.0-A1B	737.0-A1B	3
1-isd-31-3976	713.0-A7	713.0-A6	1.5
1-isd-31-3925	713.0-A6	692.0-A7	3
1-isd-31-3923	713.0-A6	713.0-A28	3
1-isd-31-3817	737.0-A5	713.0-A28	3
1-isd-31-3816	713.0-A12	713.0-A28	3
1-isd-31-3815	713.0-A11	713.0-A28	3
1-isd-31-3805	713.0-A7	713.0-A28	3
1-isd-31-3804	713.0-A1A	713.0-A6	3
2-isd-31-3988	713.0-A1B	692.0-A1B	3
1-isd-31-3995	713.0-A1A	692.0-A1A	3
2-isd-31-3870	713.0-A20	713.0-A29	1.5
2-isd-31-3970	713.0-A20	713.0-A29	1.5
2-isd-31-3873	713.0-A29	713.0-A15	1.5
2-isd-31-3874	713.0-A29	713.0-A16	1.5
2-isd-31-3875	713.0-A29	737.0-A9	1.5
2-isd-31-3876	713.0-A29	737.0-A9	1.5
0-isd-31-3827	729.0-A6	692.0-A14	3
0-isd-31-3823	729.0-A6	692.0-A14	3
0-isd-31-3824	729.0-A6	692.0-A14	3
1-isd-31-3992	729.0-A8	692.0-A14	3
2-isd-31-3882	737.0-A12	737.0-A1B	3
2-isd-31-3881	737.0-A1B	737.0-A9	3
2-isd-31-3880	737.0-A9	737.0-A1B	3
2-isd-31-3879	737.0-A9	737.0-A1B	3
2-isd-31-3877	713.0-A29	737.0-A1B	3
2-isd-31-3869	737.0-A12	713.0-A1B	3
2-isd-31-3883	737.0-A12	737.0-A1B	3
2-isd-31-5452	737.0-A12	737.0-A1B	3
(continued)			

PART II – FIRE PROTECTION PLAN

TABLE 14.8.2 FIRE DAMPERS
(PAGE 3 OF 6)

AUXILIARY BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
2-isd-31-3872	713.0-A29	737.0-A8	1.5
1-isd-31-5150	737.0-A1A	713.0-A1A	3
0-isd-31-3833	729.0-A6	737.0-A9	3
0-isd-31-3834	737.0-A1C	737.0-A9	3
0-isd-31-3843	737.0-A1A	737.0-A5	3
0-isd-31-3845	737.0-A1C	737.0-A5	3
0-isd-31-3846*	737.0-A5	FUEL XFR CANAL	3
0-isd-31-3847*	729.0-A6	737.0-A5	1.5
0-isd-31-3848*	729.0-A6	737.0-A5	1.5
0-isd-31-3849	729.0-A6	737.0-A5	3
2-isd-31-3984	729.0-A6	729.0-A9	3
1-isd-31-3819	737.0-A1A	713.0-A28	1.5
1-isd-31-3818	737.0-A5	713.0-A28	1.5
1-isd-31-3814	737.0-A7	713.0-A28	1.5
1-isd-31-3813	737.0-A5	737.0-A1A	3
1-isd-31-3809	737.0-A5	737.0-A1A	3
1-isd-31-3808	737.0-A5	737.0-A1A	3
1-isd-31-3807	737.0-A3	737.0-A1A	3
1-isd-31-3806	737.0-A3	737.0-A1A	3
1-isd-31-3803	737.0-A3	713.0-A1A	3
1-isd-31-3996	737.0-A1A	713.0-A1A	3
2-isd-31-3884	757.0-A17	757.0-A16	3
2-isd-31-3885	757.0-A13	757.0-A16	3
2-isd-31-3957	757.0-A17	757.0-A13	1.5
2-isd-31-3240	757.0-A13	782.0-A3	1.5
2-isd-31-3239	757.0-A13	782.0-A3	3
2-isd-31-2990	757.0-A13	763.5-A2	3
0-isd-31-2713	757.0-A3	757.0-A2	3
0-isd-31-2715	757.0-A3	757.0-A2	3
0-isd-31-2720	757.0-A1	757.0-A2	3
0-isd-31-2721	757.0-A1	757.0-A2	1.5
0-isd-31-2723	757.0-A1	757.0-A25	3
0-isd-31-2725	757.0-A1	757.0-A25	3
0-isd-31-2726	757.0-A1	757.0-A26	3
0-isd-31-2728	757.0-A1	757.0-A26	3
0-isd-31-2733	757.0-A4	757.0-A2	3
0-isd-31-2771	757.0-A1	757.0-A24	3
0-isd-31-2772	757.0-A1	757.0-A24	1.5
0-isd-31-2774	757.0-A1	757.0-A27	3
0-isd-31-2775	757.0-A1	757.0-A27	3
(continued)			

PART II – FIRE PROTECTION PLAN

TABLE 14.8.2 FIRE DAMPERS
(PAGE 4 OF 6)

AUXILIARY BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
0-isd-31-2777	757.0-A1	757.0-A28	3
0-isd-31-2779	757.0-A1	757.0-A28	3
0-isd-31-2780	757.0-A23	757.0-A24	3
0-isd-31-2782	757.0-A23	757.0-A24	3
0-isd-31-2785	757.0-A22	757.0-A24	3
0-isd-31-3835	757.0-A14	737.0-A9	3
0-isd-31-3836	757.0-A13	757.0-A14	3
0-isd-31-3837	757.0-A13	729.0-A4	3
0-isd-31-3838	757.0-A13	729.0-A3	3
0-isd-31-3839	757.0-A13	757.0-A12	1.5
0-isd-31-3840	757.0-A12	737.0-A5	3
0-isd-31-3841	757.0-A13	757.0-A12	1.5
0-isd-31-3842	757.0-A12	737.0-A5	3
1-isd-31-3966	757.0-A9	757.0-A13	3
1-isd-31-3788	757.0-A10	757.0-A13	3
1-isd-31-3786	757.0-A9	757.0-A10	1.5
0-isd-31-4618	757.0-A5	757.0-A4	3
0-isd-31-4620	757.0-A5	757.0-A2	1.5
0-isd-31-4621	757.0-A5	757.0-A2	1.5
0-isd-31-4622	757.0-A22	757.0-A21	3
0-isd-31-4623	757.0-A24	757.0-A21	1.5
0-isd-31-4624	757.0-A24	757.0-A21	1.5
0-isd-31-4625	757.0-A24	757.0-A21	1.5
0-isd-31-4619	757.0-A5	757.0-A2	1.5
1-isd-31-2987	757.0-A13	763.5-A1	3
2-isd-31-2564	772.0-A14	772.0-A13	3
2-isd-31-2559	772.0-A14	772.0-A15	3
2-isd-31-2558	772.0-A14	772.0-A13	3
2-isd-31-2557	772.0-A14	772.0-A15	3
2-isd-31-2554	772.0-A15	772.0-A16	3
2-isd-31-2526	772.0-A15	772.0-A16	3
2-isd-31-2525	772.0-A13	772.0-A15	3
2-isd-31-2523	772.0-A14	772.0-A15	3
1-isd-31-3119	757.0-A13	782.0-A1	3
1-isd-31-3117	757.0-A13	782.0-A1	3
2-isd-31-2516	772.0-A10	772.0-A16	3
2-isd-31-2515	772.0-A10	772.0-A16	1.5
2-isd-31-2500	757.0-A17	772.0-A10	3
1-isd-31-2526	772.0-A1	772.0-A2	3
1-isd-31-2500	757.0-A9	772.0-A7	3
(continued)			

PART II – FIRE PROTECTION PLAN

TABLE 14.8.2 FIRE DAMPERS
(PAGE 5 OF 6)

AUXILIARY BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
1-ISD-31-2556	772.0-A3	772.0-A4	3
1-ISD-31-2515	772.0-A1	772.0-A7	1.5
0-ISD-31-5455	772.0-A1	772.0-A8	3
1-ISD-31-2554	772.0-A2	772.0-A1	3
1-ISD-31-2555	772.0-A2	772.0-A3	3
1-ISD-31-2525	772.0-A2	772.0-A4	3
1-ISD-31-2516	772.0-A1	772.0-A7	3
1-ISD-31-2523	772.0-A2	772.0-A3	3
1-ISD-31-2504	772.0-A1	772.0-A7	3
2-ISD-31-2504	772.0-A10	772.0-A16	3
2-ISD-31-2519	786.0-A3	772.0-A15	3
2-ISD-31-2518	786.0-A3	772.0-A15	3
2-ISD-31-2517	786.0-A3	772.0-A15	3
1-ISD-31-2517	786.0-A4	772.0-A2	3
1-ISD-31-2518	786.0-A4	772.0-A2	3
1-ISD-31-2519	786.0-A4	772.0-A2	3

CONTROL BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
0-ISD-31-5036	708.0-C2	708.0-C3	3
0-ISD-31-3968	708.0-C3	708.0-C1	1.5
0-ISD-31-3969	708.0-C3	708.0-C1	3
0-ISD-31-3957	708.0-C3	708.0-C1	3
0-ISD-31-3956	708.0-C1	708.0-C3	1.5
0-ISD-31-5035	708.0-C2	708.0-C3	3
0-ISD-31-5034	708.0-C2	708.0-C3	3
0-ISD-31-5033	708.0-C2	708.0-C3	3
2-ISD-31-2058	708.0-C3	708.0-C4	3
2-ISD-31-3955	708.0-C3	708.0-C4	1.5
0-ISD-31-3953	729.0-C1	Area 63, Turbine Bldg	3

PART II – FIRE PROTECTION PLAN

TABLE 14.8.2 FIRE DAMPERS
(PAGE 6 OF 6)

DIESEL GENERATOR BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
0-ISD-30-619	742.0-1	742.0-4	3
0-ISD-30-594	742.0-2	742.0-D9A	3
0-ISD-30-631	760.5-1	760.5-5	3
0-ISD-30-621	760.5-2	760.5-3	3
0-ISD-30-620	760.5-3	742.0-D9A	1.5
0-ISD-30-617	760.5-3	742.0-D9A	3
0-ISD-30-616	760.5-12	742.0-D9B	3
0-ISD-30-1090	760.5-9	742.0-D9N	3

CDWE BUILDING			
IDENTIFICATION NUMBER	ROOMS CONNECTING		RATING (Hours)
	ROOM 1	ROOM 2	
0-ISD-31-2429	Area 62, CDWE BLDG	729.0-A4	1.5
0-ISD-31-2427	Area 62, CDWE BLDG	729.0-A4	1.5

* See FPR Part VII, Section 6.2.

Table 14.8.2 References - See references 4.2.23[CJR1], 4.2.24, 4.2.25, and 4.2.41.

PART II – FIRE PROTECTION PLAN

TABLE 14.10 (Fire Safe Shutdown Equipment)
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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
0-BKD-31-590	480v SHUTDOWN BD RM 2A EXHAUST BACKDRAFT DAMPER	14.10.j.c
0-BKD-31-591	480v SHUTDOWN BD RM 2A EXHAUST BACKDRAFT DAMPER	14.10.j.c
0-BKD-31-592	480v SHUTDOWN BD RM 1B EXHAUST BACKDRAFT DAMPER	14.10.j.c
0-BKD-31-593	480v SHUTDOWN BD RM 1B EXHAUST BACKDRAFT DAMPER	14.10.j.c
0-XS-31-12-A	TRANSFER CONTROL DURING APP R FIRE	14.10.m
0-XS-31-11-B	TRANSFER CONTROL DURING APP R FIRE	14.10.m
0-MTR-32-60	AUX CONTROL AIR COMPRESSOR A-A	14.10.k
0-MTR-32-86	AUX CONTROL AIR COMPRESSOR B-B	14.10.k
0-FI-67-226	ERCW FLOW TO CCS HX-C INDICATOR	14.10.d
0-FCV-70-194	SFPCS HX SUPPLY HEADER FCV	14.10.w
0-FCV-70-197	SFPCS HX SUPPLY HEADER FCV	14.10.w
0-TANK-77-2701	LIQUID NITROGEN STORAGE TANK	14.10.o
0-XS-78-12	SFPCS Pump A-A EMEREGENCY STOP SWITCH	14.10.m
0-XS-78-9	SFPCS Pump B-B EMEREGENCY STOP SWITCH	14.10.m
0-XS-78-35-S	SFPCS Pump C-S EMEREGENCY STOP SWITCH	14.10.m
0-BD-200-A	6.9kV COMMON BD A	14.10.z
0-BD-206-1	480V AUXILIARY BUILDNG COMMON BOARD	14.10.z
0-OXF-206-A	AB COM BD XFMR A	14.10.z
0-BAT-239-1	250V BATTERY 1	14.10.a
0-BAT-239-2	250V BATTERY 2	14.10.a
0-BD-239-1	250V BATTERY BD1	14.10.b
0-BD-239-2	250V BATTERY BD2	14.10.b
0-CHRG-239-1	250V DC BATTERY CHARGER 1	14.10.b
0-DPL-239-1	250VDC TURBINE BLDG DISTRIBUTION BOARD 1	14.10.b
0-DPL-239-2	250VDC TURBINE BLDG DISTRIBUTION BOARD 2	14.10.b
1-FCV-1-36	MAIN FW PUMP TURBINE HP STOP VALVE	14.10.c
1-FCV-1-37	MAIN FW PUMP TURBINE HP CONTROL VALVE	14.10.c
1-FCV-1-43	MAIN FW PUMP TURBINE HP STOP VALVE	14.10.c
1-FCV-1-44	MAIN FW PUMP TURBINE HP CONTROL VALVE	14.10.c
1-FCV-1-75	MOISTURE SEPARATOR REHEATER A2 CONTROL VALVE	14.10.c
1-FCV-1-77	MOISTURE SEPARATOR REHEATER B2 CONTROL VALVE	14.10.c
1-FCV-1-79	MOISTURE SEPARATOR REHEATER C2 CONTROL VALVE	14.10.c
1-FCV-1-84	MOISTURE SEPARATOR REHEATER A1 CONTROL VALVE	14.10.c
1-FCV-1-91	MOISTURE SEPARATOR REHEATER B1 CONTROL VALVE	14.10.c

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TABLE 14.10 (Fire Safe Shutdown Equipment)
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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
1-FCV-1-98	MOISTURE SEPARATOR REHEATER C1 CONTROL VALVE	14.10.c
1-FCV-1-103	MAIN STEAM DUMPVALVE	14.10.c
1-FCV-1-104	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-105	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-106	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-107	MAIN STEAM DUMPVALVE	14.10.c
1-FCV-1-108	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-109	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-110	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-111	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-113	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-114	MAIN STEAM DUMP VALVE	14.10.c
1-FCV-1-147-A	STEAM LINE WARMING VALVE LOOP 1	14.10.c
1-FCV-1-148-B	STEAM LINE WARMING VALVE LOOP 2	14.10.c
1-FCV-1-149-A	STEAM LINE WARMING VALVE LOOP 3	14.10.c
1-FCV-1-150-B	STEAM LINE WARMING VALVE LOOP 4	14.10.c
1-FCV-1-275	MSR A2 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-FCV-1-277	MSR B2 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-FCV-1-279	MSR C2 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-FCV-1-284	MSR A1 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-FCV-1-291	MSR B1 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-FCV-1-298	MSR C1 LOW POWER BYPASS CONTROL VALVE	14.10.c
1-PCV-1-5	N2 OPERATING STATION FOR SG #1 PORV	14.10.j
1-PCV-1-12	N2 OPERATING STATION FOR SG #2 PORV	14.10.j
1-PCV-1-23	N2 OPERATING STATION FOR SG #3 PORV	14.10.j
1-PCV-1-30	N2 OPERATING STATION FOR SG #4 PORV	14.10.j
1-TANK-1-0405A	N2 TANK #1 SUPPLY TO 1-PCV-1-12-B	14.10.j.a (1)
1-TANK-1-0405B	N2 TANK #2 SUPPLY TO 1-PCV-1-12-B	14.10.j.a (1)
1-TANK-1-0406A	N2 TANK #1 SUPPLY TO 1-PCV-1-30-B	14.10.j.a (1)
1-TANK-1-0406B	N2 TANK #2 SUPPLY TO 1-PCV-1-30-B	14.10.j.a (1)
1-TANK-1-0407A	N2 TANK #1 SUPPLY TO 1-PCV-1-23-A	14.10.j.a (1)
1-TANK-1-0407B	N2 TANK #2 SUPPLY TO 1-PCV-1-23-A	14.10.j.a (1)
1-TANK-1-0408A	N2 TANK #1 SUPPLY TO 1-PCV-1-5-A	14.10.j.a (1)
1-TANK-1-0408B	N2 TANK #2 SUPPLY TO 1-PCV-1-5-A	14.10.j.a (1)
1-FCV-3-116A-A	ERCW HDR A ISOLATION VALVE	14.10.n
1-FCV-3-116B-A	ERCW HDR A ISOLATION VALVE	14.10.n
1-FCV-3-126A-B	ERCW HDR B ISOLATION VALVE	14.10.n
1-FCV-3-126B-B	ERCW HDR B ISOLATION VALVE	14.10.n

Note 1: Both tanks of each pair is required at or above listed pressure (Reference 4.2.11).

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TABLE 14.10 (Fire Safe Shutdown Equipment)
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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
1-HS-3-945-A	FIRE SAFE SHUTDOWN ISOL FCV-3-236, 245, 239, 242	14.10.u
1-ISV-3-827	SG 2 MDAFWP LCV ISOLATION VALVE	14.10.y
1-ISV-3-828	SG 1 MDAFWP LCV ISOLATION VALVE	14.10.y
1-PI-3-117	LOCAL MDAFWP A SUCTION PRES INDICATOR	14.10.d
1-PI-3-127	LOCAL MDAFWP B SUCTION PRES INDICATOR	14.10.d
1-PI-3-137	LOCAL TDAFW PUMP SUCTION PRES INDICATOR	14.10.d
1-HS-30-1080	CONTROL ROOM ISOLATION DAMPER	14.10.u
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	14.10.g
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	14.10.g
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	14.10.g
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	14.10.g
1-PDI-30-30C	CONTAINMENT PRESSURE	14.10.d
1-TCO-30-82-B	CONTROL ROD DRIVE CLING 1D-B RM DIVERSION DAMPER	14.10.g
1-TCO-30-85-A	CONTROL ROD DRIVE CLING 1A-A ROOM DIVERSION DAMPER	14.10.g
1-TCO-30-90-A	CONTROL ROD DRIVE CLING 1C-A ROOM DIVERSION DAMPER	14.10.g
1-TCO-30-94-B	CONTROL ROD DRIVE CLING 1B-B ROOM DIVERSION DAMPER	14.10.g
1-XS-30-38A	CNTMT AIR RETURN FAN 1A-A (ISOL)	14.10.aa
1-XS-30-39A	CNTMT AIR RETURN FAN 1B-B (ISOL)	14.10.aa
1-FCV-32-110-A	RB TRAIN A NON-ESSENTIAL CONTROL AIR ISLN VLV	14.10.q
1-XI-32-112A1/A &B	LIGHT INDICATION FOR 1-XSV-32-112A1	14.10.q
1-XI-32-112A2/A &B	LIGHT INDICATION FOR 1-XSV-32-112A2	14.10.q
1-XI-32-112B1/A &B	LIGHT INDICATION FOR 1-XSV-32-112B1	14.10.q
1-XI-32-112B2/A &B	LIGHT INDICATION FOR 1-XSV-32-112B2	14.10.q
1-XSV-32-112A1	CNTMT NON-ESSENTIAL HDR DUMP SOLENOID	14.10.q
1-XSV-32-112A2	CNTMT NON-ESSENTIAL HDR DUMP SOLENOID	14.10.q
1-XSV-32-112B1	CNTMT NON-ESSENTIAL HDR DUMP SOLENOID	14.10.q
1-XSV-32-112B2	CNTMT NON-ESSENTIAL HDR DUMP SOLENOID	14.10.q
1-XS-32-112	TRANSFER TRAIN A OR TRAIN B POWER	14.10.q
1-FSV-47-26A-A	EHC OVERSPEED PROTECTION CONTROL	14.10.h
1-FSV-47-26B-B	EHC OVERSPEED PROTECTION CONTROL	14.10.h
1-FSV-47-24	TRAIN A MAIN TURBINE TRIP SOLENOID	14.10.h
1-FSV-47-27	TRAIN B MAIN TURBINE TRIP SOLENOID	14.10.h
1-FI-62-1A	RCP-1 SEAL INJECTION FLOW INDICATOR	14.10.d
1-FI-62-14A	RCP-2 SEAL INJECTION FLOW INDICATOR	14.10.d
1-FI-62-27A	RCP-3 SEAL INJECTION FLOW INDICATOR	14.10.d
1-FI-62-40A	RCP-4 SEAL INJECTION FLOW INDICATOR	14.10.d

PART II – FIRE PROTECTION PLAN

TABLE 14.10 (Fire Safe Shutdown Equipment)
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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
1-HS-62-69B	LOCAL LETDOWN ISOLATION	14.10.v
1-FI-62-93A	NORMAL CHARGING FLOW INDICATOR	14.10.d
1-LI-62-129A	VCT LEVEL INDICATOR	14.10.d
1-ISV-62-526	CCP 1A-A SEAL INJECTION BYPASS	14.10.y
1-ISV-62-527	CCP 1A-A DISCHARGE VALVE	14.10.y
1-ISV-62-533	CCP 1B-B DISCHARGE VALVE	14.10.y
1-ISV-62-534	CCP 1B-B SEAL INJECTION BYPASS	14.10.y
1-ISV-62-535	1-FCV-62-93 ISOLATION VALVE	14.10.y
1-ISV-62-537	FCV-62-89 UPSTREAM ISOL	14.10.y
1-ISV-62-539	FCV-62-89 DOWNSTREAM ISOL	14.10.y
1-ISV-62-549	SEAL WATER INJECTION FILTER OUTLET	14.10.y
1-ISV-62-550	SEAL WATER INJECTION FILTER OUTLET	14.10.y
1-FCV-63-39-A	SIS BORON INJECTION TANK SHUTOFF VALVE	14.10.s
1-FCV-63-40-B	SIS BORON INJECTION TANK SHUTOFF VALVE	14.10.s
1-FCV-67-146-A	CCS HX A DISCHARGE CONTROL VLV	14.10.w
1-FI-67-61	ERCW SUPPLY HEADER 1A FLOW INDICATOR	14.10.d
1-FI-67-62	ERCW SUPPLY HEADER 1B FLOW INDICATOR	14.10.d
1-TCV-67-84-A	LOWER CNTMT VENT CLR A SUPPLY CONTROL VLV	14.10.i
1-TCV-67-85-A	CONTROL ROD DRIVE VENT CLR A SUPPLY CONTROL VLV	14.10.i
1-TCV-67-92-A	LOWER CNTMT VENT CLR C SUPPLY CONTROL VLV	14.10.i

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TABLE 14.10 (Fire Safe Shutdown Equipment)

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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
1-TCV-67-93-A	CONTROL ROD DRIVE VENT CLR C SUPPLY CONTROL VLV	14.10.i
1-TCV-67-100-B	LOWER CNTMT VENT CLR B SUPPLY CONTROL VLV	14.10.i
1-TCV-67-101-B	CONTROL ROD DRIVE VENT CLR B SUPPLY CONTROL VLV	14.10.i
1-TCV-67-108-B	LOWER CNTMT VENT CLR D SUPPLY CONTROL VLV	14.10.i
1-TCV-67-109-B	CONTROL ROD DRIVE VENT CLR D SUPPLY CONTROL VLV	14.10.i
1-PCV-68-340B	PRESSURIZER SPRAY VALVE	14.10.f
1-PCV-68-340D	PRESSURIZER SPRAY VALVE	14.10.f
1-HS-70-81BA-B	TBBP FLOW DIFF SIGNAL DEFEAT B	14.10.p
1-HS-70-81EA-A	TBBP FLOW DIFF SIGNAL DEFEAT E	14.10.p
1-ISV-70-574	CCS SUPPLY TO NON-REGEN LETDOWN HX ISOL	14.10.y
1-ISV-70-587	CCS OUT/SEAL/ WTR & NON-REGEN LETDOWN HX ISOL	14.10.y
1-ISV-70-705	EXCESS LETDOWN HX CCS RETURN ISOLATION VALVE	14.10.y
1-MTR-70-38-B	CCS PUMP 1B-B	14.10.x(2)
1-MTR-70-130-B	THERMAL BARRIER BOOSTER PUMP 1B-B	14.10.e
1-MTR-70-131-A	THERMAL BARRIER BOOSTER PUMP 1A-A	14.10.e
1-TI-70-154	RHR HX-B OUTLET TEMP (CCS)	14.10.d
1-TI-70-157	RHR HX-A OUTLET TEMP (CCS)	14.10.d
1-TI-70-161	ERCW/CCS HX-A OUTLET TEMP (CCS)	14.10.d
0-TI-70-162	ERCW/CCS HX-C OUTLET TEMP (CCS)	14.10.d
1-TI-74-15	RHR HX-A OUTLET TEMPERATURE	14.10.d
1-TI-74-27	RHR HX-B OUTLET TEMPERATURE	14.10.d
1-TR-74-14P002	RHR HX-A TEMPERATURE RECORDER	14.10.d
1-TR-74-25P002	RHR HX-B TEMPERATURE RECORDER	14.10.d
1-FSV-77-2561	ISOLATION VALVE FOR LIQUID NITROGEN	14.10.r
1-FSV-77-2562	ISOLATION VALVE FOR LIQUID NITROGEN	14.10.r
1-DPL-264-1	120V TSC Distribution Panel 1	14.10.z
2-FCV-1-36	MAIN FW PUMP TURBINE HP STOP VALVE	14.10.c
2-FCV-1-37	MAIN FW PUMP TURBINE HP CONTROL VALVE	14.10.c
2-FCV-1-43	MAIN FW PUMP TURBINE HP STOP VALVE	14.10.c
2-FCV-1-44	MAIN FW PUMP TURBINE HP CONTROL VALVE	14.10.c
2-FCV-1-75	MOISTURE SEPARATOR REHEATER A2 CONTROL VALVE	14.10.c
2-FCV-1-77	MOISTURE SEPARATOR REHEATER B2 CONTROL VALVE	14.10.c
Note 2: Not applicable 8 hours or less prior to entering Mode 4 from Mode 3. See WBN U-1 Tech Spec 3.7.16.		

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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
2-FCV-1-79	MOISTURE SEPARATOR REHEATER C2 CONTROL VALVE	14.10.c
2-FCV-1-84	MOISTURE SEPARATOR REHEATER A1 CONTROL VALVE	14.10.c
2-FCV-1-91	MOISTURE SEPARATOR REHEATER B1 CONTROL VALVE	14.10.c
2-FCV-1-98	MOISTURE SEPARATOR REHEATER C1 CONTROL VALVE	14.10.c
2-FCV-1-103	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-104	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-105	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-106	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-107	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-108	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-109	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-110	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-111	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-112	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-113	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-114	MAIN STEAM DUMP VALVE	14.10.c
2-FCV-1-147-A	STEAM LINE WARMING VALVE LOOP 1	14.10.c
2-FCV-1-148-B	STEAM LINE WARMING VALVE LOOP 2	14.10.c
2-FCV-1-149-A	STEAM LINE WARMING VALVE LOOP 3	14.10.c
2-FCV-1-150-B	STEAM LINE WARMING VALVE LOOP 4	14.10.c
2-FCV-1-275	MSR A2 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-FCV-1-277	MSR B2 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-FCV-1-279	MSR C2 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-FCV-1-284	MSR A1 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-FCV-1-291	MSR B1 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-FCV-1-298	MSR C1 LOW POWER BYPASS CONTROL VALVE	14.10.c
2-PCV-1-5	N2 OPERATING STATION FOR SG #1 PORV	14.10.j
2-PCV-1-12	N2 OPERATING STATION FOR SG #2 PORV	14.10.j
2-PCV-1-23	N2 OPERATING STATION FOR SG #3 PORV	14.10.j
2-PCV-1-30	N2 OPERATING STATION FOR SG #4 PORV	14.10.j
2-TANK-1-0405A	N2 TANK #1 SUPPLY TO 2-PCV-1-12-B	14.10.j.a (3)
2-TANK-1-0405B	N2 TANK #2 SUPPLY TO 2-PCV-1-12-B	14.10.j.a (3)
2-TANK-1-0406A	N2 TANK #1 SUPPLY TO 2-PCV-1-30-B	14.10.j.a (3)
2-TANK-1-0406B	N2 TANK #2 SUPPLY TO 2-PCV-1-30-B	14.10.j.a (3)
2-TANK-1-0407A	N2 TANK #1 SUPPLY TO 2-PCV-1-23-A	14.10.j.a (3)
2-TANK-1-0407B	N2 TANK #2 SUPPLY TO 2-PCV-1-23-A	14.10.j.a (3)
2-TANK-1-0408A	N2 TANK #1 SUPPLY TO 2-PCV-1-5-A	14.10.j.a (3)
2-TANK-1-0408B	N2 TANK #2 SUPPLY TO 2-PCV-1-5-A	14.10.j.a (3)
Note 3: Both tanks of each pair is required at or above listed pressure (Reference 4.2.11).		

PART II – FIRE PROTECTION PLAN

TABLE 14.10 (Fire Safe Shutdown Equipment)

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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
2-FCV-3-116A-A	ERCW HDR A ISOLATION VALVE	14.10.n
2-FCV-3-116B-A	ERCW HDR A ISOLATION VALVE	14.10.n
2-FCV-3-126A-B	ERCW HDR B ISOLATION VALVE	14.10.n
2-FCV-3-126B-B	ERCW HDR B ISOLATION VALVE	14.10.n
2-HS-3-945-A	FIRE SAFE SHUTDOWN ISOL FCV-3-35, 35A, 48, 48A, 90, 90A, 103, 103A, 236, 239, 242, 245, 185, 186, 187, 188	14.10.u
2-ISV-3-827	SG 2 MDAFWP LCV ISOLATION VALVE	14.10.y
2-ISV-3-828	SG 1 MDAFWP LCV ISOLATION VALVE	14.10.y
2-PI-3-117	LOCAL MDAFWP A SUCTION PRES INDICATOR	14.10.d
2-PI-3-127	LOCAL MDAFWP B SUCTION PRES INDICATOR	14.10.d
2-PI-3-137	LOCAL TDAFW PUMP SUCTION PRES INDICATOR	14.10.d
2-HS-30-1080	CONTROL ROOM ISOLATION DAMPER FOR FSV-30-17 &40	14.10.u
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	14.10.g
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	14.10.g
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	14.10.g
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	14.10.g
2-PDI-30-30C	CONTAINMENT PRESSURE	14.10.d
2-TCO-30-82-B	CONTROL ROD DRIVE CLING 2D-B ROOM DIVERSION DAMPER	14.10.g
2-TCO-30-85-A	CRD COOLING UNIT 2A-A ROOM DIVERSION DAMPER	14.10.g
2-TCO-30-90-A	CONTROL ROD DRIVE CLING 2C-A ROOM DIVERSION DAMPER	14.10.g
2-TCO-30-94-B	CONTROL ROD DRIVE CLING 2B-B DIVERSION DAMPER	14.10.g
2-XS-30-38A	CNTMT AIR RETURN FAN 1A-A (ISOL)	14.10.aa
2-XS-30-39A	CNTMT AIR RETURN FAN 1B-B (ISOL)	14.10.aa
2-FCV-32-111-B	RB TRAIN B NON-ESSENTIAL CONTROL AIR ISLN VLV	14.10.q
2-XI-32-112A	LIGHT INDICATION FOR CNTMT NON-ESSENTIAL HDR DUMP SOLENOIDS	14.10.q
2-XSV-32-112A1	UNIT 2 APPENDIX R RX NON-ESSENTIAL AIR VENT VALVE	14.10.q
2-XSV-32-112A2	UNIT 2 APPENDIX R RX NON-ESSENTIAL AIR VENT VALVE	14.10.q
2-XSV-32-112B1	UNIT 2 APPENDIX R RX NON-ESSENTIAL AIR VENT VALVE	14.10.q
2-XSV-32-112B2	UNIT 2 APPENDIX R RX NON-ESSENTIAL AIR VENT VALVE	14.10.q
2-FSV-47-26A-A	EHC OVERSPEED PROTECTION CONTROL	14.10.h
2-FSV-47-26B-B	EHC OVERSPEED PROTECTION CONTROL	14.10.h
2-FSV-47-24	TRAIN A MAIN TURBINE TRIP SOLENOID	14.10.h
2-FSV-47-27	TRAIN B MAIN TURBINE TRIP SOLENOID	14.10.h

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TABLE 14.10 (Fire Safe Shutdown Equipment)

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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
2-FI-62-1A	RCP-1 SEAL INJECTION FLOW INDICATOR	14.10.d
2-FI-62-14A	RCP-2 SEAL INJECTION FLOW INDICATOR	14.10.d
2-FI-62-27A	RCP-3 SEAL INJECTION FLOW INDICATOR	14.10.d
2-FI-62-40A	RCP-4 SEAL INJECTION FLOW INDICATOR	14.10.d
2-HS-62-69B	LOCAL LETDOWN ISOLATION	14.10.v
2-FI-62-93A	NORMAL CHARGING FLOW INDICATOR	14.10.d
2-LI-62-129A	VCT LEVEL INDICATOR	14.10.d
2-ISV-62-526	CCP 1A-A SEAL INJECTION BYPASS	14.10.y
2-ISV-62-527	CCP 1A-A DISCHARGE VALVE	14.10.y
2-ISV-62-535	2-FCV-62-93 ISOLATION VALVE	14.10.y
2-ISV-62-537	FCV-62-89 UPSTREAM ISOL	14.10.y
2-ISV-62-549	SEAL WATER INJECTION FILTER OUTLET	14.10.y
2-ISV-62-550	SEAL WATER INJECTION FILTER OUTLET	14.10.y
2-TANK-62-89A/1	N2 Tank A/1 Supply to 2-FCV-62-89	14.10.t(4)
2-TANK-62-89B/2	N2 Tank B/2 Supply to 2-FCV-62-89	14.10.t(4)
2-TANK-62-89A/3	N2 Tank A/3 Supply to 2-FCV-62-89	14.10.t(4)
2-TANK-62-89B/4	N2 Tank B/4 Supply to 2-FCV-62-89	14.10.t(4)
2-TANK-62-89A/5	N2 Tank A/5 Supply to 2-FCV-62-89	14.10.t(4)
2-TANK-62-89B/6	N2 Tank B/6 Supply to 2-FCV-62-89	14.10.t(4)
2-FCV-63-39-A	SIS BORON INJ TANK INLET SHUTOFF VALVE	14.10.s
2-FCV-63-40-B	SIS BORON INJ TANK INLET SHUTOFF VALVE	14.10.s
2-FI-67-61	ERCW SUPPLY HEADER 2A FLOW INDICATOR	14.10.d
2-FI-67-62	ERCW SUPPLY HEADER 2B FLOW INDICATOR	14.10.d
2-FI-67-222	ERCW SUPPLY HEADER 2A FLOW INDICATOR	14.10.d
2-TCV-67-84-A	LOWER CNTMT VENT CLR A SUPPLY VLV	14.10.i
2-TCV-67-85-A	CONTROL ROD DRIVE VENT CLR A SUPPLY VLV	14.10.i
2-TCV-67-92-A	LOWER CNTMT VENT CLR C SUPPLY VLV	14.10.i
2-TCV-67-93-A	CONTROL ROD DRIVE VENT CLR C SUPPLY VLV	14.10.i
2-TCV-67-100-B	LOWER CNTMT VENT CLR B SUPPLY VLV	14.10.i
2-TCV-67-101-B	CONTROL ROD DRIVE VENT CLR B SUPPLY VLV	14.10.i
2-TCV-67-108-B	LOWER CNTMT VENT CLR D SUPPLY VLV	14.10.i
2-TCV-67-109-B	CONTROL ROD DRIVE VENT COOLER D SUPPLY VLV	14.10.i
2-FCV-67-146-A	CCS HX B DISCHARGE CONTROL VALVE	14.10.w
2-PCV-68-340B	PRESSURIZER SPRAY VALVE	14.10.f
2-PCV-68-340D	PRESSURIZER SPRAY VALVE	14.10.f
2-HS-70-81BA-B	TBBP FLOW DIFF SIGNAL DEFEAT B	14.10.p
2-HS-70-81EA-A	TBBP FLOW DIFF SIGNAL DEFEAT E	14.10.p
2-ISV-70-545A	RHR HX 2A-A INLET VALVE	14.10.y
Note 4: Each tank is required at or above the listed pressure (Reference 4.2.15).		

PART II – FIRE PROTECTION PLAN

TABLE 14.10 (Fire Safe Shutdown Equipment)

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COMPONENT UNID NUMBER	COMPONENT DESCRIPTION	APPLICABLE TIR
2-ISV-70-574	CCS SUPPLY TO NON-REGEN LETDOWN HX ISOL	14.10.y
2-MTR-70-33-B	CCS PUMP 2B-B	14.10.x (5)
2-MTR-70-130-B	THERMAL BARRIER BOOSTER PUMP 2B-B	14.10.e
2-MTR-70-131-A	THERMAL BARRIER BOOSTER PUMP 2A-A	14.10.e
2-TI-70-154	RHR HX-B OUTLET TEMP (CCS)	14.10.d
2-TI-70-157	RHR HX-A OUTLET TEMP (CCS)	14.10.d
2-TI-70-161	ERCW/CCS HX-B OUTLET TEMP (CCS)	14.10.d
2-TI-74-15	RHR HX-A OUTLET TEMPERATURE	14.10.d
2-TI-74-27	RHR HX-B OUTLET TEMPERATURE	14.10.d
2-TR-74-14P002	RHR HX-A TEMPERATURE RECORDER	14.10.d
2-TR-74-25P002	RHR HX-B TEMPERATURE RECORDER	14.10.d
2-FSV-77-2561	ISOLATION VALVE FOR LIQUID NITROGEN	14.10.r
2-FSV-77-2562	ISOLATION VALVE FOR LIQUID NITROGEN	14.10.r
Note 5: Not applicable 8 hours or less prior to entering Mode 4 from Mode 3. See WBN U-2 Tech Spec 3.7.16.		

1.0 INTRODUCTION

Part III describes the methodology used to identify, select, and analyze the systems, components, and cables needed to demonstrate compliance with Appendix R to 10 CFR 50, and the applicable Nuclear Regulatory Commission (NRC) generic letters. The safe shutdown analysis methodology as applied at Watts Bar Nuclear Plant (WBN) is also described.

Paragraph 50.48 of 10 CFR 50 became effective on February 17, 1981 and requires all nuclear plants licensed to operate prior to January 1, 1979 to comply with the requirements of 10 CFR 50 Appendix R Sections III.G, III.J, and III.O regardless of any previous approvals by the NRC of other design features. Section III.G.1 requires that fire protection features be provided for those systems, structures, and components important to safe shutdown. These features shall be capable of limiting fire damage so that:

- (1) One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or the emergency control station(s) is free of fire damage; and
- (2) Systems necessary to achieve and maintain cold shutdown from either the control room or the emergency control station(s) can be repaired within 72 hours.

Where alternative shutdown capability is required (i.e., for control building fires that require shutdown from outside of the Main Control Room), cold shutdown must be achieved within 72 hours. Alternate shutdown capability is evaluated per Appendix R Sections III.G.3 and III.L. Plant locations that do not require alternative shutdown capability are evaluated per Section III.G.2 of Appendix R. Generic Letter 81-12 (February 20, 1981) Enclosure 1 "Staff Position", (Part II, Reference 4.1.12) provides additional guidance on the NRC's requirements for safe shutdown capability.

1.1 Design Basis Evaluation

The purpose of this evaluation is to demonstrate fire safe shutdown capability for postulated fires involving in situ and/or transient combustibles that could impact systems, structures, or components located in or adjacent to that area. For purposes of this evaluation, it is assumed that these fires may adversely affect those systems, structures or components essential to safe shutdown. The availability of offsite power for specific systems and/or fire scenarios has been evaluated for non-alternative shutdown locations. Cases for only on-site power available and for off-site power available are evaluated for control building fires, for which alternative shutdown is provided. No concurrent or sequential design basis accidents or transients are assumed to occur. Failures that are a consequence of the fire are evaluated.

1.2 Limiting Safety Consequences

The limiting safety consequences used in the evaluation of fire safe shutdown are: (1) no fuel failure due to calculated cladding temperature increases; (2) no rupture of any primary coolant boundary; (3) no rupture of the containment boundary; (4) following the event, the reactor coolant system process variables shall be within those predicted for a loss of normal AC power; and (5) shutdown capability shall be able to achieve and maintain subcritical conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby conditions for an extended period of time, achieve cold shutdown conditions within 72 hours with equipment

powered by onsite power sources if using alternative shutdown methods, and maintain cold shutdown conditions thereafter.

Generic Letter 81-12, Enclosure 1, (Part II, Reference 4.1.12) specifies the performance goals and associated safe shutdown functions necessary to ensure the limiting safety consequences of the fire safe shutdown analysis. Other sub-functions may exist under each of these broad headings. Examples of such sub-functions are steam generator level control and steam generator pressure control which exist as part of reactor heat removal. Steam generator level and pressure control are required during hot standby. However, during certain portions of hot shutdown and all of cold shutdown, the residual heat removal system is in operation and these sub-functions are not required. Other sub-functions such as emergency power, process cooling, etc., are included as support functions.

In addition to the performance goals and safe shutdown functions identified in Generic Letter 81-12, the reactor coolant pressure control function has been included. Although this function could be placed within the reactor coolant makeup function and reactor heat removal function, the specific goals achieved by the performance of this function are unique enough to warrant a separate safe shutdown function classification. Multiple spurious operation of components due to fire damage on cables has also been considered.

The performance goals and safe shutdown functions identified in the generic letter adequately ensure that the containment pressure boundary is not threatened. Uncontrolled mass and energy releases to the containment from the primary systems are limited by the achievement of these safe shutdown functions and ensures that no rupture of the reactor coolant or containment pressure boundaries occurs.

Figures III-1 through III-4 present the Appendix R safe shutdown/interaction analysis flow chart. The figures include:

- (1) Identification of performance goals and functions
- (2) Identification of safe shutdown systems
- (3) Identification of safe shutdown equipment
- (4) Identification of safe shutdown cables
- (5) Performance of separation/interaction analysis
- (6) Documentation of compliance strategies

These topics are described below.

2.0 SAFE SHUTDOWN FUNCTIONS

This section provides a brief overview of the WBN safe shutdown functions. The specific safe shutdown functions necessary to satisfy the performance goals and safe shutdown functions of Appendix R as identified in Enclosure 1 to Generic Letter 81-12 are:

- (1) The reactivity control function
- (2) The reactor coolant makeup function
- (3) The reactor coolant pressure control function
- (4) The reactor/residual heat removal function
- (5) The process monitoring function
- (6) The support function

2.1 Reactivity Control

After a reactor trip, the reactivity control systems must be capable of achieving and maintaining adequate reactivity margin from zero power hot standby to cold shutdown. The function must be capable of compensating for any reactivity changes associated with xenon decay and reactor coolant temperature decrease which occur during cooldown to cold shutdown conditions.

2.2 Reactor Coolant Makeup

The reactor coolant makeup systems shall be capable of assuring that sufficient makeup inventory is provided to compensate for reactor coolant system (RCS) fluid losses due to identified leakage from the reactor coolant pressure boundary and shrinkage of the RCS water volume during cooldown from hot standby to cold shutdown conditions. Adequate performance of this function is demonstrated by the maintenance of reactor coolant level within the pressurizer.

2.3 Reactor Coolant Pressure Control

Reactor coolant pressure control is required to assure that the RCS is operated:

- (1) Within the Technical Specifications for RCS pressure-temperature requirements of WBN T/S 3.4.3;
- (2) To prevent peak RCS pressure from exceeding 110% of system design pressure; and
- (3) With a sufficient subcooling margin to minimize void formation within the reactor vessel.

2.4 Residual Heat Removal

The residual heat removal (RHR) systems shall be capable of transferring fission product decay heat from the reactor core at a rate such that specified acceptable fuel design limits and design conditions of the reactor coolant pressure boundary are not exceeded. The function shall be capable of achieving (for alternative shutdown) cold shutdown within a 72-hour period and maintaining cold shutdown conditions thereafter.

2.5 Process Monitoring

When information on process variables is required by operators to modify safe shutdown system alignments or control safe shutdown equipment, such monitoring information must be available. The process monitoring function shall be capable of providing, if possible, direct readings of those plant process variables necessary for plant operators to perform and/or control the previously identified functions.

2.6 Support

The systems and equipment used to perform the Fire Safe Shutdown (FSSD) functions may require miscellaneous support functions such as process cooling, lubrication and AC/DC power. These supporting functions shall be available and capable of providing the support necessary to assure acceptable performance of the FSSD functions.

3.0 ANALYSIS OF SAFE SHUTDOWN SYSTEMS

3.1 Introduction

Various analytical approaches ensure that sufficient plant systems are available to perform the FSSD functions. Numerous plant systems are available, alone and in combination with other systems, to provide these required functions. A minimum set of plant systems and components are identified to demonstrate that the plant can achieve and maintain safe shutdown per TVA's commitments to Appendix R at WBN. In addition, for control building fires that require shutdown from outside of the Main Control Room (MCR), the concurrent loss of off-site power is also assumed. Providing adequate protection of this minimum system, component, and cable set from the effects of postulated fires constitutes an adequate and conservative demonstration of the ability to achieve and maintain safe shutdown for the purpose of fire protection.

The safe shutdown systems selected for WBN are capable of:

- (1) Achieving and maintaining subcritical conditions in the reactor,
- (2) Maintaining reactor coolant inventory,
- (3) Achieving and maintaining hot shutdown conditions for an extended period of time,
- (4) Within 72 hours, performing cold shutdown repairs needed to achieve and maintain cold shutdown (or, for control building fires that require shutdown from outside of the MCR, achieving cold shutdown conditions within 72 hours), and
- (5) Maintaining cold shutdown conditions thereafter.

Common Unit 1 and Unit 2 support systems and process monitoring equipment (such as Component Cooling System (CCS), Essential Raw Cooling Water (ERCW), electrical power distribution) are required for the safe shutdown analysis. In the electrical power distribution discussions, reference is made to "per unit" equipment. "Per unit", as used in the discussions, designates the Unit 1 and Unit 2 common support equipment that are required for safe shutdown of the plant.

3.2 Initial Assumptions

- (1) Each unit is operating at 100% power upon the occurrence of a fire.
- (2) For alternative shutdown locations (control building fires that require shutdown from outside of the MCR), the post fire safe shutdown analysis is conducted for both the case with offsite power available as well as the case with only onsite power available for 72 hours.

The reactor(s) are tripped either manually or automatically. The Appendix R fire response procedures direct the operators to manually trip the reactor. There is also the possibility of an automatic reactor trip initiated by fire damage such as damage to the reactor protection system input cables. The Appendix R safe shutdown analysis begins ($t=0$) with reactor trip; either manual or automatic, whichever occurs first.
- (3) The reactor(s) are tripped either manually or automatically. The Appendix R fire response procedures direct the operators to manually trip the reactor. There is also the possibility of an automatic reactor trip initiated by fire damage such as damage to the reactor protection system input cables. The Appendix R safe shutdown analysis begins ($t=0$) with reactor trip; either manual or automatic, whichever occurs first.
- (4) No failures are considered other than those directly attributable to the fire.
- (5) Equipment required for safe shutdown is assumed to be in operation (i.e., not out of service).
- (6) The analysis includes a fire induced spurious Safety Injection (SI) signal in Control Building fires only. The plant design precludes spurious SI signals for fires in other locations.
- (7) Analysis of areas both inside and outside the Control Building considers situations in which fire related equipment failures result in plant conditions reaching the initiation setpoint for safety injection.

3.3 Definitions

Hot Standby (Mode 3)	The initial safe shutdown state with the reactor at zero power, K_{eff} less than 0.99 and average RCS temperature T_{avg} greater than or equal to 350°F.
Hot Shutdown (Mode 4)	Reactor at zero power, K_{eff} less than 0.99 and average RCS temperature T_{avg} less than 350°F and greater than 200°F.
Cold Shutdown (Mode 5)	Reactor at zero power, K_{eff} less than 0.99 and average RCS temperature T_{avg} below or equal to 200°F.
Subcooling Margin	The difference between the saturation temperature at the RCS pressure, and the maximum temperature in the hot legs or Reactor Pressure Vessel (RPV).

3.4 Safe Shutdown Functions

The following is a comparison of the Generic Letter 81-12 (Part II, Reference 4.1.12) safe shutdown functions and the corresponding safety functions used in the Appendix R FSSD analysis for WBN:

<u>GL 81-12 Safe Shutdown Function</u>	<u>WBN Safety Functions</u>
Reactivity Control	Initial Reactivity Control
Reactor Coolant Makeup Control	RCS Inventory Control RCP Seal Integrity RCS Pressure Boundary Control RCS Makeup and Letdown RCS Seal Injection
Reactor Coolant Pressure Control	RCS Pressure Control
Decay Heat Removal	SG Inventory Control Secondary Side Pressure Control Secondary Side Isolation Long -Term Heat Removal
Process Monitoring Instrumentation	(no specific correlation, in logics by system)
Support	Electrical Supply Containment Integrity Environmental Control Process Cooling

Each plant system or subsystem function relied on to accomplish the above safe shutdown functions is identified. A separate designator is assigned to each plant system or subsystem function to ensure consistency between analysis documents and calculations. Each designator is identified as a safe shutdown "Key". Figure III-5 depicts the safe shutdown system and/or system function, associated Key number, and logical relationships between systems and Keys used to demonstrate compliance with Appendix R criteria. Table 3-1 identifies the plant systems and subsystems sorted by Key. The correlation between Keys and safe shutdown systems is provided in Section 4. The following sections provide a general description of the methods and systems used to satisfy the safe shutdown performance goals and functions as delineated in Generic Letter 81-12 (Part II, Reference 4.1.12).

3.4.1 Reactivity Control

Initial reactivity control will result from an automatic reactor protection system (RPS) trip or from operator initiation of a manual trip upon notification of a major fire. This action will de-energize the normally energized control rod drive mechanism (CRDM) to actuate a reactor trip. The RPS has a diversity of inputs, each of which "fails safe" and will actuate on an open circuit or a loss of power. As such, fire damage to the RPS will not preclude the initiation of an automatic trip or control rod insertion.

Following rod insertion, additional negative reactivity insertion is required as xenon decays and RCS temperature is decreased. The addition of borated water from the refueling water storage tank (RWST) is required to maintain the required reactivity margin. The chemical and volume control system (CVCS) is capable of injecting this quantity of borated water into the RCS and maintaining the required reactivity margin throughout safe shutdown.”

3.4.2 Reactor Coolant Makeup Control

For the assumed fire scenario, reactor coolant makeup control can be achieved by isolation of normal makeup and boron injection tank (BIT) injection path, isolation of the normal and excess letdown CVCS paths, and operation of the charging portion of the CVCS through the reactor coolant pump (RCP) seal injection path. Reactor coolant makeup is available post-reactor trip.

Successful maintenance of RCS integrity is also necessary to achieve adequate inventory control. Inadvertent opening of boundary isolation valves such as the reactor head vent valves and RHR suction isolation valves has been precluded. Adequate reactor coolant pump seal integrity is maintained to assure safe shutdown.

Control of pressurizer water level is achieved manually by controlling CVCS charging flow based on charging flow or pressurizer level information. The total quantity of water from the RWST which must be injected into the RCS to achieve the required reactivity margin is less than the quantity of borated water required to maintain a constant pressurizer level during cooldown (RCS volume shrinkage compensation).

3.4.3 Reactor Coolant Pressure Control

Establishing and maintaining a sufficient subcooling margin within the RCS is required to minimize void formation in the core and to ensure the ability to maintain natural circulation (if the RCPs are not in operation) through the steam generators (SGs). This is essential to achieving and maintaining safe shutdown.

Overpressure protection of the RCS prior to a controlled cooldown and depressurization is provided by the pressurizer safety valves. During cooldown from Mode 3 hot standby (above 350°F) to Mode 4 hot shutdown (below 350°F), pressure control may be by pressurizer heaters or by varying pressurizer level by controlling RCS temperature using SG power operated relief valves (PORVs). Pressure is reduced by discharging to the pressurizer relief tank (PRT) using either the reactor coolant (pressurizer) PORVs or reactor head vent valves. To ensure adequate RCS pressure and adequate subcooling margin, the operator isolates pressurizer spray valves, or trips the RCPs to limit depressurization, and isolate the pressurizer auxiliary spray. Entering Mode 4 permits aligning the RHR system to the RCS for decay heat removal. While on RHR, the maximum pressures in both the RHR and RCS systems are limited by the RHR system safety valves.

The specific combinations of systems used are identified in Part VI under the safe shutdown analysis discussion for each plant location.

3.4.4 Residual Heat Removal

Following a reactor trip with loss of off-site power (either assumed or caused by the fire), decay heat is initially removed by natural circulation within the RCS, heat transfer to the main steam system via the steam generators, and operation of the steam generator PORVs or lift of the main steam system code safety valves.

For decay heat removal via natural circulation a minimum of two steam generators are available. Decay heat removal requires the ability to supply sufficient auxiliary feedwater to the steam generators to make up for the inventory discharged as steam by the safety valves or steam generator PORVs. For maintenance of initial hot standby conditions, the required feedwater flow to the steam generators is supplied by the auxiliary feedwater (AFW) system. AFW sources are available from the condensate storage tanks, and alternatively, from the ERCW system. AFW may be supplied to the steam generators by the motor-driven AFW pumps or by the turbine-driven AFW pump. Continued heat removal is achieved by the controlled operation of the PORVs and continued operation of the AFW system. After reduction of RCS temperature to 350°F, the RHR system is used to establish long-term core cooling by the removal of decay heat from the RCS to the environment via the RHR, CCS, and ERCW systems.

3.4.5 Process Monitoring Instrumentation

The operator requires knowledge of various plant parameters to perform required system transitions and essential operator actions. A discussion by safe shutdown function of the necessary instrumentation is provided below.

For the fire scenarios assumed in this analysis, inventory makeup to the RCS is from the RWST through the RCP seal injection lines. As previously discussed, sufficient negative reactivity exists in the RCS after control rod insertion. Furthermore, the negative reactivity inserted by the control rods and borated water injected by the CVCS (to compensate for the RCS volume decrease) maintains the core subcritical while cooling down from hot full power to a cold shutdown condition. Sufficient boron is added to the primary system in a timely manner via charging of borated water through the seals to achieve the necessary reactivity margin for cold shutdown. With boron concentration in the Volume Control Tank (VCT) and RWST under procedural control, no operator actions are required based on direct-reading neutron monitoring to ensure an adequate safe shutdown reactivity margin. However, core source range detectors are available for core reactivity monitoring in the MCR or local station. An additional source range channel indicator is available in the Auxiliary Control Room (ACR) to provide this information for fires in control building areas requiring alternative shutdown.

Various process monitoring functions must be available to adequately achieve and maintain the reactor coolant makeup, pressure control and decay heat removal functions. For the assumed fire scenario, maintenance of hot standby requires that pressurizer level and RCS pressure instrumentation are available. RCS temperature is maintained during hot standby by proper decay heat removal via steam generators using the steam generator PORVs. When the reactor coolant pumps are tripped and cooling is required in the natural circulation mode of operation, the difference between the hot-leg and cold-leg wide range temperatures ($T_h - T_c$) provide indication of the existence of a natural circulation condition.

RCS hot and cold leg temperature instrumentation is available for use given a fire that does not require MCR abandonment. For alternative shutdown, SG pressure instrumentation is required in order to provide a means of determining RCS cold-leg temperature from the ACR. (Refer to Part VII for the deviation request associated with T_{sat} in lieu of direct indication of T_c in the ACR.) During RCS cooldown, RCS temperature is controlled by manual control of the SG PORVs.

Operating personnel maintain RCS pressure to assure that appropriate subcooling margin is achieved by monitoring of RCS pressure and hot leg temperature (T_h) instrumentation. Manual control of the pressurizer heaters may be used if available, but is not required for safe shutdown. Pressurizer level control is maintained by monitoring pressurizer level instrumentation and manual control of CVCS charging flow through the RCP seals.

The above methods of controlling primary system parameters by means of the secondary system require monitoring secondary system parameters. Steam generator level and pressure indicators are available to assure adequate and controlled decay heat removal. Steam generator level is controlled by operator manipulation (either from the MCR or locally) of AFW system flow based on steam generator wide range level indication or AFW system flow and steam generator narrow range level indications. Use of AFW flow indication and narrow range level indication for monitoring SG inventory is consistent with analyses for FSAR Chapter 15 design basis events. Secondary system pressure is monitored by steam generator pressure indication.

The plant operators utilize the instrumentation discussed above for monitoring natural circulation conditions, subcooling margin, heat removal and compliance with the RCS low temperature pressure/temperature limits (minimum cold leg temperature for a given RCS pressure).

3.5 Support Functions

The support functions for various safe shutdown equipment or systems are provided by the following systems:

- (1) Emergency Power Distribution System
- (2) Offsite Power System
- (3) Essential Raw Cooling Water System
- (4) Component Cooling Water System
- (5) Ventilation to areas containing essential fire safe shutdown equipment
- (6) Main Control Room chillers and ventilation

The following sections discuss the required safe shutdown systems and support systems.

4.0 SAFE SHUTDOWN SYSTEMS

A reference system, identified by key number is used to aid the construction of the safe shutdown analysis logic. The safe shutdown logic is depicted in Figure 3-5. The safe shutdown systems and subsystems are identified by key number in Table 3-1.

4.1 Chemical and Volume Control System (CVCS) - Keys 1A, 2, 4, 5, 9

The charging portion of the CVCS accomplishes the following safe shutdown functions:

- (1) Reactivity control by injection of boron into the RCS
- (2) Reactor coolant makeup control by maintaining seal water injection to the RCS
- (3) Maintenance of reactor coolant pump seal integrity

Reactivity control for safe shutdown is provided by the control rods, with boron injection used to compensate for positive reactivity insertion due to cooldown and xenon decay. Insertion of the control and shutdown rod groups make the reactor adequately subcritical following trip from any credible operation condition to the hot zero power condition, even assuming the most reactive rod remains in the fully withdrawn position.

For the assumed post-fire scenario, makeup water to the RCS is provided by the CVCS from the RWST. When the unit is at power, the concentration of boron in the RWST exceeds that quantity required to bring the reactor from an initial hot standby condition to hot shutdown and then to cold shutdown, assuming that the only volume injected is that required to make up for reactor water volume decrease due to cooling. Letdown, which permits adding more borated water, is not necessary to achieve adequate boron concentration for cold shutdown reactivity margin.

Numerous CVCS paths are normally available for charging to the RCS. The flow path that is used to provide reactor coolant makeup and boration is the charging line to the reactor coolant pump seals. This path is available by ensuring that at least one of the charging pumps is in operation and charging flow control valve remains open.

For the assumed event, charging and boration is accomplished by operating a minimum of one centrifugal charging pump taking suction from the RWST and injecting borated water through the RCP seal injection line to the RCS. Suction to the charging pump can be delivered from the RWST by opening either one of two normally closed motor-operated valves.

Controlled leakage (letdown) from the RCS normally occurs via the RCP #1 Seal Leakoff path and the normal and excess letdown paths. For the post-fire operational scenario, the normal and excess letdown paths are isolated. Isolation of the normal and excess letdown lines may occur as a result of loss of instrument air or is achieved by operator action to assure adequate inventory control. Procedural controls for isolation of all potentially spurious RCS letdown paths, including pressurizer PORVs and reactor head vents, provide assurance that isolation of letdown paths is achieved.

The injection path from the charging pumps to the reactor coolant pump seals contains the charging flow control valve (normally open) which is provided with a minimum-flow pneumatic stop. Thus, operation of one charging pump ensures availability of minimum RCS charging

flow. In the event of failure of the pneumatic stop and complete cutoff of injection path flow, thermal barrier cooling (Key 9) is credited to assure seal integrity until charging is reestablished. Thermal barrier cooling ensures that the RCP seal integrity is maintained. No boron injection is required during this period.

Isolation of the VCT by closure of either one of two motor-operated valves during emergency makeup from the RWST can be performed either remotely or by local manual operation. The VCT is isolated to prevent introduction of H₂ cover gas into the centrifugal charging pump (CCP) suction in the event of VCT drainage.

Pressurizer water level is maintained by operation of one centrifugal charging pump using pressurizer level instrumentation information.

4.1.1 Centrifugal Charging Pumps - Key 1A

The two high-head centrifugal charging pumps (per unit) are normally aligned for the CVCS charging function. During design basis accidents, they are part of the Emergency Core Cooling System (ECCS). The centrifugal charging pumps are of the horizontal multistage type with a design flow rate of 150 gpm at 5800 feet total dynamic head. Each pump is designed to provide rated flow against a pressure equal to the sum of the RCS normal maximum pressure (existing when the pressurizer PORV is operating) and the piping, valve and equipment pressure losses at the design charging flows. Each of the centrifugal charging pumps has a motor-operated minimum re-circulation flow valve to prevent damage to the pump when it is operating at shut-off pressure. The pumps require cooling water from the CCS to their mechanical-seal heat exchangers, gear oil coolers, bearing oil coolers and seal housings.

4.1.2 Refueling Water Storage Tank - Key 5

In addition to its normal duty to supply borated water to the refueling cavity for refueling operations, the RWST provides borated water to ECCS pumps for cooling and to provide shutdown margin.

The capacity of the refueling water storage tank (one per unit) is based on the requirement for filling the refueling cavity. This quantity is in excess of that required for safe shutdown. The Technical Specification requirement for the volume of the RWST is 370,000 gallons of borated water at a minimum concentration of 3100 ppm boron.

4.2 Reactor Coolant System - Keys 7, 8, 28, 48

The RCS consists of four similar heat transfer loops (per unit) connected in parallel to the reactor vessel. Each loop contains a reactor coolant pump and a steam generator. In addition, the system includes a pressurizer with associated code safety and power-operated relief valves (PORVs). RCS instrumentation includes cold-leg and hot-leg temperatures (wide range), pressure (wide range), and pressurizer water level.

The natural circulation capability of the plant provides a means of decay heat removal when the reactor coolant pumps are unavailable. Natural circulation flow rates are governed by the amount of decay heat, relative component elevations, primary to secondary heat transfer, loop flow resistance, steam generator and RCS inventories, and any RCS voiding. These conditions determine whether adequate primary to secondary heat transfer and subcooling during natural circulation can be maintained.

For this analysis of safe shutdown capability, two of the four RCS loops (for which steam generator level and pressure are controlled - active loop) are available to ensure that natural circulation is established and maintained.

While in natural circulation, adequate heat transfer and coolant flow are dependent on adequate inventory in both the primary and secondary systems. Maintaining water level above the "U" tubes on the secondary side of the active loop steam generators and adequate level within the pressurizer are required for natural circulation. RCS loop temperatures confirm flow and heat transfer while in natural circulation on active loops. Cold-leg temperature (T_c) should drop to a few degrees higher than the saturation temperature of the secondary inventory. Hot-leg temperature (T_h) should reach a value which is less than at full power but higher than T_c .

RCS inventory control is based on the operation of CVCS charging paths. High pressure seal water from the CVCS system is injected into the reactor coolant pumps lower radial bearing chamber to prevent leakage of high temperature reactor coolant along the pump shaft. The injection flow splits in the bearing chamber with a portion flowing up through the radial bearing and into the shaft seal chamber. The remaining portion flows down the shaft, through the RCP thermal barrier and into the RCS. For added operational flexibility in certain post-fire scenarios, RCP thermal barrier cooling provided by CCS is available for safe shutdown. Availability of either seal injection or thermal barrier cooling provides adequate protection of the RCP seals.

4.2.1 Pressurizer Heaters

The pressurizer heaters are not required to operate for safe shutdown. Alternate means of controlling RCS pressure are credited in the WBN Appendix R analysis. (Refer to Calculation EDQ00099920090012 and EDQ00099920090016 for details.) However, should the pressurizer heaters be available, subcooling within the RCS can be maintained by controlled operation of the pressurizer heaters. The availability of pressurizer heaters has been analyzed to enhance the capability of controlling RCS pressure and subcooling margin. The locations where pressurizer heaters are available are documented in Part VI of the FPR. The heat from one pressurizer heater conservatively covers heat losses from the pressurizer at or below normal operating temperature and pressure.

4.3 Main Steam Systems - Keys 20, 21, 22, 24, 25, 26

For the post-fire scenario, maintenance of the steam generator inventory and control of steam generator pressure are required for both hot standby and subsequent primary system cooldown to support the decay and sensible heat removal function, within the applicable operational limits, until initiation of RHR to bring the affected unit to cold shutdown.

The main steam (MS) system for each unit consists of four parallel flow paths, one from each steam generator to the main turbine of the unit. The MS system is isolated either by operation of the turbine stop and control, dump, reheat, feed turbine stop and control, and gland steam valves; or by the main steam isolation valves.

In accordance with supporting analyses, inventory control of two steam generators provides the reactor heat removal function during natural circulation conditions. Maintenance of the steam generator water level during the period of AFW operation (hot standby) involves either MCR operator or local manual positioning of the AFW level control valves and operation of the motor-driven or turbine-driven AFW pumps based on steam generator level information. Steam generator water level and pressure indication are available in the MCR and in the ACR.

The MS system also delivers motive steam to the turbine-driven AFW pump. Steam to the turbine is supplied by branch connections upstream of the main steam isolation valves on two steam lines (corresponding to steam generators No. 1 and 4). Either line is sufficient to supply steam for the AFW pump turbine, however, credit is only taken for steam supply from steam generator No. 1.

4.3.1 Steam Generator Power - Operated Relief Valves

A power-operated relief valve (PORV) provided on each steam line is capable of releasing the sensible and decay heat to the atmosphere. The PORVs are used for plant cooldown by steam discharge to the atmosphere since the steam dump system is assumed to be unavailable. The

PORVs have a total combined capacity of approximately 10% of the maximum steam flow. For the assumed fire scenario, a minimum of two PORVs are available to support controlled cooldown of the RCS.

Controls for the steam generator PORVs are provided in the MCR and locally at the shutdown stations. During hot standby conditions, the steam generator PORVs are controlled by MCR non-safety grade controllers (automatic control on steam pressure setpoint), safety grade handswitches (manual quick opening or positive closing control), or local valve position control at the local nitrogen control stations. In this mode, the RCS temperature is controlled by maintaining the steam generator at the corresponding saturation pressure.

4.4 Auxiliary Feedwater System - Keys 11, 12, 14, 16, 17, 19

The AFW system is required during hot standby to support RCS decay heat removal. For hot standby, secondary system (steam generator) inventory control is provided by the AFW system. Two motor-driven pumps and one turbine-driven pump are provided to each unit. Each motor-driven pump is rated at 450 gpm at a nominal 3270 feet total dynamic head. The turbine-driven pump is rated at 790 gpm at 3350 feet total dynamic head. The pumps have the design capability to provide the rated flow, less bypass, against the lowest steam generator safety valve setpoint plus 3% accumulation and 3% set error.

The AFW system is designed to deliver enough water to maintain sufficient heat transfer in the steam generators in order to prevent loss of primary water through the RCS pressurizer safety or relief valves.

4.4.1 Turbine-Driven Auxiliary Feedwater Pump

The turbine-driven AFW pump (one per unit) is designed to deliver a sufficient flow to all four steam generators and maintain steam generator water levels at the lower limit of the wide range level indicator. The pump is a horizontal, six-stage, centrifugal pump driven by a single-stage atmospheric exhaust turbine. During automatic operation the turbine speed, and therefore capacity, are governed by pump flow. The turbine is provided with automatic speed control that ensures a minimum of 720 gpm. Manual speed control is also provided to enable the operator to control speed from 2076 rpm to 3950 rpm. Use of the speed control in combination with manual operation of the level control valves (LCVs) allows the operator to control the flow from 0 to 720 gpm. Two overspeed trip devices are provided. The electrical overspeed trip resets automatically. The higher mechanical overspeed trip device must be reset manually.

The AFW pump turbine lube oil system uses a pump driven from the turbine shaft. Water for the turbine oil cooler and pump bearing cooler is supplied from the AFW pump discharge line. Lube and control oil and lube oil cooling are therefore available whenever the AFW pump turbine is operating.

Steam generators No. 1 and/or 4 provide motive steam to the turbine-driven AFW pump. However, only the steam supply from steam generator No. 1 is credited for safe shutdown. The turbine-driven AFW pump is capable of operating down to a steam pressure of 115 psia, which is below the pressure at which the RHR system must be placed in service.

4.4.2 Motor-Driven Auxiliary Feedwater Pumps

WBN is supplied with two motor-driven AFW pumps per unit with only one per unit required for safe shutdown. Pump A supplies SGs 1 and 2 and Pump B supplies SGs 3 and 4. Each pump is a horizontal, nine-stage centrifugal pump. Bearings are cooled by water from the first stage. A separate motor-driven oil pump is provided for motor bearings. Pump bearings use ring oilers. The pumps require no external lube oil cooling or other support services other than AC power.

4.4.3 Condensate Storage Tank

Each unit is provided a Condensate Storage Tank (CST). At hot standby, the minimum volume of water required by the WBN Technical Specification for each CST is 200,000 gallons. The CST is normally aligned to the supply for the AFW pumps. As a backup, cross-ties to the AFW supply from the ERCW system are provided. Ample time is available post-fire for a local manual realignment of the supply to the AFW pumps from CST to ERCW.

4.5 Residual Heat Removal System - Keys 30, 31

The RHR system is designed to remove residual and sensible heat from the core by reducing the temperature of the RCS during the hot and cold shutdown phases of safe shutdown. The following discussion is applicable for each unit.

The RHR system for each unit consists of two RHR heat exchangers, two RHR pumps and associated piping, valving and instrumentation necessary for operational control. The design residual heat load is based on the residual heat fraction of the full core MW (thermal) power level that exists 20 hours following reactor shutdown from an extended power run near full power.

During cold shutdown operations, reactor coolant flows from the RCS to the RHR pumps through the tube side of the RHR heat exchangers and back to the RCS. The heat load is transferred to CCS on the shell side.

Four motor-operated valves isolate the inlet line to the RHR system from the RCS. The four valves are arranged in an "H" Configuration, with pairs of parallel valves in series. To avoid potential RCS boundary leakage at this high/low pressure interface, all four of the motor-operated valves in the RHR suction line are kept closed (pre-fire condition) with the corresponding motor control center breaker in the open position. The return lines are isolated by two series check valves in each line and a common motor-operated valve.

A minimum-flow return line from the downstream side of each RHR heat exchanger to the corresponding pump's suction line is provided to assure that the RHR pumps do not overheat under low flow conditions. A motor-operated valve located in each minimum flow line is opened if RHR pump flow falls below 250 gpm and is closed when the flow increases above 1100 gpm.

The cooldown rate of the reactor coolant is controlled by regulating the flow through the tube side of the RHR heat exchangers. A bypass line, which serves both residual heat exchangers, is used to regulate the temperature of the return flow to the RCS as well as to maintain a constant flow through the RHR system.

The RHR system can be placed in operation when the pressure and temperature of the RCS are about 400 psig and 350°F, respectively. If one of the pumps and/or one of the heat exchangers is not Operable, safe operation of the plant is not affected.

4.5.1 Residual Heat Removal Pumps

Two identical pumps per unit are installed in the RHR system. Each pump is sized to deliver sufficient reactor coolant flow through the residual heat exchangers to meet the unit's cooldown requirements. A seal heat exchanger for each pump is supported by operation of the CCS.

4.5.2 RHR Safety Valves

The RHR system safety valves provide RCS cold overpressure protection whenever the RHR system is in operation. The valves are located inside containment, one each on the RHR system suction and discharge path, and discharge to the pressurizer relief tank. The valves are set at 450 psig and 600 psig, respectively.

4.6 Safety Injection System Accumulators - Key 36

During normal plant operating conditions, the safety injection system accumulators are pressurized by nitrogen gas in order to inject borated water in the RCS when RCS pressure falls below 600 psi unintentionally. During a controlled depressurization, the accumulators are isolated to prevent injection of safety injection system accumulator borated water. However, if the isolation valves remain open, the borated water is injected and nitrogen pressure decreases due to the increased empty volume of the accumulators. Injection of nitrogen into the RCS occurs when RCS pressure is less than 325 psig, with allowance for instrument inaccuracy.

The manual isolation of the accumulators is assumed as a post-fire activity. The isolation valve at each accumulator is closed only when the RCS is intentionally depressurized below 900 psig. If the cables associated with these valves were damaged by fire, isolation is performed locally per appropriate plant procedures (post-fire). In the event the valves are inaccessible, RCS pressure is maintained greater than 325 psig to preclude nitrogen injection into the RCS via the accumulators.

4.7 Component Cooling System (CCS) - Key 1B

CCS is a supporting system to other safe shutdown systems. Two redundant trains per unit are available. For each unit, Train A consists of two available pumps (pumps 1A-A and 1B-B for Unit 1 and pumps 2A-A and 2B-B for Unit 2) and the associated valves, piping, instrumentation and heat exchanger (Heat Exchanger A for Unit 1 and Heat Exchanger B for Unit 2). Train B is common for both units and consists of one pump (pump C-S) and the associated valves, piping, instrumentation and heat exchanger (Heat Exchanger C). Each unit has a Train A pump (1A-A for Unit 1 and 2A-A for Unit 2) which receives electrical power from Train A. Each unit also has a Train B pump (1B-B for Unit 1 and 2B-B for Unit 2) which receives electrical power from Train B. These pumps are normally aligned to the Train A piping system for that unit but can be aligned to the common Train B piping system. The C-S pump, which normally receives Train B electrical power while serving as the common Train B CCS pump, is capable of being powered from a Train A power source.

The CCS system serves as an intermediate heat transfer loop between the various safe shutdown components and the ERCW system (ultimate heat sink).

The CCS system provides cooling for the following safe shutdown equipment:

- (1) Centrifugal charging pumps
- (2) Residual heat removal heat exchangers
- (3) Residual heat removal pumps
- (4) Reactor coolant pump thermal barrier coolers (CCS Train A only)
- (5) Chemical volume control system seal water heat exchanger (CCS Train A only)

Note:

In addition to cooling the above listed fire safe shutdown equipment, the spent fuel pool cooling heat exchangers non-fire safe shutdown cooling load may also be cooled by Train A of the component cooling system

One CCS pump and its associated CCS heat exchanger fulfill the heat removal function of a unit during normal full-load operation for various components located in the auxiliary and reactor buildings. During normal unit cooldown in RHR mode, two CCS trains (i.e., that unit's Train A and the common Train B) are utilized to remove the residual heat. If only one train is used, cooldown is at a lower rate.

Other than the RHR heat exchangers, the essential loads are normally valved open to the supply header and discharge to the suction of the CCS pump with which they are normally associated, so that component cooling water is circulated continuously through the essential loads during normal operation.

The CCS outlet lines from each unit's Train A RHR heat exchangers (one per unit) have a normally closed motor-operated valve which must be opened during RHR cooldown. The CCS outlet lines (one per unit) from the Train B RHR heat exchanger have throttleable motor-operated valves. The valve for the unit undergoing cooldown must be open during RHR cooldown and the other unit's valve must be closed. The motor-operated valves that isolate the RCP thermal barrier coolers (Train A only) are included as safe shutdown components for operational flexibility in a post-fire scenario, since the thermal barriers may be required to perform a redundant function to RCP seal injection cooling.

4.8 Essential Raw Cooling Water System - Key 1C

The ERCW system provides cooling for the following safe shutdown heat transfer equipment:

- (1) Component cooling heat exchangers
- (2) Emergency diesel generator heat exchangers
- (3) Essential ventilation coolers and water chillers
- (4) Auxiliary control air compressors

The system also provides a back-up supply of water to the AFW system in the event that the condensate storage tank is depleted.

This system consists of four traveling water screens and their wash pumps, eight pumps, four discharge strainers, and four main headers (1A, 1B, 2A, and 2B). These components, together

with the associated heat exchangers, valves, piping and local instrumentation, complete the ERCW system.

The ERCW system can remove the heat transferred to CCS, plus the heat loads of the emergency diesel generator (EDG) engine coolers (i.e., the air aftercoolers, lubricating oil cooler, and jacket water cooler), auxiliary control air compressors and essential ventilation coolers and water chillers, and provide makeup flow to the turbine and motor-driven AFW pumps.

The four Train A ERCW pumps are installed in a portion of the intake pumping station separate from the Train B pumps. The Train A pumps supply ERCW to two Train A ERCW headers (i.e., 1A and 2A). Interlocks exist to preclude starting more than one ERCW pump on a single diesel generator. One ERCW pump is sufficient to carry the heat load of one unit during hot shutdown conditions. Normal ERCW alignment is for Train A ERCW header 2A to provide cooling to both unit's Train A CCS heat exchangers which utilize two Train A ERCW pumps. Three pumps are normally used to carry the dual unit heat removal duties of the system during RHR cooldown of a unit. Local manual operation of motor-operated valves and strainers is credited post-fire. Train B pumps and headers are arranged similar to the Train A configuration.

4.9 Essential HVAC - Keys 37A, 37C, 37J, 37K, and 37O

Essential HVAC is provided for the Control, Auxiliary, Diesel Generator, and Reactor Buildings. Portions of the systems in each building that service safe shutdown equipment required for compliance with Appendix R have been analyzed to ensure that at least one path of the required systems is available for an Appendix R fire. The systems consist of filters, fans, ductwork, dampers, heating/cooling coils, instrumentation, and controls for general building ventilation, along with separate systems for individual rooms. The required systems, components, and cables for those subsystems relied on to protect equipment for safe shutdown have been incorporated into the Appendix R analysis as required equipment and cables. The location of equipment and routing of cables has been identified and evaluated as described in Sections 5 and 6 of this Part. These systems are discussed below.

The primary safety-related portions of the MCR are cooled by two independent trains of HVAC. The two trains are separated by fire barriers and/or separation distance in accordance with Appendix R requirements to ensure that the control building HVAC system remains functional during a fire. The entire control building HVAC system is separate from the HVAC system servicing the ACR.

The auxiliary building HVAC system is required to achieve and maintain hot standby. Specifically, HVAC is required for the 480V transformer rooms and for the general floor area on the 713' elevation to support the use of the motor-driven auxiliary feedwater (MDAFW) and CCS pumps. Individual room coolers are also required for the CCP and RHR pumps and are addressed in the equipment logics for their respective systems (Keys 1A and 31).

The turbine-driven auxiliary feedwater (TDAFW) pump room is provided with a DC operated exhaust fan sized (1200 CFM +/-10%) to provide required air flow in the room for the volume method of cooling. The fan is a roof ventilator type with intake and venting to the general area of the auxiliary building. The fan automatically starts upon the start of the TDAFW pump. The fan is addressed in the TDAFW pump equipment logic (Key 14).

The diesel generator HVAC systems serve each combination of diesel generator and associated batteries and electrical boards. The diesel generator building HVAC system consists of various subsystems. The subsystems for each combination include diesel generator room HVAC subsystems, generator and electrical panel subsystems, battery hood exhaust subsystems, electric board room exhaust and heating subsystems, and muffler room exhaust systems. A fire in any combination of diesel generator and associated batteries and electrical boards, which are separate fire areas, will not affect the HVAC systems servicing the adjacent combinations of diesel generator and associated batteries and electrical boards.

The containment air cooling systems are designed to maintain acceptable temperatures within the upper and lower compartments, CRDM shroud, and instrument room for the protection of controls. Each unit's lower compartment cooling (LCC) system consists of (4) 33-1/3% fan coil assemblies. Each unit's CRDM cooling system consists of (4) 50% fan coil assemblies combined into two subsystems, with one fan coil assembly in each subsystem normally operating. Each unit's containment air cooling is evaluated to ensure either 3 out of 4 LCC fan coil assemblies, or 2 out of 4 LCC/CRDM pairs of fan coil assemblies, are available for Appendix R fire scenarios.

All other areas of the plant which contain equipment required for safe shutdown per Appendix R have been evaluated and determined that acceptable temperatures are maintained for the required equipment to perform its intended function if HVAC is lost.

4.10 Onsite Power System - Key 38

The plant Emergency Power System (EPS) includes on-site, independent, automatically-starting emergency power sources that supply power to essential safe shutdown equipment if the normal off-site power sources are unavailable.

The emergency power sources consist of four 6.9kV diesel generators. Each consists of a single generator driven by two engines on a common shaft. Each diesel engine is equipped with its own auxiliaries. These include starting air, fuel oil, lube oil, cooling water, intake and exhaust system, speed regulator (governor) and controls. Cooling water is provided from the ERCW system while electric power for each engine's auxiliaries is provided by its own generator. The governors for each pair of engines are electrically linked.

4.10.1 6.9KV Shutdown Power System

Each of the four 6.9kV shutdown boards is normally fed from 161kV/6.9kV Common Station Service Transformers (CSSTs) that receive power from offsite sources. In addition, upon loss of the normal CSST due to a line fault, the 6.9kV boards transfer the power source to another CSST.

Each of four 6.9kV shutdown boards can also be fed from the corresponding 6.9kV diesel generator. Loss of offsite power to the 6.9kV boards is sensed by undervoltage relays. Upon sensing an undervoltage, the master relay(s) automatically start the emergency diesel generators, trip the normal feed switchgear breakers and trip all motor feeder breakers on the boards. The emergency diesel generators can also be manually started locally, from the MCR, or from the ACR. For shutdown scenarios that do not require MCR abandonment, a switchgear breaker on each board is automatically closed when its diesel generator is at rated speed and rated voltage and re-energizes the bus. The essential loads are sequentially connected to the bus. For shutdown scenarios from the ACR, breaker closure and diesel generator loading is

done manually. The emergency diesel generators then supply all equipment which must operate under emergency conditions for the respective safeguard train.

4.10.2 480V AC Shutdown Power System

The 480V power system distributes power for low voltage station service demands. The normal source of power is the 6.9kV shutdown boards via the 6.9kV/480V transformers.

The 480V power system consists of eight boards, two per unit per train. Each 480V board is fed from the associated unit/train 6.9kV board through the normal or spare 6.9kV/480V transformers. There are a total of eight normal and four spare transformers, with each spare transformer able to feed either of the two boards of the same train/unit. The 480V shutdown boards feed 480V loads and various motor control centers (MCCs). The MCCs in turn feed various motor operated valves and other loads required for safe shutdown. Each MCC has a normal and alternate power source that can be utilized when needed for equipment maintenance.

4.10.3 120V AC Vital Instrument Power System

The 120V AC Vital Instrument Power System consists of four separate vital boards per unit. Each 120V AC Vital Bus is supplied by an independent inverter. Each station battery supplies two inverters (one per unit) of the same channel. Each channel also includes a normally de-energized spare inverter that can be energized and manually aligned to be an alternate supply to either Unit 1 or Unit 2 associated 120V AC vital bus. Each inverter is normally supplied by the 480V AC power system of the associated train (A for D or F and B for E or G) and can be supplied from the opposite trains via a manual transfer switch. In addition, the uninterrupted supply to each inverter is its respective 125V DC battery board via a static transfer switch scheme.

The output of each inverter is connected to its 120V AC vital instrument power board through a normally closed circuit breaker. The vital instrument power boards supply all of the required normal safe shutdown instrumentation per channel.

4.10.4 125V DC Power System

The 125V DC power system consists of four batteries, four normal chargers, two pairs of spare chargers, and four main DC battery boards. The 125V dc power system supplies power for control of 6.9kV/480V shutdown boards, operation of vital inverters, pneumatic-operated, solenoid controlled valves, and MCR emergency lights. The battery system consists of four separately located sets of batteries powering four channels of DC boards. Each normal vital battery has its own normal charger. Each vital battery board can also be supplied from one of the two spare chargers in each pair. The battery chargers are energized from normal or alternate MCCs via a manual transfer switch. A fifth vital battery may be used as an installed spare and can be placed into service in place of any of the four normal vital batteries. The fifth vital battery is maintained by its own charger until connected to one of the normal vital battery boards.

During normal operation, the 125V DC loads are fed from the battery chargers, with the batteries being supplied a "trickle" charge floating on the system. Upon loss of ac power, the entire DC load is drawn from the batteries. The batteries are credited for two hours of operation after a loss of charging, predicated upon the continued operation of DC emergency equipment.

However, the battery chargers can be manually aligned to alternate power sources to take over the load and recharge their associated battery.

All direct current loads associated with engineered safeguards equipment are fully redundant. These loads are arranged so that each battery supplies its associated redundant channel.

4.10.5 250V DC Power System

The 250V DC power system consists of two batteries, two normal chargers, two spare chargers, and two 250V DC battery boards. Control power for start board power circuit breakers and associated protective relays is distributed from the 250V DC supply via circuit breakers on the turbine building DC distribution boards. The 250V DC power system provides power for non-safety-related loads and, for Appendix R fire scenarios, is used to operate steam load trip circuits and to provide capabilities to trip the RCPs.

4.11 Offsite Power System - Key 38A

The offsite power system evaluated for safe shutdown consists of CSSTs and common station service boards that provide power from the 161kV offsite power sources to the 6.9kV shutdown boards. Two CSSTs provide normal and alternate power to four 6.9kV shutdown boards. One CSST is the normal source for Train A shutdown boards and also supplies the alternate power to the Train B shutdown boards. The other CSST is the normal source for Train B shutdown boards and the alternate source to the Train A shutdown boards.

4.12 Containment Isolation - Key 10

In order to maintain the integrity of the containment boundary, it is necessary to ensure the capability to isolate all containment penetrations. The normal containment isolation requirements have been relaxed to be consistent with fire safe shutdown requirements and assumptions. Only one isolation boundary is necessary for each penetration and can consist of a check valve or a closed system on either side of the boundary regardless of the piping class. When penetrations are isolated only by electrically isolated valves, the valves were included as required FSSD components.

4.13 Reactor Trip - Key 29

A fire inside or outside of the control building may require the reactor trip to bring the plant to hot standby. Manual trip circuits for manual shutdown from the MCR are available for any fire. The RPS is not specifically protected from fire damage given the fail safe design of the RPS. Diversity of input signals could initiate a reactor trip, if required, before the trip is manually initiated. The reactor trip provides sufficient initial reactivity control. Long term reactivity control is accomplished by preventing boron dilution and assuring that injected makeup water is at least the boron concentration of the RWST.

4.14 Auxiliary Control Air System (ACAS) - Key 13

The ACAS provides essential air to the following fire safe shutdown equipment if the normal air supply system cannot maintain minimum system pressure:

- (1) Turbine/Motor-driven auxiliary feedwater level control valves (LCVs)
- (2) Motor-driven auxiliary feedwater pressure control valves (PCVs)
- (3) Steam generator power operated relief valves (SG PORVs)

The ACAS is separated into two independent trains, one supplied from Train A power and the other supplied from Train B power. Each train consists of a compressor, receiver, dryer and filter. The system is supplied from two motor-driven, non-lubricated, compressors that are integral skid mounted assemblies. Relief valves are in place on the compressors and air receivers for overpressure protection. The ACAS automatically isolates from the non-essential control air system (CAS) on low pressure.

The ACAS air dryers normal operation is with one of the dual towers in the regeneration (purge) state and the other tower supplying the air loads. With the local hand switch in the automatic mode, the dryer is interlocked with the ACAS compressor such that when the compressor is running the ACAS dryer will operate continuously. The dryer cycle will continue to run after the associated compressor has stopped until the local hand switch is placed in the "stop" position. The dual air dryer towers are alternately regenerated (purged) and fully pressurized for service via cam-operated cycling valves controlled by adjustable timers in automatic mode. The dryer regeneration and pressurization cycle can be manually started with the local hand switch allowing operations periodically to change which dryer tower is "in-service" to preclude moisture saturation. This will be at significantly reduced periodicity than the cycle timer cycling. The dryer is designed such that in the event of electrical failure to the equipment, it will continue to dry air for 4 to 8 hours. The electrical circuit is designed with interlocks that prevents a purge exhaust valve and an inlet switching valve on the same side of the dryer to be open at the same time. This precludes loss of air from the system through the purge valve.

The ERCW system provides the source of cooling to the ACAS compressors, inter-coolers and after coolers.

5.0 IDENTIFICATION OF SAFE SHUTDOWN SYSTEM COMPONENTS

Section 4 described the specific systems which are used to achieve safe shutdown. This subsection discusses the WBN method of selection of safe shutdown components.

For each system, plant flow diagrams (P&IDs), system descriptions and one-line diagrams were used to identify the precise primary flow paths and operational characteristics that must be established to accomplish the desired safe shutdown function. From this information, a list was

compiled of the components which participate in the system's performance of its safe shutdown function. These components are:

- (1) Active components that need to be powered to establish, or assist in establishing, the primary flow path and/or the system's operation;
- (2) Active components in the primary flow path that normally are in the proper position whose power loss will not result in a change of position, but may be affected by open, short, or ground faults in control or power cabling;
- (3) Power-operated components that need to change position to establish or assist in establishing the primary flow path, whose loss of electrical or air supplies result in the component adopting the required safe shutdown position but which may be affected by open, short or ground faults in control or power cabling; and
- (4) Major mechanical components that support safe shutdown.

From the analysis of the safe shutdown system flow paths, those components whose spurious operation threatens safe shutdown system functionality were also identified. This identification included those branch flow paths that must be isolated and remain isolated to assure that flow is not substantially diverted from the primary flow path. See Section 7 for the detailed discussion of spurious operations.

A list was generated for safe shutdown devices including device identification and operating requirements for the various shutdown Keys. The shutdown Keys were previously identified in Section 4 and Table 3-1.

The safe shutdown equipment list (SSEL) for WBN is the equipment necessary to safely shut down the affected unit or units. For reasons of operational flexibility, equipment such as pressurizer heater availability for RCS pressure control was identified in Sections 3 and 4. Optional components are not required for safe shutdown; however, they are included in the safe shutdown equipment list and in the safe shutdown interaction calculation.

The safe shutdown equipment list developed for WBN includes the components required to protect the safe shutdown capability from the exposure fire damage postulated in Appendix R. The safe shutdown equipment list is provided as Table 3-2.

6.0 IDENTIFICATION OF SAFE SHUTDOWN CIRCUITS AND CABLES

The equipment list developed during the WBN safe shutdown system analysis was the basic input for the identification of electrical circuits essential to ensure adequate equipment performance. Essential safe shutdown electrical circuits were identified for all the electrically-dependent devices in Table 3-2. However, for some equipment, either a subset of cables or no cables were identified. For example, cables were not selected for valves where local manual operation is required during cooldown and nitrogen bottle control stations are used for AFW flow control. The circuits identified included power, control, and instrumentation. Type II associated circuits as addressed in Section 7 were also treated as required circuits.

The identification and analysis of these essential electrical circuits was based on one-line diagrams, schematics, and wiring diagrams from which the necessary circuit cables were selected for the subsequent cable routing and separation analysis. Circuit evaluation and

identification considers equipment functionality requirements. Circuits are identified for active and passive equipment. Circuit identification for high/low pressure boundary components considered the possibility of more conservative cable faults (e.g., 3 phase to 3 phase faults).

For each electrical component, circuits and cables were identified (1) which are required for safe shutdown to ensure functionality or (2) failure of which is detrimental. The circuits not included per the above criteria included annunciator, computer, motor stator heaters and external monitoring circuits. Those circuits which are electrically isolated from the electrical circuits of concern, or whose failure does not affect functionality, were not included in the separation analysis.

WBN utilizes Distributed Control Systems (DCS) for Non Safety Related Control Systems. Each unit's DCS is interconnected via fiber optic networks but is isolated from the other unit. Unit 1 has one DCS network which is located totally in the control building Auxiliary Instrument Room (AIR), Room 708.0-C1. The Unit 2 DCS is segmented into two functional segments with one in the Auxiliary Control Room (ACR) and one in the control building AIR, Room 708.0-C4. The network in the ACR is for monitoring and maintenance purposes only and the controls function independent of the network. In order to allow monitoring by the DCS Work Station, the ACR and AIR network segments are interconnected via the DCS network which is configured to mitigate network failures. This prevents a failure of one network segment (i.e., ACR network) from affecting the other segment (i.e., AIR network) and vice versa. Packet rate limiters are used on the DCS network to provide redundant assurance that data transmission cannot impede communications in the AIR segment. This isolation between the ACR and AIR, ensures that no event arising from equipment failures, such as caused by a fire, can inhibit DCS equipment outside that fire zone.

For each safe shutdown Key, cable block diagrams were developed for each safe shutdown component to identify cables required to ensure that the component can perform its safe shutdown function.

7.0 ASSOCIATED CIRCUITS OF CONCERN

7.1 Introduction

The separation and protection requirements of 10 CFR 50, Appendix R apply not only to safe shutdown circuits but also to "associated" circuits which could prevent operation or cause maloperation of shutdown systems and equipment. The identification of these associated circuits of concern was performed for WBN in accordance with NRC Generic Letter 81-12, the Staff's clarification to Generic Letter 81-12 (Part II, Reference 4.1.12), and Generic Letter 86-10 (Part II, Reference 4.1.16). The generic letters defined associated circuits of concern as those which have a physical separation less than that required by Section III.G of Appendix R, and have one of the following:

Type I	A common power source with the shutdown equipment and the power source is not electrically protected from the circuit of concern by coordinated breakers, fuses, or similar devices;
Type II	A connection to circuits of equipment whose spurious operation would adversely affect the shutdown capability;
Type III	A common enclosure with the shutdown cables, and, (1) are not electrically protected by circuit breakers, fuses or similar devices, or (2) will allow propagation of the fire into the common enclosure

7.2 Associated Circuits by Common Power Supply and Common Enclosures

The electrical distribution system was reviewed to assure that Type I associated circuits by common power supply are addressed by providing selective protective trip coordination for all FSSD power supplies. Type III associated circuits by common enclosures were addressed by ensuring that all existing circuits in Category 1 buildings are electrically protected with a fuse or breaker that actuates prior to the jacket of existing faulted cables reaching their auto-ignition temperature. For new circuits, Type III associated circuit electrical fault protection is provided to ensure that the fuse or breaker operates prior to the temperature of the insulation reaching its insulation damage temperature.

Electrical circuit fault protection was originally designed to provide protection for plant electric circuits via protective relaying, circuit breakers and fuses. Protective equipment was designed and applied to ensure adequate protection of electrical distribution equipment, including cables, from electric faults and overload conditions in the circuits. The selection and application of these devices was in accordance with TVA design practices and is documented in engineering calculations. The protective equipment ensures that electrical faults and overloads do not result in any more cable degradation than is expected when operating conditions are below the set point of the protective equipment. This also limits cable damage and prevents cable faults from resulting in internal cable temperatures which could cause ignition of cable insulation.

An integral part of the original electric system protection was the proper coordination of these electrical protective devices. Such coordination assures that the protective device nearest (in an electrical sense) to the fault operates prior to the operation of any "upstream" protective devices, and provides interruption of electrical service to a minimum amount of equipment. The original electrical protection design at WBN required coordination of such electrical protective devices and is documented in engineering calculations. Electrical design practices ensures that no associated circuits of concern by common power supply (Type I) or by common enclosure (Type III) exist

7.3 Associated Circuits by Spurious Operation

Cables that are not part of safe shutdown circuits may be damaged by the effects of postulated fires. This cable damage may consequently prevent the correct operation of safe shutdown components, or result in the maloperation of equipment which directly prevents the proper

performance of the safe shutdown systems. The effects of spurious operations may be conceptually divided into two subclasses as follows:

- (1) Maloperation of safe shutdown equipment due to control circuit electrical interlocks between safe shutdown circuits and other circuits; for example, the numerous safe shutdown equipment automatic operation interlocks from process control and instrument circuits.
- (2) Maloperation of equipment that is not defined as part of the safe shutdown systems, but that could prevent the accomplishment of a safe shutdown function; for example, inadvertent depressurization of the RCS or the MS system by spurious opening of boundary valves.

The evaluation of Appendix R events ensures that any failure of associated circuits of concern by spurious operation (Type II) does not prevent safe shutdown. Credible electrical faults considered in the analysis included open circuit, short circuit (conductor-to-conductor), short to ground, and cable-to-cable (hot-short) including 3-phase hot-shorts for high/low pressure interface valves. The analysis also considers that the normally ungrounded 125V DC power distribution system is grounded due to fire damage.

In order for cable faults that generate spurious operation to occur, the following conditions must exist synergistically at the cable fault location:

- (1) Sufficient energy must exist due to the fire to create failure of the cable jacket and insulating material;
- (2) The failure of the jacket and insulating material must occur in a way that directly exposes the cable conductors;
- (3) For each short circuit, two or more specific conductors must come into direct contact causing low impedance conductor-to-conductor connections;
- (4) For certain types of spurious operation, multiple electrically independent shorts must occur;
- (5) No additional conductors that would cause circuit fault currents and operation of circuit protective devices may participate in the short condition; and
- (6) No ground faults that would cause operation of circuit protective devices must occur.

The spurious operation analysis performed for WBN recognized the extremely low probability of certain types of these faulted conditions. The following cable short conditions causing spurious operation were considered of sufficiently low likelihood that they were assumed not to require additional analysis or modification (unless it involves high-low pressure boundary interfaces):

CASE:

- (1) Three phase-AC power circuit cable-to-cable faults (6.9kV and 480V)
- (2) Two wire ungrounded-DC power circuit cable-to-cable faults (125V)
- (3) Two wire ungrounded-AC control circuit cable-to-cable faults (120V)

With respect to Cases (1), (2), and (3), no conductor-to-conductor faults within the same power cable can cause spurious powering of the associated device. Only power cable-to-cable connections between one de-energized and one energized power circuit could permit operation. For the case of the three-phase-AC circuit, three electrically independent cable-to-cable shorts must occur without grounds in order to power the associated device. Similarly, for the two-wire ungrounded DC power circuit, two electrically independent cable-to-cable shorts without grounds must occur. The likelihood of such occurrences has been acknowledged by the NRC Staff to be sufficiently low to permit excluding such faulted conditions from consideration except for high/low pressure boundary components. Therefore, for the above identified spurious operations caused by cable faults, only 3-phase hot-shorts for high/low pressure boundary interface valves have been incorporated into the analysis.

The fundamental basis of excluding the remaining shorts from consideration is based on the need for multiple cable-to-cable electrically independent faults in order for spurious operation to occur.

Concerning Case (2), all DC control circuits at WBN are ungrounded. In order for spurious operation to occur due to circuit-to-circuit faults between DC circuits supplied from different sources, at a minimum, two electrically independent cable-to-cable shorts without grounds must occur.

For the ungrounded AC control circuits in Case (3), the identical consideration exists. Most MCC transformer secondary 120V AC control circuits are ungrounded. Therefore, at a minimum, two cable-to-cable shorts must simultaneously occur in order for spurious operation to result for circuits supplied from different sources.

7.4 Multiple High Impedance Faults

Multiple High Impedance Faults (MHIFs) are considered in accordance with Appendix B.1 to NEI-00-01 (Part II, Reference 4.3.6) as endorsed by RG 1.189 revision 2 (Part II, Reference 4.1.45) which establishes a base case analysis demonstrating that the probability of MHIFs is sufficiently low such that they do not pose a credible risk to post-fire safe shutdown when certain criteria are met. Those criteria are requirements which establish applicability of the base case to individual plant designs. The Watts Bar electrical power supplies relied upon for motive and control power for safe shutdown equipment that must operate for FSSD comply with those

requirements is described in the following table:

NEI-00-01 Rev. 2 Appendix B.1 MHIF Base Case Applicability and Compliance	
Base Case Condition	WBN Compliance
The power supply in question must operate at a nominal AC or DC voltage greater than 110 V. Specifically, this analysis does not apply to AC and DC control power systems operating at 12 V, 24 V, or 48 V. Nor is the analysis applicable to instrument loops regardless of operating voltage.	The applicable WBN FSSD power supplies all operate at greater than 110V (120V AC, 125V DC, 250V DC, 480V AC, and 6900V AC)
For the power supply in question, electrical coordination must exist between the supply-side overcurrent protective device(s) and load-side overcurrent protective devices of concern. Achievement of proper selective tripping shall be based on the guidance of IEEE 242, or other acceptable criteria	For FSSD power sources, electrical coordination exists between the supply side overcurrent protective device(s) and load-side overcurrent protective devices of concern. Proper selective tripping is based on the guidance of IEEE 242. (Note 1)
For 120 V AC and 125 V DC power supplies, in addition to adequate coordination, a minimum size ratio of 2:1 shall exist between the supply-side protective device(s) and load-side devices of concern (for example, a distribution panel with a 50 A main circuit breaker cannot have any load-side breakers larger than 25 A). This stipulation adds additional margin to account for slower protective device clearing times of low-energy circuits.	For 120 V AC and 125 V DC FSSD power supplies the WBN design meets the minimum size ratio of 2:1 between the supply-side protective device(s) and load-side devices of concern.
The electrical system must be capable of supplying the necessary fault current for sufficient time to ensure predictable operation of the overcurrent protective devices in accordance with their time-current characteristics.	The WBN FSSD electrical power systems are capable of supplying the necessary fault current for sufficient time to ensure predictable operation of the overcurrent protective devices in accordance with their time-current characteristics. These features are demonstrated in the WBN electrical power system coordination and protection calculations.

NEI-00-01 Rev. 2 Appendix B.1 MHIF Base Case Applicability and Compliance	
Base Case Condition	WBN Compliance
Each overcurrent protective device credited for interrupting fault current shall: <ul style="list-style-type: none"> Be applied within its ratings, including voltage, continuous current, and interrupting capacity Be listed or approved by a nationally recognized test laboratory (e.g., UL, ETL, CSA, etc.) to the applicable product safety standard (fuses, molded case circuit breakers, circuit protectors, GFI devices) or be designed and constructed in accordance with applicable ANSI and NEMA standards (protective relays, low and medium voltage switchgear). 	The WBN FSSD power supply overcurrent protective devices credited for interrupting fault current are: <ul style="list-style-type: none"> Applied within their ratings, including voltage, continuous current, and interrupting capacity Listed or approved by UL to the applicable product safety standard or are designed and constructed in accordance with applicable ANSI and NEMA standards. (Note 1)
Proper operation of the overcurrent devices shall be ensured by appropriate testing, inspection, maintenance, and configuration control.	The overcurrent protective devices associated with FSSD electrical power sources are included in the WBN electrical inspection, testing, and maintenance program and are under the WBN configuration control program. (Note 1)
The electrical system associated with the power supply in question shall conform to a recognized grounding scheme. Recognized schemes include solidly grounded, high impedance or resistance grounded, or ungrounded.	WBN electrical power systems associated with the FSSD power sources conform to recognized grounding schemes. The 480 VAC and DC systems are ungrounded. The 120 VAC systems are grounded. The 6900 VAC system is high impedance grounded.

Note 1 – Power supplies whose load cables are not located in fire zones where the supply is credited do not pose a MHIF concern (e.g. Offsite power sources and their breaker control power sources are not safety-related nor Class 1E. But, they are not an MHIF concern because they are not credited where their load cables could be exposed to potential high impedance faults).

7.5 Current Transformer Secondaries

When a secondary circuit of a current transformer (CT) opens due to a fire at a remote location, ionized gases and/or additional fires in other locations could be generated, resulting in fire propagation to additional fire areas. Fire hazards due to a fire-induced open circuit in the secondary of CTs installed in high energy panels (i.e., 6.9kV switchgear) of the Appendix R required and non-required power systems have been evaluated. Three types of CT circuits used in the auxiliary power system have been evaluated: ground fault, differential relaying, and protective relaying.

For Appendix R required and non-required 480V switchgear panels, the CT circuits are contained in the panels. For the CT secondary circuit to be opened by the fire, the fire has to be localized inside the switchgear assembly. The same is true for the 6.9kV switchgear panel

ground fault circuit. Since it is contained within the 6.9kV panels, the fire has to be localized in the switchgear assembly for the CT secondary circuit to be opened by a fire. Ground fault circuits do not, therefore, result in fire propagation to other fire areas.

The 6.9kV CT circuit that is connected to protective relaying and a current transducer is also contained within the switchgear panel. The output of the current transducer is connected to a remote indicator, and the current transducer is an electrical isolator. Additionally, the output-to-input of the current transducer has been tested for 1500V AC differential. Electrical isolation also exists for the Watt & VAR transducers used on the 6.9kV switchgear at WBN.

With three exceptions, the board differential relaying circuits are totally internal to the switchgear panels. The three exceptions are: (1) between the 6.9kV switchgear emergency supply feeders and the diesel generators which are included in the interaction analysis as required circuits; (2) between the 6.9kV Start and Unit Boards which are not required circuits; and (3) the CSST differential relaying circuits which are required offsite power circuits. Current imbalance created by an open CT circuit causes the protective differential relay to open the supply circuit breaker. This removes primary power to the CT within the time required for protective relay and breaker operation. Since the EDG or CSST differential relay circuit can cause loss of the power train, it is evaluated as a required circuit. Likewise, current imbalance in the protective differential relay of the non-required circuits also opens the supply circuit breaker.

8.0 HIGH/LOW PRESSURE BOUNDARY INTERFACES

Special considerations for high/low pressure interfaces to meet the requirements of 10CFR50 Appendix R are described in Generic Letters 81-12 (Part II, Reference 4.1.12) and 86-10 (Part II, Reference 4.1.16) and Information Notice 87-50 (Part II, Reference 4.1.21). Per Generic Letter 81-12, the following information is required for high/low pressure boundary interfaces in order to ensure that they are adequately protected for the effects of a single fire:

- (1) Identify each high/low pressure interface that uses redundant electrically controlled devices (such as two series motor operated valves) to isolate or preclude rupture of any primary coolant boundary.
- (2) Identify the essential cabling for each device.
- (3) Identify each location where the identified cables are separated by a barrier having less than a 3-hour fire rating.
- (4) For the areas identified in (3) above (if any), provide the bases and justification.

Per Generic Letter 86-10, the possibility of getting a hot short on all three phases of three phase AC circuits in the proper sequence to cause spurious operation of a motor is only required to be evaluated for cases involving high/low pressure interfaces. The same applies to ungrounded DC circuits regarding two hot shorts of proper polarity without grounding resulting in spurious operation of high/low pressure interfaces.

Per Information Notice 87-50, for those low pressure systems that connect to the reactor coolant system (a high pressure system) at least one isolation valve must remain closed despite any damage that may be caused by fire, because the high pressure from the reactor coolant system could result in failure of the low pressure piping.

Based on the above, a review of the systems credited for safe shutdown at WBN was conducted to identify potential high/low pressure interfaces. These interfaces were evaluated to identify valves that, if spuriously opened, expose low pressure piping to high pressure resulting in failure of the low pressure system.

The control system for RHR valves has been designed to prohibit opening unless the reactor coolant pressure is low enough to prevent RHR piping failure. However, if these valves opened spuriously, exposure of RHR piping to high pressure may cause failure of the RHR system piping and render the system inoperable. Therefore, the RHR/RCS isolation valves (1/2-FCV-74-1, 2, 8, and 9) are considered high/low pressure interface valves.

Excess letdown is not required for safe shutdown. However, spurious opening of these valves could expose downstream piping to excess pressure that may cause failure resulting in the rupture of the primary coolant boundary. Therefore, the excess letdown isolation valves (1/2-FCV-62-55, and 56) are considered high/low pressure interface valves.

Normal letdown is not required for safe shutdown. However, spurious opening of these valves may cause failure to maintain RCS inventory control. Therefore, the normal letdown isolation valves (1/2-FCV-62-69 and 70) are considered high/low pressure interface valves.

The safety injection system (SIS)/RHR interface valve with the RCS is located in piping that connects the SIS with the RHR system at a point between the RCS/RHR isolation valves. SIS is not required for safe shutdown. However, spurious opening of valve 1/2-FCV-63-186 along with either 1/2-FCV-74-1-A or -9-B could expose SIS piping to damaging pressure. Therefore, this valve is considered a high/low pressure interface.

The pressurizer PORVs and reactor head vent isolation valves are designed to function at high RCS operating pressure. They provide the safe shutdown function to initially remain closed for RCS inventory control purposes. The pressurizer PORVs also provide RCS pressure control during cool down. The primary method of RCS inventory control during cool down is to maintain pressurizer level while makeup is provided by injecting borated water through the RCP seals as part of seal cooling and the RCS cool down rate is adjusted by controlling steam generator level and pressure to provide RCS volume shrinkage equal to the volume of fluid injected through the RCP seals. The reactor head vent isolation valves (where available) and the pressurizer PORVs can also be used to reduce RCS inventory. Discharge from the RCS through these valves is directed to the inlet of the pressurizer relief tank (PRT). The inlet lines are sized to accommodate vent/relief discharge flow without piping or component failure. Continuous blowdown to the PRT may eventually cause spillage of excess coolant to containment through the PRT rupture disks. Therefore, the pressurizer PORVs and block valve combinations, and reactor head vent isolation valves are considered high/low interface valves.

9.0 LOCATION OF SAFE SHUTDOWN EQUIPMENT, CABLES AND RACEWAYS

The safe shutdown equipment list (Table 3-2) identifies the equipment, components, and sub-components relied on for fire safe shutdown.

The routing (conduits and tray nodes) of each safe shutdown cable was obtained from the Integrated Cable and Raceway Design System (ICRDS). This information was entered into a database concurrently with the corresponding room location of each conduit and cable tray node. The route of each safe shutdown cable by room and by fire area has been identified and later used as part of the separation analysis. For large rooms containing redundant paths of safe shutdown equipment and cables, equipment locations and cable routes were further

refined by subdividing the room based on column lines. Walkdowns were conducted to verify the locations of the equipment and conduits.

10.0 SAFE SHUTDOWN SYSTEM SEPARATION EVALUATION METHODOLOGY

10.1 Overview of Evaluation Methodology

The safe shutdown analysis first established the systems, components, and cables required for fire safe shutdown purposes. The locations of equipment and routing of cables were determined as described in previous sections. The separation criteria of Appendix R were evaluated on a fire area basis to meet the safe shutdown performance goals as identified in NRC generic letters and guidance documents.

The Appendix R analysis evaluated fire areas that contain systems, components, and cables required for fire safe shutdown. The turbine building, condensate demineralized waste evaporator (CDWE) building, and Yard specific plant locations that directly abut fire areas containing FSSD capabilities, were also included in the separation analysis. Plant structures that do not contain systems, components, or cables associated with FSSD capabilities, or which do not directly abut fire areas containing FSSD capabilities (e.g., service building, modification building, etc.) were not included in the separation analysis. The adequacy of barriers separating safe shutdown-related and non-safe shutdown-related buildings (such as between the control and turbine buildings) was evaluated.

The fire safe shutdown analysis was based on the evaluation of separation in the auxiliary, control, diesel generator, and reactor building, along with the intake pumping station. The auxiliary and diesel generator buildings, and the intake pumping station, were evaluated against the requirements of Appendix R Sections III.G.1, III.G.2a, III.G.2b, and III.G.2c. Detailed procedures have been developed to ensure fire safe shutdown capability in case of an Appendix R fire in the identified locations where applicable.

For purposes of this analysis, the entire control building was evaluated as a single alternative shutdown location under the criteria of Appendix R Section III.G.3 and III.L. Fire safe shutdown activities take place outside of the control building at the ACR and other manual action locations. Detailed procedures have been developed to ensure fire safe shutdown capability in case of an Appendix R fire in the control building.

The reactor buildings were analyzed in accordance with the criteria of Appendix R Sections III.G.2d, III.G.2e, and III.G.2f. Interactions were identified where less than 20 feet, free of intervening combustibles, exist between redundant safe shutdown paths or trains of components. Such interactions are resolved by some combination of protecting one redundant path or train of safe shutdown components with noncombustible radiant energy shields or by fire detectors and automatic suppression in the area. Detailed procedures have been developed to ensure fire safe shutdown capability in case of an Appendix R fire in either reactor building.

Interactions between redundant safe shutdown paths were identified based on the location of the components and cables of redundant safe shutdown trains. Interactions are defined as locations where components of redundant shutdown paths do not meet Appendix R separation criteria. Interactions which require resolution were identified when redundant capabilities did not meet the above criteria. These interactions were evaluated for their impact on the safe shutdown capability of the plant and their resolutions have been documented. The resolutions may consist of modifications, use of alternate equipment, manual operator actions, fire barrier

and radiant energy shield installation, post-fire repairs, engineering evaluations prepared in accordance with the guidance of Generic Letter 86-10, or deviation requests.

10.2 Fire Area Evaluation Methodology

Separation analyses were initially evaluated for viability on a fire area basis. The fire area separation analysis was effective where only a single room constituted a fire area, and where redundant capability existed outside of the fire area. Large rooms and specific fire areas containing redundant trains of safe shutdown systems, components, or cables have been further subdivided for purposes of the analysis. Where multiple rooms exist in the fire area, regulatory barriers (walls and floor/ceiling assemblies) with a 2-hour fire rating have been credited under Appendix R Section III.G.2c criteria. The 2-hour fire rating exceeds the requirements of Section III.G.2c. The 2-hour rating (as opposed to a minimum 1-hour rating) has been chosen because of the positive effect on fire protection IPEEE and PRA analyses. Where the 2-hour fire rated barriers have been credited, they are identified as regulatory fire barriers, and automatic detection and suppression capabilities on both sides of the barriers have been evaluated per Section III.G.2c criteria. The fire rated non-regulatory fire barriers (maintained for property protection, but not required for Appendix R separation) have not been credited in the analysis.

Credit has been taken for a minimum of 20 feet of separation under Appendix R Section III.G.2b criteria in those fire areas that contain multiple rooms not separated by regulatory fire barriers. Section III.G.2b criteria have also been utilized in large rooms that contain redundant trains of safe shutdown capability. Section III.G.2c criteria have been applied where 20 feet of separation was not available. Section III.G.2b criteria have been used in the large open areas of the auxiliary building and adjacent rooms which are not enclosed by regulatory fire barriers. It also applies to the B train 480V reactor MOV board rooms on 772' elevation, above the part-height 1-hour barrier separating redundant CCS pumps and cables, and in the electrical equipment room in the intake pumping station (IPS).

10.3 Analysis Volume Evaluation Methodology

An analysis volume (AV) is a defined area subjected to a detailed Appendix R safe shutdown analysis to ensure that one train of FSSD capability is always available. The analysis volume can consist of an entire fire area or a portion of a larger fire area. When the analysis volume is a portion of the fire area, it can consist of multiple rooms, a single room, portions of a room (normally defined by column line locations), or any combination of the above. Each analysis volume that involves only a portion of a room includes a 20 foot wide (minimum) "buffer zone" between it and the adjacent analysis volume. The buffer zones are analyzed as part of the larger analysis volume and as a separate analysis volume.

In performing safe shutdown analyses, safe shutdown components and cables are assigned to the analysis volume containing the component. Additionally, components located in the buffer zones are assigned to an analysis volume for the buffer zone.

The safe shutdown analysis is performed assuming that all components and cables in the analysis volume are damaged. A set of safe shutdown equipment is then selected and corrective actions designated to ensure safe shutdown functions can be maintained with the selected equipment. Corrective actions consist of cable relocation, cable protection by electrical raceway fire barrier system (ERFBS), manual operator actions and/or application of Appendix R, Section III.G.2 separation criteria as described in Sections 10.1, 10.2 and 10.3.

10.3.1 Analysis Volume Types and Appendix R Compliance

The following types of analysis volumes were identified and used for evaluating Appendix R compliance.

- a. *Fire Area* - The fire area is separated from other adjacent areas by rated fire barriers (walls, floors, & ceilings) that are sufficient to withstand the hazards associated with the area and, as necessary, to protect equipment in the area from a fire outside the area. The fire area may be a single room or several individual rooms. If redundant safe shutdown cables are located in the analysis volume, they are protected by an ERFBS throughout the analysis volume (i.e., from rated fire barrier to rated fire barrier). For example an analysis volume consisting of an entire fire area (FA-19) is shown in Figure 1.

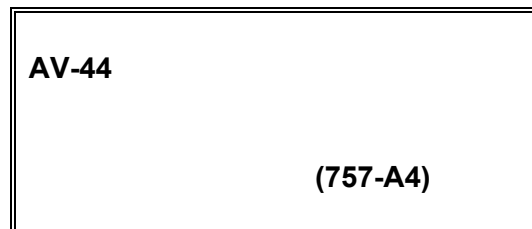


Figure 1

This analysis volume is bounded on all sides by 3-hour rated fire barriers. The 3-hour fire barriers provide for protection of safe shutdown components in accordance with Appendix R Section III.G. Redundant safe shutdown cables in the analysis volume are protected by an ERFBS throughout the analysis volume (i.e., from 3-hour rated fire barrier to 3-hour rated fire barrier).

- b. *Single Room within a Fire Area* - The room is separated from other adjacent rooms in a fire area by regulatory fire barriers (walls, floors, & ceilings) that have a 1-hour or greater fire rating. The fire barriers are provided in accordance with Appendix R Section III.G.2.a and III.G.2.c. If redundant safe shutdown cables are located in the analysis volume, they are protected by an ERFBS throughout the analysis volume (i.e., from regulatory fire barrier to regulatory fire barrier). An example of an analysis volume

consisting of a single room within a fire area (FA-1) is shown in Figure 2.

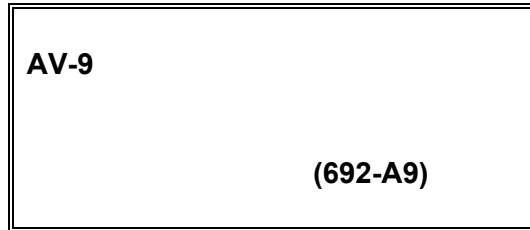


Figure 2

This analysis volume is bounded on all sides by rated fire barriers. Fire propagation does not occur beyond the physical barriers of the room. This type of analysis volume configuration provides for protection of safe shutdown equipment in accordance with Appendix R Section III.G.2.a and G.2.c. Redundant cables requiring protection are protected with an ERFBS from the rated fire barrier to rated fire barrier.

- c. *Combination of Rooms within a Fire Area* - The combination of rooms in the analysis volume are separated from other analysis volumes within the same fire area by regulatory fire barriers that are rated for at least 1-hour. The regulatory fire barriers that separate the analysis volume from other analysis volumes in the fire area provide for protection of safe shutdown equipment in accordance with Appendix R Section III.G.2. Except as discussed in Section 10.2 above and in Part VII, Section 2.5, "Partial Fire Wall Between CCS Pumps," if redundant safe shutdown cables are located in the analysis volume, they are protected by an ERFBS throughout the analysis volume (i.e., from regulatory fire barrier to regulatory fire barrier that establishes the analysis volume boundary). An example of this type analysis volume configuration is shown in Figure 3.

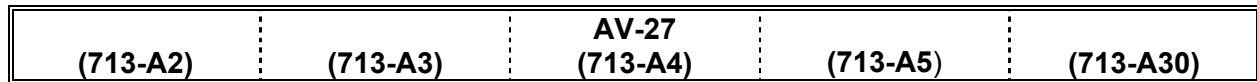


Figure 3

Combination of rooms within a Fire Area
(dashed lines denote non-regulatory barrier room divisions)

In this example, rooms 713-A2 through A5 and 713-A30 were combined and evaluated as a single analysis volume (AV-27). Fire is unlikely to spread from one room to the next but, in any event, does not propagate beyond the regulatory barriers establishing the boundary of the analysis volume. ERFBS installed to protect redundant cables are applied from regulatory barrier to regulatory barrier and do not stop at the intermediate walls.

- d. *Sections of Large General Areas* - Analysis volumes consisting of sections of large general areas are separated from each other by "buffer zones." The buffer zones are greater than 20 feet in width. In large general areas where buffer zones are used that include intervening combustibles, enhanced automatic suppression and detection systems are installed in the large general area. Refer to FPR Part VII, Section 2.4, "Intervening Combustibles," for additional information. If redundant safe shutdown cables are located in the analysis volume, one train is selected for protection by an ERFBS. The ERFBS is applied throughout the analysis volume (i.e., from analysis boundary to analysis volume boundary); exceptions are noted and justified for the

applicable analysis volumes in FPR Part VI. An example of this type of analysis volume is shown in Figures 4.1 and 4.2.

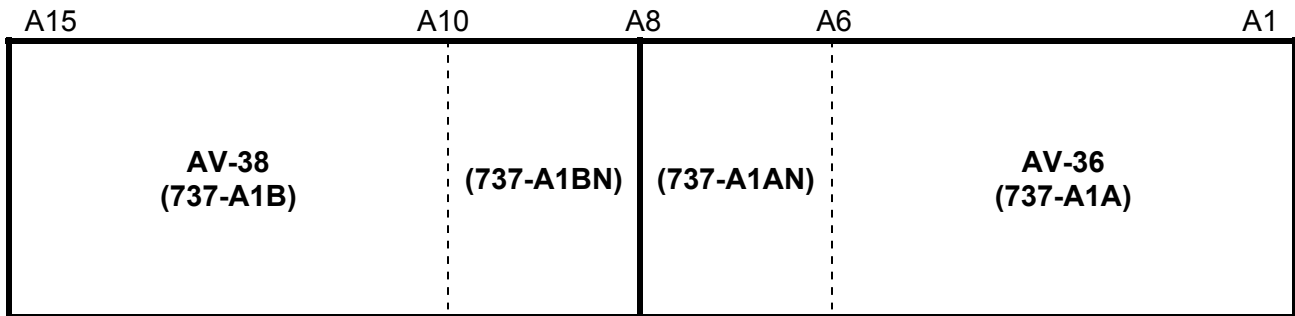


Figure 4.1

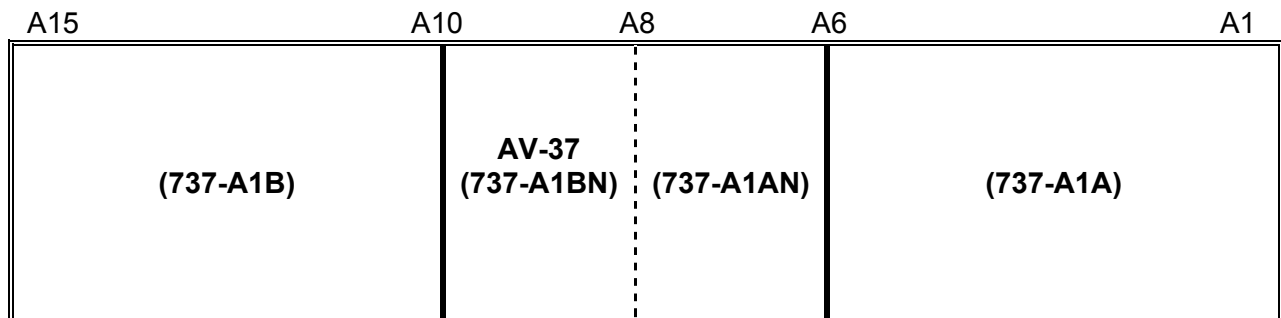


Figure 4.2

Sections of large general areas (Aux. Bldg. El. 737)

In this example, the 737' elevation of the auxiliary building was subdivided into smaller sections to facilitate analysis. First as shown in Figure 4.1, the 737' elevation was split into two main analysis volumes at column line A8 (AV-36 and AV-38). AV-36 covers the area between column lines A1 to A8. AV-38 covers the area between column lines A8 to A15. Each analysis volume includes a >20' buffer zone (737-A1BN and 737-A1AN) which forms the interface between the analysis volume subdivisions. Next as shown in Figure 4.2, a third analysis volume (AV-37) was formed that consisted of the AV-36 and AV-38 buffer zones. AV-37 consists of the area between column lines A6 to A10 and is approximately 42 feet in width.

TVA first evaluated the main analysis volumes (AV-36 and AV-38). In each of these analysis volumes, TVA performed an evaluation to ensure compliance with Appendix R Section III.G.2. Where cables of redundant safe shutdown equipment are located in an AV, one train is selected for protection with an ERFBS. The selected cables are protected from AV boundary to AV boundary. In this example, Train B cables are protected in the AV-36 area and Train A cables are protected in the AV-38 area. If a Train B cable were to transition AV-36, it would be protected from the rated fire barrier at A1 to the end of the analysis volume at A8.

TVA next evaluated the analysis volume created by combining the AV-36 and AV-38 buffer zones (AV-37). This evaluation addresses potential fires that may occur at the AV-36/AV-38 interface as well as address the potential for a fire to propagate across the interface. In performing the AV-37 analysis, TVA credited components and cables

outside AV-37 to the maximum extent practical to ensure that separation between redundant trains was greater than 20 feet. Where cables of redundant safe shutdown equipment were located in AV-37, one train was selected for protection with an ERFBS. Any ERFBS needed are installed on the selected safe shutdown equipment cables throughout the boundaries of AV-37.

This evaluation process results in an overlap area of greater than 20 feet where both trains of safe shutdown equipment cables are protected. For example, if Train A cables were selected to be protected throughout AV-37, both trains of safe shutdown equipment cables would be protected in AV-36's buffer zone (column lines A-6 to A-8) because Train B cables are protected throughout AV-36. In actual practice, the only cables that require protection in AV-37 are:

- (1) A conduit containing Channel D instrumentation cables (to ensure adequate instrumentation is available)
- (2) A conduit containing PORV and reactor head vent cables (for prevention of hot spurious shorts)

In each of the above cases, the conduits are wrapped throughout AV-36 and AV-37. For other components, TVA credited cables located outside AV-37 to achieve separation much greater than 20 feet.

- e. *Sections of Large Rooms* - Analysis volumes that consist of large room sections separated by an overlap region that is greater than 20 ft. The overlap region is considered part of both analysis volumes. If the overlap region contains intervening combustibles, enhanced automatic suppression and detection systems are installed in the large room. Refer to Section 2.4, "Intervening Combustibles," in Part VII for additional information. If redundant safe shutdown cables are located in the analysis volume, they are protected by an ERFBS throughout the analysis volume (i.e., from analysis volume boundary to analysis volume boundary). An example of this type of analysis volume is shown in Figures 5.1 and 5.2.

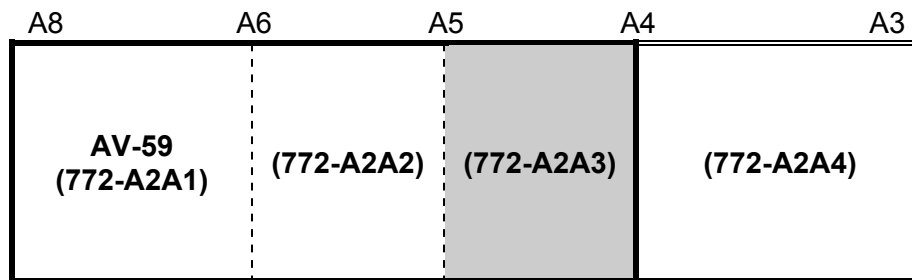


Figure 5.1

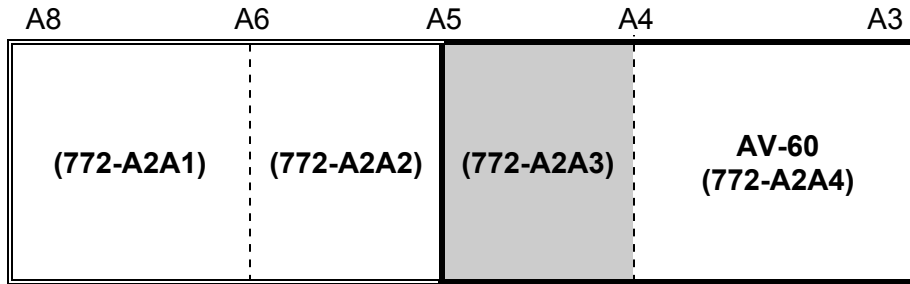


Figure 5.2
Sections of large rooms (Aux. Bldg. El. 772)

Room 772-A2 is a large room subdivided into two analysis volumes to facilitate analysis (AV-59 and AV-60). As showing in Figure 5.1, AV-59 consists of sections A2A1, A2A2, and A2A3. As showing in Figure 5.2, AV-60 consists of sections A2A3 and A2A4. Section A2A3 is the overlap area that is part of both analysis volumes. This overlap area was selected to provide a separation distance greater than 20 feet between the joining analysis volumes.

In each of these analysis volumes, TVA performed an evaluation to ensure compliance with Appendix R Section III.G.2. Where cables of redundant safe shutdown equipment are located in an AV, one train is selected for protection with an ERFBS. The selected cables are protected from AV boundary to AV boundary. In this example the only cables requiring ERFBS protection in AV-59 and AV-60 were located and protected in both AVs.

Table 3-3 identifies by analysis volume the rooms and portions of rooms included in the Appendix R separation analysis for each analysis volume. The compartmentation drawings, (Figures II-27A through II-46A excluding 37A) contained in Part II of the FPR, locate the fire areas and rooms at WBN.

Intervening combustibles consisting of exposed cable insulation in trays, ERFBS cable protection, or floor-based fixed and transient combustibles have been mitigated by:

- (1) Enhanced suppression consisting of automatic preaction sprinklers located at ceiling level and below obstructions to provide coverage of floor based fires.
- (2) Documented electrical cable protective device sizing to preclude electrical initiation of cable fire.
- (3) Limited flame spread of cable insulation/jacket material - New cables are required to meet IEEE-383 vertical tray test if available. Flame retardant coating is applied to non-IEEE-383 cables in accordance with Design Criteria WB-DC-30-4 (Part II, Reference 4.2.29).
- (4) Very low flame spread of Thermo-Lag 330-1.
- (5) Dedicated onsite fire brigade.

Refer to the intervening combustible deviation request in Part VII of the FPR for additional justification.

Where redundant cables or components could be damaged by fire in an analysis volume, that function was ensured primarily by either: 1) 1-hour raceway fire barriers (or radiant energy shields inside containment) along with automatic suppression and detection or 2) operator manual actions. Three hour raceway fire barriers are used where automatic suppression and detection are not provided.

11.0 Multiple Spurious Operation (MSO) Evaluation

Regulatory Guide 1.189, Fire Protection for Nuclear Power Plants, Revision 2, formalized the requirements for addressing multiple fire induced circuit failures, or MSOs and multiple concurrent hot shorts. RG 1.189 (Part II, Reference 4.1.45) endorsed the methodology in NEI 00-01 Revision 2 (Part II, Reference 4.3.6) for addressing those issues. In accordance with the NEI 00-01 Rev. 2 guidance, an expert panel was used to identify plant specific scenarios that might be caused by MSOs. The results of this expert panel review was documented in calculation NUC-WBN-NTB-XDN0000002011002, WBN Unit 1 Multiple Spurious Operation Review for Regulatory Guide 1.189, Revision 2 (Part II, Reference 4.2.22). Subsequent evaluation of the identified scenarios for Unit 1 resulted in a number of deficiencies which were entered into the plant corrective action tracking system. Results of the scenario evaluation for Unit 2 are documented in Calculation EDQ0009992012000085, Multiple Spurious Operation Evaluation (Part II, Reference 4.2.3).

TABLE 3-1
SAFE SHUTDOWN SYSTEMS AND SUBSYSTEMS BY KEY

Key 1A	Centrifugal Charging Paths
Key 1B	Component Cooling Paths
Key 1C	Emergency Raw Cooling Water Paths (TVA System 67, "Essential Raw Cooling Water System)
Key 2	Charging Flow Control Paths
Key 4	Volume Control Tank Suction
Key 5	RWST Suction
Key 7	RCS Pressure Boundary Isolation
Key 8	Excess Letdown Isolation
Key 9	RCP Thermal Barrier Cooling
Key 10	Containment Isolation
Key 11	Motor Driven Auxiliary Feedwater Paths
Key 12	Steam Generator Level Control Paths
Key 13	Auxiliary Control Air
Key 14	Turbine-Driven Auxiliary Feedwater Paths using FCV-1-15
Key 16	Steam Generator Level Control using TDAFW Pump
Key 17	Condensate Storage Tank Supply Paths to AFW
Key 19	Auxiliary Feedwater Pump Suction Paths from ERCW
Key 20	Secondary Side Isolation Using MSIVs
Key 21	Secondary Side Isolation Using TB Valves
Key 22	Main Feedwater Isolation Valves
Key 24	Steam Generator Blowdown Isolation Valves
Key 25	Secondary Side Safety Valves
Key 26	Secondary Side Relief Valves
Key 28	RCS Pressure Control
Key 29	Reactor Trip System
Key 30	RHR Cooling Flow Paths
Key 31	RHR Pump Paths
Key 36	Safety Injection System Accumulator Isolation
Key 37A	Main Control Room HVAC Paths
Key 37C	Diesel Generator Building HVAC Paths
Key 37J	Containment Cooling System
Key 37K	480V Transformer Rooms HVAC
Key 37O	CCS/AFW Pump Coolers and AFW Pump Room HVAC
Key 38, 38A	Electrical Power (includes Onsite and Offsite)
Key 48	RCS Letdown

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
0-BAT-236-1-D	125 V VITAL BATTERY I
0-BAT-236-2-E	125 V VITAL BATTERY II
0-BAT-236-3-F	125 V VITAL BATTERY III
0-BAT-236-4-G	125 V VITAL BATTERY IV
0-BAT-236-5-S	125 V VITAL BATTERY V
0-BAT-239-1	250V BATTERY 1
0-BAT-239-2	250V BATTERY 2
0-BD-200-A	6.9KV COMMON BOARD A
0-BD-200-C	COMMON SERVICE STATION BOARD C
0-BD-200-D	COMMON SERVICE STATION BOARD D
0-BD-206-1	480V AUXILIARY BUILDING COMMON BOARD
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
0-BD-239-1	250V BATTERY BD1
0-BD-239-2	250V BATTERY BD2
0-BKD-31-590	480v SHUTDOWN BD RM 2A EXHAUST BACKDRAFT DAMPER
0-BKD-31-591	480v SHUTDOWN BD RM 2A EXHAUST BACKDRAFT DAMPER
0-BKD-31-592	480v SHUTDOWN BD RM 1B EXHAUST BACKDRAFT DAMPER
0-BKD-31-593	480v SHUTDOWN BD RM 1B EXHAUST BACKDRAFT DAMPER
0-CHGR-236-1-D	125V VITAL BATTERY CHARGER 1-D
0-CHGR-236-2-E	125V VITAL BATTERY CHARGER 2-E
0-CHGR-236-3-F	125V VITAL BATTERY CHARGER 3-F
0-CHGR-236-4-G	125V VITAL BATTERY CHARGER 4-G
0-CHGR-236-6-S	125V VITAL BATTERY CHARGER 6-S
0-CHGR-236-7-S	125V VITAL BATTERY CHARGER 7-S
0-CHGR-236-8-S	125V VITAL BATTERY CHARGER 8-S
0-CHGR-236-9-S	125V VITAL BATTERY CHARGER 9-S
0-CHGR-239-1	250V DC BATTERY CHARGER 1
0-DPL-239-1	250VDC TURBINE BLDG DISTRIBUTION BOARD 1
0-DPL-239-2	250VDC TURBINE BLDG DISTRIBUTION BOARD 2
0-FCO-31-11-B	MCR HVAC DAMPER
0-FCO-31-12-A	MCR HVAC DAMPER
0-FCO-31-82-A	MCR HVAC DAMPER
0-FCO-31-91-B	MCR HVAC DAMPER
0-FCV-26-126-A	HP FP AB TRAIN A HDR VALVE
0-FCV-26-127-B	HP FP AUX BLDG TRAIN B HDR VALVE
0-FCV-26-13-B	HPFP TRAIN B HDR FCV TO YARD
0-FCV-26-15	HPFP COMMON HDR FCV
0-FCV-26-16	HPFP COMMON HDR FCV
0-FCV-26-17-B	HPFP COMMON HEADER TO YARD FCV
0-FCV-26-6-A	HPFP TRAIN A HDR FCV TO YARD
0-FCV-67-144-B	CCS HX C ERCW BYPASS FCV
0-FCV-67-151-A	CCS HX C DISCHARGE VLV (HDR A)
0-FCV-67-152-B	CCS HX C DISCHARGE VLV (HDR B)
0-FCV-70-12-B	CCS HX C OUTLET VALVE
0-FCV-70-194-B	SFPCS HX SUPPLY HEADER FCV
0-FCV-70-197-A	SFPCS HX SUPPLY HDR FCV
0-FCV-70-22-B	CCS HX C INLET VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
0-FI-67-226	ERCW FLOW TO CCS HX-C INDICATOR
0-FT-67-226	ERCW TO CCS HX-C FLOW TRANSMITTER
0-INV-235-1-D	SPARE CHANNEL I VITAL INVERTER
0-INV-235-2-E	SPARE CHANNEL II VITAL INVERTER
0-INV-235-3-F	SPARE CHANNEL III VITAL INVERTER
0-INV-235-4-G	SPARE CHANNEL IV VITAL INVERTER
0-ISV-70-524A	CCS SUPPLY TO SFP HX-A ISOL
0-ISV-70-524B	CCS SUPPLY TO SFP HX-B ISOL VLV
0-MTR-26-1-A	HIGH PRESSURE FIRE PUMP
0-MTR-26-4-B	HIGH PRESSURE FIRE PUMP
0-MTR-26-9-A	HIGH PRESSURE FIRE PUMP
0-MTR-26-11-B	HIGH PRESSURE FIRE PUMP
0-MTR-31-11-B	MCR AHU B-B MOTOR
0-MTR-31-12-A	MCR AHU A-A MOTOR
0-MTR-31-80/1-A	CW CIRC PUMP A-A
0-MTR-31-80/2-A	WATER CHILLER A-A
0-MTR-31-96/1-B	CW CIRC PUMP B-B
0-MTR-31-96/2-B	WATER CHILLER B-B
0-MTR-32-461	AUX AIR COMP A-A CAM TIMER/AIR DRYER FCV
0-MTR-32-462	AUX AIR COMP B-B CAM TIMER/AIR DRYER FCV
0-MTR-32-60-A	CONTROL AIR COMPRESSOR A-A
0-MTR-32-86-B	CONTROL AIR COMPRESSOR B-B
0-MTR-67-28-A	ERCW PUMP MOTOR A-A
0-MTR-67-32-A	ERCW PUMP MOTOR B-A
0-MTR-67-36-A	ERCW PUMP MOTOR C-A
0-MTR-67-40-A	ERCW PUMP MOTOR D-A
0-MTR-67-47-B	ERCW PUMP MOTOR E-B
0-MTR-67-51-B	ERCW PUMP MOTOR F-B
0-MTR-67-55-B	ERCW PUMP MOTOR G-B
0-MTR-67-59-B	ERCW PUMP MOTOR H-B
0-MTR-70-51-S	CCS PUMP C-S MOTOR
0-MTR-78-9-B	SPENT FUEL PIT PUMP B-B
0-MTR-78-12-A	SPENT FUEL PIT PUMP A-A
0-MTR-78-35-S	SPENT FUEL PIT PUMP C-S
0-OXF-206-A	AUXILIARY BUILDING COMMON BOARD TRANSFORMER A
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP
0-PNL-236-1-S	480 VAC VITAL DISCONNECT PNL CHANNEL I
0-PNL-236-2-S	480V AC VITAL DISCONNECT PNL CHANNEL II
0-PNL-236-3-S	480V AC VITAL DISCONNECT PNL CHANNEL III
0-PNL-236-4-S	480V AC VITAL DISCONNECT PNL CHANNEL IV
0-TANK-77-2701	LIQUID NITROGEN STORAGE TANK
0-TB-31-80/2-A	WATER CHILLER A-A
0-TB-31-96/2-B	WATER CHILLER B-B
0-TCV-67-1051-A	MAIN CONTROL RM HVAC TCV
0-TCV-67-1053-B	MAIN CONTROL RM HVAC TCV
0-TE-70-162	CCS TEMPERATURE ELEMENT
0-TI-70-162	ERCW/CCS HX-C OUTLET TEMP (CCS)
0-XSW-236-1-S	480V AC VITAL TRANSFER SWITCH I
0-XSW-236-2-S	480V AC VITAL TRANSFER SWITCH II
0-XSW-236-3-S	480V AC VITAL TRANSFER SWITCH III

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
0-XSW-236-4-S	480V AC VITAL TRANSFER SWITCH IV
0-XSW-236-68AC1-S	480V AC TRANSFER SWITCH, NORM/ALT CHARGERS 6-S/8-S
0-XSW-236-68AC2-S	480V AC TRANSFER SWITCH, SELECT CHARGERS 6-S/8-S
0-XSW-236-68DC1-S	125V DC TRANSFER SWITCH, SELECT BATTERY BOARDS 1/2
0-XSW-236-68DC2-S	125V DC TRANSFER SWITCH, SELECT CHARGERS 6-S/8-S
0-XSW-236-79AC1-S	480V AC TRANSFER SWITCH, NORM/ALT, CHARGER 7-S/9-S
0-XSW-236-79AC2-S	480V AC TRANSFER SWITCH, SELECT CHARGERS 7-S/9-S
0-XSW-236-79DC1-S	125V DC TRANSFER SWITCH, SELECT BATTERY BOARDS 3/4
0-XSW-236-79DC2-S	125V DC TRANSFER SWITCH, SELECT CHARGERS 7-S/9-S
1-BD-211-A-A	6.9KV SHUTDOWN BOARD 1A-A
1-BD-211-B-B	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
1-BD-237-A	INSTRUMENT POWER DISTRIBUTION PANEL 1A
1-BD-237-B	INSTRUMENT POWER DISTRIBUTION PANEL 1B
1-BKR-99-L116/1B-A	REACTOR TRIP SWGR A
1-BKR-99-L116/1C-B	REACTOR TRIP SWGR B
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR
1-DPL-264-1	120V TECHNICAL SUPPORT CENTER DISTRIBUTION PANEL 1
1-FCO-30-244A	480V TRANSFORMER RM 1A INTAKE AIR DAMPER
1-FCO-30-244B	480V TRANSFORMER RM 1A INTAKE AIR DAMPER
1-FCO-30-248A	480V TRANSFORMER RM 1B INTAKE AIR DAMPER
1-FCO-30-248B	480V TRANSFORMER RM 1B INTAKE AIR DAMPER
1-FCO-30-443-A	DIESEL GENERATOR VENT FAN DAMPER
1-FCO-30-445-B	DIESEL GENERATOR VENT FAN DAMPER
1-FCO-30-447-A	DG 1A-A ROOM EXHAUST FAN 1A MOTOR
1-FCO-30-449-B	DIESEL GENERATOR 1B-B ROOM EXHAUST FAN 1B
1-FCO-30-451-A	DG 1A-A ROOM EXHAUST FAN 2A MOTOR
1-FCO-30-453-B	DIESEL GENERATOR 1B-B ROOM EXHAUST FAN 2B
1-FCO-30-459-A	DG 1A-A ELECTRIC BOARD ROOM EXHAUST FAN MOTOR
1-FCO-30-461-B	DIESEL GEN 1B-B 480V ELEC BD ROOM EXHAUST FAN
1-FCV-1-103	MAIN STEAM COOL DOWN VALVE
1-FCV-1-104	MAIN STEAM DUMP VALVE
1-FCV-1-105	MAIN STEAM DUMP VALVE
1-FCV-1-106	MAIN STEAM DUMP VALVE
1-FCV-1-107	MAIN STEAM COOL DOWN VALVE
1-FCV-1-108	MAIN STEAM DUMP VALVE
1-FCV-1-109	MAIN STEAM DUMP VALVE
1-FCV-1-11	#2 SG MAIN STEAM ISOLATION VALVE
1-FCV-1-110	MAIN STEAM DUMP VALVE
1-FCV-1-111	MAIN STEAM COOL DOWN VALVE
1-FCV-1-112	MAIN STEAM DUMP VALVE
1-FCV-1-113	MAIN STEAM COOL DOWN VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FCV-1-114	MAIN STEAM DUMP VALVE
1-FCV-1-147-A	STEAM LINE WARMING VALVE LOOP 1
1-FCV-1-148-B	STEAM LINE WARMING VALVE LOOP 2
1-FCV-1-149-A	STEAM LINE WARMING VALVE LOOP 3
1-FCV-1-14-A	SG 2 BLOWDOWN CONTROL VALVE
1-FCV-1-150-B	#4SG MSIV BYPASS
1-FCV-1-15-A	AFWPT STEAM SUPPLY FROM SG 1 FLOW CONTROL VALVE
1-FCV-1-17-A	STEAM FLOW TO AUX FWPT ISOL VALVE
1-FCV-1-181-A	SG 1 BLOWDOWN ISOLATION VALVE
1-FCV-1-182-B	SG 2 BLOWDOWN ISOLATION VALVE
1-FCV-1-183-A	SG 3 BLOWDOWN ISOLATION VALVE
1-FCV-1-184-B	SG 4 BLOWDOWN ISOLATION VALVE
1-FCV-1-18-B	STEAM FLOW TO AUX FWPT ISOLATION VALVE
1-FCV-1-22	#3 SG MAIN STEAM ISOLATION VALVE
1-FCV-1-25-B	SG 3 BLOWDOWN CONTROL VALVE
1-FCV-1-275	MSR A2 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-277	MSR B2 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-279	MSR C2 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-284	MSR A1 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-29	#4 SG MAIN STEAM ISOLATION VALVE
1-FCV-1-291	MSR B1 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-298	MSR C1 LOW POWER BYPASS CONTROL VALVE
1-FCV-1-32-A	SG 4 BLOWDOWN CONTROL VALVE
1-FCV-1-36	MAIN FW PUMP TURBINE HP STOP VALVE
1-FCV-1-37	MAIN FW PUMP TURBINE HP CONTROL VALVE
1-FCV-1-4	#1 SG MAIN STEAM ISOLATION VALVE
1-FCV-1-43	MAIN FW PUMP TURBINE HP STOP VALVE
1-FCV-1-44	MAIN FW PUMP TURBINE HP CONTROL VALVE
1-FCV-1-51-S	AFW PUMP TURBINE TRIP & THROTTLE VALVE
1-FCV-1-52	TDAFWP TURBINE GOVERNOR VALVE
1-FCV-1-61	MAIN TURBINE CONTROL VALVE
1-FCV-1-62	MAIN TURBINE CONTROL VALVE
1-FCV-1-64	MAIN TURBINE CONTROL VALVE
1-FCV-1-65	MAIN TURBINE CONTROL VALVE
1-FCV-1-67	MAIN TURBINE CONTROL VALVE
1-FCV-1-68	MAIN TURBINE CONTROL VALVE
1-FCV-1-70	MAIN TURBINE CONTROL VALVE
1-FCV-1-71	MAIN TURBINE CONTROL VALVE
1-FCV-1-75	MOISTURE SEPARATOR REHEATER A2 CONTROL VALVE
1-FCV-1-77	MOISTURE SEPARATOR REHEATER B2 CONTROL VALVE
1-FCV-1-79	MOISTURE SEPARATOR REHEATER C2 CONTROL VALVE
1-FCV-1-7-B	SG 1 BLOWDOWN CONTROL VALVE
1-FCV-1-84	MOISTURE SEPARATOR REHEATER A1 CONTROL VALVE
1-FCV-1-91	MOISTURE SEPARATOR REHEATER B1 CONTROL VALVE
1-FCV-1-98	MOISTURE SEPARATOR REHEATER C1 CONTROL VALVE
1-FCV-26-240-A	CONTAINMENT STANDPIPE ISOLATION VALVE
1-FCV-26-241-B	ANNULUS STANDPIPE ISOLATION VALVE
1-FCV-26-242-A	ANNULUS STANDPIPE ISOLATION VALVE
1-FCV-26-243-A	RCP SPRAY ISOLATION VALVE
1-FCV-26-244-B	ANNULUS SPRINKLER ISOLATION VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FCV-26-245-A	ANNULUS SPRINKLER ISOLATION VALVE
1-FCV-30-10-A	UPPER CONTAINMENT PURGE AIR SUPPLY
1-FCV-30-14-A	LOWER CONTAINMENT PURGE AIR SUPPLY
1-FCV-30-15-B	LOWER CONTAINMENT PURGE AIR SUPPLY
1-FCV-30-16-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
1-FCV-30-17-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
1-FCV-30-19-B	INSTRUMENT ROOM PURGE AIR SUPPLY
1-FCV-30-20-A	INSTRUMENT ROOM PURGE AIR SUPPLY
1-FCV-30-37-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
1-FCV-30-40-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
1-FCV-30-50-B	UPPER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-51-A	UPPER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-52-A	UPPER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-53-B	UPPER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-56-A	LOWER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-57-B	LOWER CONTAINMENT PURGE AIR EXHAUST
1-FCV-30-58-B	INSTRUMENT ROOM PURGE AIR EXHAUST
1-FCV-30-59-A	INSTRUMENT ROOM PURGE AIR EXHAUST
1-FCV-30-7-A	UPPER CONTAINMENT PURGE AIR SUPPLY
1-FCV-30-8-B	UPPER CONTAINMENT PURGE AIR SUPPLY
1-FCV-30-9-B	UPPER CONTAINMENT PURGE AIR SUPPLY
1-FCV-3-100-B	STEAM GENERATOR 4 FEEDWATER ISOLATION VALVE
1-FCV-3-103	STEAM GENERATOR 4 FW CONTROL VALVE
1-FCV-3-103A	STEAM GENERATOR 4 FW BYPASS VALVE
1-FCV-3-116A-A	ERCW HDR A ISOLATION VALVE
1-FCV-3-116B-A	ERCW HDR A ISOLATION VALVE
1-FCV-3-126A-B	ERCW HDR B ISOLATION VALVE
1-FCV-3-126B-B	ERCW HDR B ISOLATION VALVE
1-FCV-3-136A-A	ERCW HDR A ISOLATION VALVE
1-FCV-3-136B-A	ERCW HDR A ISOLATION VALVE
1-FCV-3-179A-B	ERCW HDR B ISOLATION VALVE
1-FCV-3-179B-B	ERCW HDR B ISOLATION VALVE
1-FCV-32-110-A	RB TRAIN A NON-ESSENTIAL CONTROL AIR ISLN VLV
1-FCV-3-236	STEAM GENERATOR 1 FW BYPASS ISOLATION VALVE
1-FCV-3-239	STEAM GENERATOR 2 FW BYPASS ISOL SOLENOID VALVE
1-FCV-3-242	STEAM GENERATOR 3 FW BYPASS ISOL VALVE
1-FCV-3-245	STEAM GENERATOR 4 FW BYPASS ISOLATION VALVE
1-FCV-3-33-A	STEAM GENERATOR 1 FEEDWATER ISOLATION VALVE
1-FCV-3-35	STEAM GENERATOR 1 FW CONTROL VALVE
1-FCV-3-355-A	TRAIN A MDAFW PUMP RECIRCULATION VALVE
1-FCV-3-359-B	TRAIN B MDAFW PUMP RECIRCULATION VALVE
1-FCV-3-35A	STEAM GENERATOR 1 FW BYPASS VALVE
1-FCV-3-47-B	STEAM GENERATOR 2 FEEDWATER ISOLATION VALVE
1-FCV-3-48	STEAM GENERATOR 2 FW CONTROL VALVE
1-FCV-3-48A	STEAM GENERATOR 2 FW BYPASS VALVE
1-FCV-3-87-A	STEAM GENERATOR 3 FEEDWATER ISOLATION VALVE
1-FCV-3-90	STEAM GENERATOR 3 FW CONTROL VALVE
1-FCV-3-90A	STEAM GENERATOR 3 FW BYPASS VALVE
1-FCV-62-1228-A	CCP SUCTION HI-POINT VENT
1-FCV-62-1229-B	CCP SUCTION HI-POINT VENT

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FCV-62-22	RCP 2 SEAL RETURN FCV
1-FCV-62-35	RCP 3 SEAL RETURN FCV
1-FCV-62-48	RCP 4 SEAL RETURN FCV
1-FCV-62-55	EXCESS LETDOWN ISOLATION VALVE
1-FCV-62-56	EXCESS LETDOWN ISOL VALVE
1-FCV-62-69-A	REACTOR COOLANT LOOP 3 LETDOWN FLOW VALVE
1-FCV-62-70-A	REACTOR COOLANT LOOP 3 LETDOWN FLOW VALVE
1-FCV-62-72-A	REGEN HTX LETDOWN ISLN VLV A
1-FCV-62-73-A	REGEN HTX LETDOWN ISLN VLV B
1-FCV-62-74-A	REGEN HTX LETDOWN ISLN VLV C
1-FCV-62-84-A	CHARGING FLOW TO RCS SPRAY VALVE
1-FCV-62-9	RCP 1 SEAL RETURN FCV
1-FCV-62-90-A	CHARGING FLOW ISOLATION VALVE
1-FCV-62-91-B	CHARGING FLOW ISOLATION VALVE
1-FCV-62-93	NORMAL MAKEUP FLOW CONTROL VALVE
1-FCV-62-98-A	CHGING PMP 1A-A FCV
1-FCV-62-99-B	CHGING PMP 1A-A FCV
1-FCV-63-118-A	SIS ACCUMULATOR TANK 1 FLOW ISOLATION VALVE
1-FCV-63-11-B	RHR PUMP SUPPLY TO SIS PUMPS
1-FCV-63-172-B	RHR TO RCS HOT LEG 1 & 3 ISOLATION VALVE
1-FCV-63-186	RHR SUPPLY TEST LINE VALVE
1-FCV-63-1-A	RWST TO RHR PUMP FCV
1-FCV-63-25-B	SIS BORON INJECTION TANK SHUTOFF VLV
1-FCV-63-26-A	SIS BORON INJECTION TANK SHUTOFF VLV
1-FCV-63-39-A	SIS BORON INJECTION TANK SHUTOFF
1-FCV-63-40-B	SIS BORON INJECTION TANK SHUTOFF
1-FCV-63-67-B	SIS ACCUMULATOR TANK 4 FLOW ISOLATION VALVE
1-FCV-63-72-A	CONTAINMENT SUMP TO RHR PUMP A-A
1-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP B-B
1-FCV-63-80-A	SIS ACCUMULATOR TANK 3 FLOW ISOLATION VALVE
1-FCV-63-8-A	RHR HX 1A TO CVCS CHARGING PMP CONTROL VALVE
1-FCV-63-93-A	SIS TO RCS LOOPS 2 & 3 FLOW CONTROL VALVE
1-FCV-63-94-B	SIS TO RCS LOOPS 1 & 4 FLOW CONTROL VALVE
1-FCV-63-98-B	SIS ACCUMULATOR TANK 2 FLOW ISOLATION VALVE
1-FCV-67-103-B	LOWER CNTMT 1B CLRS DISCH ISLN VLV INSIDE CNTMT
1-FCV-67-104-A	LOWER CNTMT 1B CLRS DISCH ISLN VLV OUTSIDE CNTMT
1-FCV-67-105-B	LOWER CNTMT 1B CLRS SUPPLY ISLN VLV INSIDE CNTMT
1-FCV-67-107-A	LOWER CNTMT 1D CLRS SUPPLY ISLN VLV OUTSIDE CNTMT
1-FCV-67-10A-B	ERCW STRAINER 1B-B BACKWASH VLV
1-FCV-67-10B-B	ERCW STRAINER 1B-B FLUSH VLV
1-FCV-67-111-B	LOWER CNTMT 1D CLRS DISCH ISLN VLV INSIDE CNTMT
1-FCV-67-112-A	LOWER CNTMT 1D CLRS DISCH ISLN VLV OUTSIDE CNTMT
1-FCV-67-113-B	LOWER CNTMT 1D CLRS SUPPLY ISLN VLV INSIDE CNTMT
1-FCV-67-123-B	CNTMT SPRAY HX 1B SUPPLY VLV
1-FCV-67-124-B	CNTMT SPRAY HX 1B DISCHARGE VLV
1-FCV-67-125-A	CONTAINMENT SPRAY HX 1A SUPPLY VLV
1-FCV-67-126-A	CNTMT SPRAY HX 1A DISCHARGE VLV
1-FCV-67-127-A	AUX BLDG AIR CLRS SUP HDR 1A FCV
1-FCV-67-128-B	AUX BLDG AIR CLRS HDR 1B ISLN VLV
1-FCV-67-143-A	CCS HX A ERCW BYPASS FCV

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FCV-67-146-A	CCS HX A DISCHARGE CONTROL VLV
1-FCV-67-147-A	ERCW SUP HDR 1A TO HDR 2B ISOL VLV
1-FCV-67-162-A	CCS/AFW PUMP SPACE COOLER FLOW CONT AOV
1-FCV-67-164-B	CCS/AFW PUMP RM COOLER 1B FLOW CONT AOV
1-FCV-67-168-A	CCP 1A ROOM COOLER ERCW ISOL
1-FCV-67-170-B	CCP-1B ROOM COOLER ISOL VALVE
1-FCV-67-188-A	RHR PUMP 1A-A RM COOLER ERCW ISOL AOV
1-FCV-67-190-B	RHR PUMP 1B-B RM COOLER ERCW ISOL AOV
1-FCV-67-223-A	SUPPLY HDR 1B TO HDR 2A ISLN VLV
1-FCV-67-22-A	ERCW HDR 1A ISLN VLV BEFORE STRAINER
1-FCV-67-24-B	ERCW HDR 1B ISLN VLV BEFORE STRAINER
1-FCV-67-458-A	ERCW TO CCS HX A ISLN VLV
1-FCV-67-478-B	ERCW TO CCS HX A ISLN VLV
1-FCV-67-66-A	EMERG DSL HT EXH 1A1 & 1A2 SUPP VALVE FM HDR 1A
1-FCV-67-67-B	EMERG DSL HT EXH 1B1 & 1B2 SUPP VALVE FM HDR 1B
1-FCV-67-81-A	AUX BLDG ERCW SUP HDR 1A ISLN VLV
1-FCV-67-82-B	AUX BLDG ERCW SUP HDR 1B ISLN VLV
1-FCV-67-83-B	LOWER CNTMT 1A CLRS SUPPLY ISLN VLV OUTSIDE CNTMT
1-FCV-67-87-A	LOWER CNTMT 1A CLRS DISCH ISLN VLV INSIDE CNTMT
1-FCV-67-88-B	LOWER CNTMT 1A CLRS DISCH ISLN VLV OUTSIDE CNTMT
1-FCV-67-89-A	LOWER CNTMT 1A CLRS SUPPLY ISLN VLV INSIDE CNTMT
1-FCV-67-91-B	LOWER CNTMT 1C CLRS SUPPLY ISLN VLV OUTSIDE CNTMT
1-FCV-67-95-A	LOWER CNTMT 1C CLRS DISCH ISLN VLV INSIDE CNTMT
1-FCV-67-96-B	LOWER CNTMT 1C CLRS DISCH ISLN VLV OUTSIDE CNTMT
1-FCV-67-97-A	LOWER CNTMT 1C CLRS SUPPLY ISLN VLV INSIDE CNTMT
1-FCV-67-99-A	LOWER CNTMT 1B CLRS SUPPLY ISLN VLV OUTSIDE CNTMT
1-FCV-67-9A-A	ERCW STRAINER 1A-A BACKWASH VALVE
1-FCV-67-9B-A	ERCW STRAINER 1A-A FLUSH VLV
1-FCV-68-332-B	REACTOR COOLANT PRESS RELIEF FLOW CONTROL VALVE
1-FCV-68-333-A	REACTOR COOLANT PRESS RELIEF FLOW CONTROL VALVE
1-FCV-70-10-A	CCS HX A & C OUTLET ISLN VLV
1-FCV-70-133-A	RCP THERMAL BARRIER CONTAINMENT ISOLATION VALVE
1-FCV-70-134-B	RCP THERMAL BARRIER CONTAINMENT ISOLATION VALVE
1-FCV-70-13-B	CCS HX A & C INLET ISOLATION VLV
1-FCV-70-143-A	EXCESS LTDN HX INLET ISLN VLV
1-FCV-70-153-B	RHR HX B-B OUTLET VALVE
1-FCV-70-156-A	RHR HX A-A OUTLET VLV
1-FCV-70-23-A	CCS HX A & C INLET ISOLATION VLV
1-FCV-70-25-A	CCS HX A INLET VLV
1-FCV-70-26-B	CCS PMPS 1A-A & 1B-B TO C-S VLV
1-FCV-70-27-B	CCS PMPS 1A-A & 1B-B TO C-S VLV
1-FCV-70-2-A	RHR HX A HDR INLET VLV
1-FCV-70-34-B	CCS PMPS 1A-A TO 1B-B ISLN VLV
1-FCV-70-3-B	RHR HX 1B-B HDR INLET VLV
1-FCV-70-4-A	MISC EQUIPMENT HDR INLET VLV
1-FCV-70-64-B	CCS PMPS 1A-A & 1B-B TO C-S VLV
1-FCV-70-74-B	CCS PMPS 1A-A & 1B-B TO C-S VLV
1-FCV-70-75-B	RHR HX 1B-B RETURN HDR ISLN VLV
1-FCV-70-85-B	EXCESS LTDN HX OUTLET VLV
1-FCV-70-87-B	RCP THERMAL BARRIER RETURN CONTAINMENT ISOL VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FCV-70-8-A	CCS HX A OUTLET VLV
1-FCV-70-90-A	RCP THERMAL BARRIER RETURN CONTAINMENT ISOL VALVE
1-FCV-70-9-B	CCS HX A & C OUTLET ISLN VLV
1-FCV-72-21-B	RWST TO SPRAY HDR 1B FCV
1-FCV-72-22-A	RWST TO SPRAY HDR 1A FCV
1-FCV-72-2-B	CNTMT SPRAY HDR 1B ISLN VLV
1-FCV-72-39-A	CNTMT SPRAY HDR 1A ISLN VLV
1-FCV-72-40-A	RHR SPRAY HDR 1A ISOLATION VALVE
1-FCV-72-41-B	RHR SPRAY HDR 1B ISOLATION VALVE
1-FCV-72-44-A	CNTMT SUMP TO SPRAY HDR 1A FCV
1-FCV-72-45-B	CNTMT SUMP TO SPRAY HDR 1B FCV
1-FCV-74-12-A	RHR PUMP 1A-A MINIMUM FLOW VALVE
1-FCV-74-16	RHR HX 1A OUTLET FLOW CONTROL VALVE
1-FCV-74-1-A	RHR SYSTEM ISOLATION VALVE
1-FCV-74-21-B	RHR PUMP 1B-B INLET FCV
1-FCV-74-24-B	RHR PUMP 1B-B MINIMUM FLOW VALVE
1-FCV-74-28	RHR HX 1B OUTLET FLOW CONTROL VALVE
1-FCV-74-2-B	RHR SYSTEM ISOLATION VALVE
1-FCV-74-32	RHR HEAT EXCHANGER BYPASS
1-FCV-74-33-A	RHR PUMP HEAT EXCHANGER 1A BYPASS VALVE
1-FCV-74-35-B	RHR PUMP HEAT EXCHANGER 1B BYPASS VALVE
1-FCV-74-3-A	RHR PUMP 1A-A INLET FCV
1-FCV-74-8-A	RHR SYSTEM ISOLATION BYPASS VALVE
1-FCV-74-9-B	RHR SYSTEM ISOLATION BY-PASS VALVE
1-FI-3-142A	TDAFW PUMP DISCHARGE FLOW
1-FI-3-147A	AFW FLOW TO #3SG
1-FI-3-147B	AFW FLOW TO #3SG
1-FI-3-147C	AFW FLOW TO #3 SG
1-FI-3-155A	AFW FLOW TO #2SG
1-FI-3-155B	AFW FLOW TO #2SG
1-FI-3-155C	AFW FLOW TO #2 SG
1-FI-3-163A	AFW FLOW TO #1SG
1-FI-3-163B	AFW FLOW TO #1SG
1-FI-3-163C	AFW FLOW TO #1 SG
1-FI-3-170A	AFW FLOW TO #4SG
1-FI-3-170B	AFW FLOW TO #4 SG
1-FI-3-170C	AFW FLOW TO #4 SG
1-FI-62-14A	RCP-2 SEAL INJECTION FLOW INDICATOR
1-FI-62-1A	RCP-1 SEAL INJECTION FLOW INDICATOR
1-FI-62-27A	RCP-3 SEAL INJECTION FLOW INDICATOR
1-FI-62-40A	RCP-4 SEAL INJECTION FLOW INDICATOR
1-FI-62-93A	NORMAL CHARGING FLOW INDICATOR
1-FI-62-93C	NORMAL CHARGING FLOW INDICATOR (ACR)
1-FI-67-61	ERCW SUPPLY HEADER 1A FLOW INDICATOR
1-FI-67-61C	ERCW SUPPLY HEADER 1A FLOW INDICATOR
1-FI-67-62	ERCW SUPPLY HEADER 1B FLOW INDICATOR
1-FI-67-62C	ERCW SUPPLY HEADER 1B FLOW INDICATOR
1-FIC-3-103	SG 4 FEEDWATER CONTROL VALVE FLOW CONTROLLER
1-FIC-3-35	SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER
1-FIC-3-48	SG 2 FEEDWATER CONTROL VALVE FLOW CONTROLLER

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FIC-3-90	SG 3 FEEDWATER CONTROL VALVE FLOW CONTROLLER
1-FM-62-56	EXCESS LETDOWN FLOW CONTROL VALVE E/P MODULE
1-FSV-1-11A-A	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11B-B	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11D-A	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11E-A	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11F-A	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11G-B	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11H-B	#2SG MSIV OPERATING SOLENOID
1-FSV-1-11J-B	#2SG MSIV OPERATING SOLENOID
1-FSV-1-22A-A	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22B-B	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22D-A	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22E-A	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22F-A	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22G-B	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22H-B	#3SG MSIV OPERATING SOLENOID
1-FSV-1-22J-B	#3SG MSIV OPERATING SOLENOID
1-FSV-1-29A-A	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29B-B	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29D-A	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29E-A	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29F-A	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29G-B	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29H-B	#4SG MSIV OPERATING SOLENOID
1-FSV-1-29J-B	#4SG MSIV OPERATING SOLENOID
1-FSV-1-4A-A	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4B-B	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4D-A	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4E-A	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4F-A	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4G-B	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4H-B	#1SG MSIV OPERATING SOLENOID
1-FSV-1-4J-B	#1SG MSIV OPERATING SOLENOID
1-FSV-3-103-A	STEAM GENERATOR 4 FW BYPASS VALVE
1-FSV-3-103AA-A	STEAM GENERATOR 4 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-103AB-A	STEAM GENERATOR 4 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-103BA-B	STEAM GENERATOR 4 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-103BB-B	STEAM GENERATOR 4 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-236A-A	STEAM GENERATOR 1 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-236B-B	STEAM GENERATOR 1 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-239A-A	STEAM GENERATOR 2 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-239B-B	STEAM GENERATOR 2 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-242A-A	STEAM GENERATOR 3 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-242B-B	STEAM GENERATOR 3 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-245A-A	STEAM GENERATOR 4 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-245B-B	STEAM GENERATOR 4 FW BYPASS ISOL SOLENOID VALVE
1-FSV-3-35AA-A	STEAM GENERATOR 1 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-35AB-A	STEAM GENERATOR 1 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-35BA-B	STEAM GENERATOR 1 FEEDWATER CONTROL SOLENOID VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-FSV-3-35BB-B	STEAM GENERATOR 1 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-35-B	STEAM GENERATOR 1 FW BYPASS SOLENOID VALVE
1-FSV-3-48-A	STEAM GENERATOR 2 FW BYPASS SOLENOID VALVE
1-FSV-3-48AA-A	STEAM GENERATOR 2 FW CONTROL SOLENOID VALVE
1-FSV-3-48AB-A	STEAM GENERATOR 2 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-48BA-B	STEAM GENERATOR 2 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-48BB-B	STEAM GENERATOR 2 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-90-B	STEAM GENERATOR 3 FW BYPASS SOLENOID VALVE
1-FSV-3-90AA-A	STEAM GENERATOR 3 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-90AB-A	STEAM GENERATOR 3 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-90BA-B	STEAM GENERATOR 3 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-3-90BB-B	STEAM GENERATOR 3 FEEDWATER CONTROL SOLENOID VALVE
1-FSV-47-24	TRAIN A MAIN TURBINE TRIP SOLENOID
1-FSV-47-26A-A	EHC OVERSPEED PROTECTION CONTROL
1-FSV-47-26B-B	EHC OVERSPEED PROTECTION CONTROL
1-FSV-47-27	TRAIN B MAIN TURBINE TRIP SOLENOID
1-FSV-67-162-A	CCS AND AUX FW PMP CLR A SOL VALVE
1-FSV-67-164-B	CCS AND AUX FW PMP CLR B SOL VALVE
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE
1-FSV-77-2561	MDAFW N2 ISOLATION VALVE
1-FSV-77-2562	TDAFW N2 ISOLATION VALVE
1-FT-3-142	TDAFW PUMP DISCHARGE FLOW TRANSMITTER
1-FT-3-147A	AFW TO #3SG FLOW TRANSMITTER
1-FT-3-147B	AFW TO #3SG FLOW TRANSMITTER
1-FT-3-155A	AFW TO #2 SG FLOW TRANSMITTER
1-FT-3-155B	AFW TO #2 SG FLOW TRANSMITTER
1-FT-3-163A	AFW TO #1 SG FLOW TRANSMITTER
1-FT-3-163B	SG1 FW FLOW
1-FT-3-170A	AFW TO #4 SG FLOW TRANSMITTER
1-FT-3-170B	SG4 FW FLOW
1-FT-62-1	RCP-1 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-14	RCP-2 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-27	RCP-3 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-40	RCP-4 SEAL INJECTION FLOW TRANSMITTER
1-FT-62-93A	CHARGING HEADER FLOW CONT
1-FT-62-93C	CVCS CHARGING HEADER FLOW
1-FT-67-61	ERCW SUPPLY HEADER 1A FLOW TRANSMITTER
1-FT-67-61C	ERCW SUPPLY HEADER 1A FLOW TRANSMITTER
1-FT-67-62	ERCW SUPPLY HEADER 1B FLOW TRANSMITTER
1-FT-67-62C	ERCW SUPPLY HEADER 1B FLOW TRANSMITTER
1-FT-70-81A	THERMAL BARRIER OUTLET FLOW TRANSMITTER
1-FT-70-81B	THERMAL BARRIER BOOSTER PUMP DISCHARGE FLOW
1-FT-70-81D	THERMAL BARRIER OUTLET FLOW TRANSMITTER
1-FT-70-81E	THERMAL BARRIER BOOSTER PUMP DISCHARGE FLOW
1-HCV-74-36	RHR HX-A BYPASS MANUAL ISOL VLV
1-HCV-74-37	RHR HX-B BYPASS MANUAL ISOL VLV
1-HS-30-63A-A	MANUAL CI PH-A MCR HAND SWITCH

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-HS-30-63B-B	MANUAL CI PH-A MCR HAND SWITCH
1-HS-30-64A-A	MANUAL CI PH-B MCR HAND SWITCH
1-HS-30-64B-B	MANUAL CI PH-B MCR HAND SWITCH
1-HS-30-68A-A	MANUAL CI PH-B MCR HAND SWITCH
1-HS-30-68B-B	MANUAL CI PH-B MCR HAND SWITCH
1-HS-63-133A-T	HAND SWITCH
1-HS-63-133B-T	HAND SWITCH
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B
1-HTR-68-341F/D1-D6	PZR CONTROL HEATER GROUP D
1-HTR-68-341H/C1-C6	PZR BACKUP HEATER GROUP C
1-HTX-62-66	CVCS SEAL WATER HTX
1-INV-235-1-D	CHANNEL I VITAL INVERTER
1-INV-235-2-E	CHANNEL II VITAL INVERTER
1-INV-235-3-F	CHANNEL III VITAL INVERTER
1-INV-235-4-G	CHANNEL IV VITAL INVERTER
1-INV-264-1	TECHNICAL SUPPORT CENTER INVERTER
1-ISIV-30-42A	CTMT PRES XMTR INST SENSING LINE/ISO VLV
1-ISIV-30-43A	CTMT PRES XMTR INST SENSING LINE/ISO VLV
1-ISIV-30-44A	CTMT PRES XMTR INST SENSING LINE/ISO VLV
1-ISIV-30-45A	CTMT PRES XMTR INST SENSING LINE/ISO VLV
1-ISV-3-827	SG 2 MDAFW LCV ISOLATION VALVE
1-ISV-3-828	SG 1 MDAFW LCV ISOLATION VALVE
1-ISV-62-526	CCP 1A-A SEAL INJECTION BYPASS
1-ISV-62-527	CCP 1A-A DISCHARGE VALVE
1-ISV-62-533	CCP 1B-B DISCHARGE VALVE
1-ISV-62-534	CCP 1B-B SEAL INJECTION BYPASS
1-ISV-62-535	1-FCV-62-93 ISOLATION VALVE
1-ISV-62-537	FCV-62-89 UPSTREAM ISOL
1-ISV-62-539	FCV-62-89 DOWNSTREAM ISOL
1-ISV-62-549	SEAL WATER INJECTION FILTER OUTLET
1-ISV-62-550	SEAL WATER INJECTION FILTER OUTLET
1-ISV-70-545A	RHR HX 1A-A INLET ISOLATION VALVE (MANUAL)
1-ISV-70-574	CCS SUPPLY TO NON-REGEN LETDOWN HX ISOL
1-ISV-70-587	CCS OUT/SEAL WTR & NON-RGN LETDOWN HX ISO
1-ISV-70-705	EXCESS LETDOWN HX CCS RETURN ISOLATION VALVE
1-PNL-L-276-1000	N2 OPERATING STATION
1-PNL-L-276-1001	N2 OPERATING STATION
1-LCV-3-148	MDAFW FLOW CONTROL VALVE TO #3SG
1-LCV-3-156	MDAFW FLOW CONTROL VALVE TO #2SG
1-LCV-3-164	MDAFW FLOW CONTROL VALVE TO #1SG
1-LCV-3-171	MDAFW FLOW CONTROL VALVE TO #4SG
1-LCV-3-172	TDAFW FLOW CONTROL VALVE TO #3SG
1-LCV-3-173	TDAFW FLOW CONTROL VALVE TO #2SG
1-LCV-3-174	TDAFW FLOW CONTROL VALVE TO #1SG
1-LCV-3-175	TDAFW FLOW CONTROL VALVE TO #4SG
1-LCV-62-132-A	VCT OUTLET ISOLATION VALVE
1-LCV-62-133-B	VCT OUTLET ISOLATION VALVE
1-LCV-62-135-A	RWST TO CHARGING PUMPS VALVE CONTROL
1-LCV-62-136-B	RWST TO CHARGING PUMPS VALVE CONTROL

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-LI-3-106	#4SG LEVEL INDICATOR (NR)
1-LI-3-107	#4SG LEVEL INDICATOR (NR)
1-LI-3-110	#4SG LEVEL INDICATOR (NR)
1-LI-3-111A	#4SG LEVEL INDICATOR (WR)
1-LI-3-148C	SG 3 NARROW RANGE LEVEL
1-LI-3-156C	SG 2 NARROW RANGE LEVEL
1-LI-3-164C	SG 1 NARROW RANGE LEVEL
1-LI-3-171C	SG 4 NARROW RANGE LEVEL
1-LI-3-38	#1SG LEVEL INDICATOR (NR)
1-LI-3-39	#1SG LEVEL INDICATOR (NR)
1-LI-3-42	#1SG LEVEL INDICATOR (NR)
1-LI-3-43A	#1SG LEVEL INDICATOR (WR)
1-LI-3-51	#2SG LEVEL INDICATOR (NR)
1-LI-3-52	#2SG LEVEL INDICATOR (NR)
1-LI-3-55	#2SG LEVEL INDICATOR (NR)
1-LI-3-56A	#2SG LEVEL INDICATOR (WR)
1-LI-3-93	#3SG LEVEL INDICATOR (NR)
1-LI-3-94	#3SG LEVEL INDICATOR (NR)
1-LI-3-97	#3SG LEVEL INDICATOR (NR)
1-LI-3-98A	#3SG LEVEL INDICATOR (WR)
1-LI-62-129A	VCT LEVEL INDICATION
1-LI-62-129C	VCT LEVEL INDICATION
1-LI-63-50	RWST LEVEL INDICATOR
1-LI-63-52	RWST LEVEL INDICATOR
1-LI-68-320-F	PZR LEVEL INDICATOR
1-LI-68-325C	RCS PRESSURIZER LEVEL
1-LI-68-326C	RCS PRESSURIZER LEVEL
1-LI-68-335A-E	PZR LEVEL INDICATOR
1-LI-68-339A-D	PZR LEVEL INDICATOR
1-LIC-3-35A	STEAM GENERATOR 1 FEEDWATER BYPASS VALVE CONTROLLER
1-LIC-3-48A	STEAM GENERATOR 2 FEEDWATER BYPASS VALVE CONTROLLER
1-LIC-3-90A	STEAM GENERATOR 3 FEEDWATER BYPASS VALVE CONTROLLER
1-LIC-3-103A	STEAM GENERATOR 4 FEEDWATER BYPASS VALVE CONTROLLER
1-LIC-3-148A	SG 3 LEVEL CONTROLLER
1-LIC-3-156A	SG 2 LEVEL CONTROLLER
1-LIC-3-164A	SG 1 LEVEL CONTROLLER
1-LIC-3-171A	SG 4 LEVEL CONTROLLER
1-LIC-3-172A	TDAFW STEAM GENERATOR 3 LEVEL CONTROLLER
1-LIC-3-173A	TDAFW STEAM GENERATOR 2 LEVEL CONTROLLER
1-LIC-3-174A	TDAFW STEAM GENERATOR 1 LEVEL CONTROLLER
1-LIC-3-175A	TDAFW STEAM GENERATOR 4 LEVEL CONTROLLER
1-LM-3-148A	1-LCV-3-148/148A MODULATOR
1-LM-3-156A	1-LCV-3-156/156A MODULATOR
1-LM-3-164A	1-LCV-3-164/164A MODULATOR
1-LM-3-171A	1-LCV-3-171/171A MODULATOR
1-LM-3-172A	LCV-3-172 MODULATOR
1-LM-3-173A	LCV-3-173 MODULATOR
1-LM-3-174A	LCV-3-174 MODULATOR
1-LM-3-175A	LCV-3-175 MODULATOR
1-LT-3-106	#4SG LEVEL TRANSMITTER (NR)

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-LT-3-107	#4SG LEVEL TRANSMITTER (NR)
1-LT-3-110	#4SG LEVEL TRANSMITTER (NR)
1-LT-3-111	#4SG LEVEL TRANSMITTER (WR)
1-LT-3-148	#SG 3 LEVEL TRANSMITTER (NR)
1-LT-3-156	#SG 2 LEVEL TRANSMITTER (NR)
1-LT-3-164	#SG 1 LEVEL TRANSMITTER (NR)
1-LT-3-171	#SG 4 LEVEL TRANSMITTER (NR)
1-LT-3-172	TDAFW SG 3 LEVEL TRANSMITTER
1-LT-3-173	TDAFW SG 2 LEVEL TRANSMITTER
1-LT-3-174	TDAFW SG 1 LEVEL TRANSMITTER
1-LT-3-175	TDAFW SG 4 LEVEL TRANSMITTER
1-LT-3-38	#1SG LEVEL TRANSMITTER (NR)
1-LT-3-39	#1SG LEVEL TRANSMITTER (NR)
1-LT-3-42	#1SG LEVEL TRANSMITTER (NR)
1-LT-3-43	#1SG LEVEL TRANSMITTER (WR)
1-LT-3-51	#2SG LEVEL TRANSMITTER (NR)
1-LT-3-52	#2SG LEVEL TRANSMITTER (NR)
1-LT-3-55	#2SG LEVEL TRANSMITTER (NR)
1-LT-3-56	#2SG LEVEL TRANSMITTER (WR)
1-LT-3-93	#3SG LEVEL TRANSMITTER (NR)
1-LT-3-94	#3SG LEVEL TRANSMITTER (NR)
1-LT-3-97	#3SG LEVEL TRANSMITTER (NR)
1-LT-3-98	#3SG LEVEL TRANSMITTER (WR)
1-LT-62-129A	VCT LEVEL TRANSMITTER
1-LT-62-129C	VCT LEVEL TRANSMITTER
1-LT-62-130A	VCT LEVEL TRANSMITTER
1-LT-63-50	RWST LEVEL TRANSMITTER
1-LT-63-51	RWST LEVEL TRANSMITTER
1-LT-63-52	RWST LEVEL TRANSMITTER
1-LT-63-53	RWST LEVEL TRANSMITTER
1-LT-63-180-D	CONTAINMENT SUMP LEVEL TRANSMITTER
1-LT-63-181-E	CONTAINMENT SUMP LEVEL TRANSMITTER
1-LT-63-182-F	CONTAINMENT SUMP LEVEL TRANSMITTER
1-LT-63-183-G	CONTAINMENT SUMP LEVEL TRANSMITTER
1-LT-68-320-F	PZR LEVEL TRANSMITTER
1-LT-68-325C	RCS PRESSURIZER LEVEL
1-LT-68-326C	RCS PRESSURIZER LEVEL
1-LT-68-335	PZR LEVEL TRANSMITTER
1-LT-68-339	PZR LEVEL TRANSMITTER
1-MCC-213-A1-A	REACTOR MOV BD 1A1-A
1-MCC-213-A2-A	REACTOR MOV BD 1A2-A
1-MCC-213-B1-B	REACTOR MOV BD 1B1-B
1-MCC-213-B2-B	REACTOR MOV BD 1B2-B
1-MCC-214-A1-A	480V CONT AND AUX BLDG VENT BOARD 1A1-A
1-MCC-214-B1-B	480V CONT AND AUX BLDG VENT BOARD 1B1-B
1-MCC-214-A2-A	C&A Building Vent Board 1A2-A
1-MCC-214-B2-B	C&A Building Vent Board 1B2-B
1-MCC-215-A1-A	DIESEL AUX BD 1A1-A
1-MCC-215-A2-A	DIESEL AUX BD 1A2-A
1-MCC-215-B1-B	DIESEL AUX BD 1B1-B

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-MCC-215-B2-B	DIESEL AUX BD 1B2-B
1-MTR-30-175-A	RHR PMP 1A-A RM COOLER MOTOR
1-MTR-30-176-B	RHR PMP 1B-B RM COOLER MOTOR
1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1-MTR-30-183-A	CCP 1A-A ROOM COOLER FAN
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR
1-MTR-30-214	TURBINE DRIVEN AUX FW PUMP ROOM VENT FAN
1-MTR-30-244F-A	XMFR RM 1A EXHAUST FAN 1A1-A MOTOR
1-MTR-30-244G-A	XMFR RM 1A EXHAUST FAN 1A2-A MOTOR
1-MTR-30-244H-A	XMFR RM 1A EXHAUST FAN 1A3-A MOTOR
1-MTR-30-248E-B	XMFR RM 1B EXHAUST FAN 1B1-B MOTOR
1-MTR-30-248F-B	XMFR RM 1B EXHAUST FAN 1B2-B MOTOR
1-MTR-30-248G-B	XMFR RM 1B EXHAUST FAN 1B3-B MOTOR
1-MTR-30-38-A	CONTAINMENT AIR RETURN FAN 1A-A
1-MTR-30-39-B	CONTAINMENT AIR RETURN FAN 1B-B
1-MTR-30-447-A	DG 1A-A ROOM EXHAUST FAN 1A MOTOR
1-MTR-30-449-B	DG 1B-B ROOM EXHAUST FAN 1B MOTOR
1-MTR-30-451-A	DG 1A-A ROOM EXHAUST FAN 2A MOTOR
1-MTR-30-453-B	DG 1B-B ROOM EXHAUST FAN 2B MOTOR
1-MTR-30-459-A	DG 1A-A ELECTRIC BOARD ROOM EXHAUST FAN MOTOR
1-MTR-30-461-B	DG 1B-B ELECTRIC BOARD ROOM EXHAUST FAN MOTOR
1-MTR-30-491-A	DG ELEC PANEL/GENERATOR VENT FAN MOTOR
1-MTR-30-493-B	DG ELEC PANEL/GENERATOR VENT FAN MOTOR
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1-MTR-3-118-A	MDAFW PUMP 1A-A
1-MTR-3-118D-A	AUX FEEDWATER PUMP A-A LUBE OIL PUMP A-A
1-MTR-3-128-B	MDAFW PUMP 1B-B
1-MTR-3-128D-B	AUX FEEDWATER PUMP B-B LUBE OIL PUMP B-B
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A
1-MTR-63-10-A	SAFETY INJECTION PUMP 1A-A
1-MTR-63-15-B	SAFETY INJECTION PUMP 1B-B
1-MTR-67-10-B	ERCW STRAINER 1B-B
1-MTR-67-431-A	ERCW SCREEN WASH PUMP 1A-A
1-MTR-67-434-A	ERCW TRAVELING SCREEN 1A-A
1-MTR-67-440-B	ERCW SCREEN WASH PUMP 1B-B
1-MTR-67-445-B	ERCW TRAVELING SCREEN 1B-B
1-MTR-67-9-A	ERCW STRAINER 1A-A
1-MTR-68-31	REACTOR COOLING PUMP NUMBER 2
1-MTR-68-50	REACTOR COOLING PUMP NUMBER 3
1-MTR-68-73	REACTOR COOLING PUMP NUMBER 4
1-MTR-68-8	REACTOR COOLANT PUMP NUMBER 1

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-MTR-70-130-B	THERMAL BARRIER BOOSTER PUMP 1B-B
1-MTR-70-131-A	THERMAL BARRIER BOOSTER PUMP 1A-A
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A
1-MTR-72-10-B	CONTAINMENT SPRAY PUMP 1B-B
1-MTR-72-27-A	CONTAINMENT SPRAY PUMP 1A-A
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B
1-MTR-81-3	PRIMARY MAKEUP WATER PUMP 1A
1-MTR-81-7	PRIMARY MAKEUP WATER PUMP 1B
1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR
1-NI-92-132-E	SOURCE RANGE NEUTRON DETECTOR
1-NI-92-138	NEUTRON SOURCE RANGE INDICATOR
1-NI-92-138P	PORTABLE NEUTRON SOURCE RANGE INDICATOR
1-NM-92-131-D	AMPLIFIER
1-NM-92-132-E	AMPLIFIER
1-NMD-92-131-D	NEUTRON DETECTOR
1-NMD-92-132-E	NEUTRON DETECTOR
1-OXF-212-A1-A	480V SHUTDOWN BOARD XMFR 1A1-A
1-OXF-212-A2-A	480V SHUTDOWN BOARD XMFR 1A2-A
1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1-PCV-1-12	STEAM GENERATOR ATMOSPHERIC RELIEF VALVE
1-PCV-1-23	STEAM GENERATOR ATMOSPHERIC RELIEF VALVE
1-PCV-1-30	STEAM GENERATOR ATMOSPHERIC RELIEF VALVE
1-PCV-1-5	STEAM GENERATOR ATMOSPHERIC RELIEF VALVE
1-PCV-3-122-A	MDAFWP 1A-A DISCHARGE VALVE
1-PCV-3-132-B	MDAFWP 1B-B DISCHARGE VALVE
1-PCV-68-334-B	PZR PORV
1-PCV-68-340A-A	PZR PORV
1-PCV-68-340B	PRESSURIZER SPRAY VALVE
1-PCV-68-340D	PRESSURIZER SPRAY VALVE
1-PDIC-3-122C	MDAFW PMP 1A-A DISCH PRES CONT ACS (IND)
1-PDIC-3-132C	MDAFW PMP 1B-B DISCH PRES CONT ACS (IND)
1-PDT-30-42-G	PROTECT SET IV - CTMT HI PRESS
1-PDT-30-43-F	PROTECT SET III - CTMT HI PRESS
1-PDT-30-44-E	PROTECT SET II - CTMT HI PRESS
1-PDT-30-45-D	PROTECT SET I - CTMT PRESS HIGH
1-PI-1-12	#2SG PRESSURE INDICATION
1-PI-1-19C	SG 3 STEAM HEADER PRESSURE
1-PI-1-1C	SG 1 STEAM HEADER PRESSURE
1-PI-1-20A	#3SG PRESSURE INDICATION
1-PI-1-20B	#3SG PRESSURE INDICATION
1-PI-1-23	#3SG PRESSURE INDICATION
1-PI-1-26C	SG 4 STEAM HEADER PRESSURE
1-PI-1-27A	#4SG PRESSURE INDICATION
1-PI-1-27B	#4SG PRESSURE INDICATION
1-PI-1-2A	#1SG PRESSURE INDICATION
1-PI-1-2B	#1SG PRESSURE INDICATION
1-PI-1-30	#4SG PRESSURE INDICATION

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-PI-1-5	#1SG PRESSURE INDICATION
1-PI-1-8C	SG 2 STEAM HEADER PRESSURE
1-PI-1-9A	#2SG PRESSURE INDICATION
1-PI-1-9B	#2SG PRESSURE INDICATION
1-PI-3-117	LOCAL MDAPFW A SUCTION PRES INDICATOR
1-PI-3-127	LOCAL MDAPFW B SUCTION PRES INDICATOR
1-PI-3-137	LOCAL TDAFW PUMP SUCTION PRES INDICATOR
1-PI-68-342A	PRESSURIZER PRESSURE INSTRUMENT
1-PI-68-342C	PRESSURIZER PRESSURE INSTRUMENT LOOP
1-PI-68-63	RCS LOOP 1 PRESSURE (RHR INLET)
1-PIC-1-13A	SG 2 PRESSURE CONTROLLER
1-PIC-1-13C	SG 2 PRESSURE CONTROLLER
1-PIC-1-24A	SG 3 PRESSURE CONTROLLER
1-PIC-1-24C	SG 3 PRESSURE CONTROLLER
1-PIC-1-31A	SG 4 PRESSURE CONTROLLER
1-PIC-1-31C	SG 4 PRESSURE CONTROLLER
1-PIC-1-6A	SG 1 PRESSURE CONTROLLER
1-PIC-1-6C	SG 1 PRESSURE CONTROLLER
1-PM-1-13	PCV-1-12 MODULATOR
1-PM-1-24	PCV-1-23 MODULATOR
1-PM-1-31	PCV-1-30 MODULATOR
1-PM-1-6	PCV-1-5 MODULATOR
1-PM-3-122	PCV-3-122 MODULATOR
1-PM-3-132	PCV-3-132 MODULATOR
1-PMP-18-54/1	1-DG-82-A-A FO XFER PP #2
1-PMP-18-54/2	1-DG-82-B-B FO XFER PP #2
1-PMP-18-55/1	1-DG-82-A-A FO XFER PP #1
1-PMP-18-55/2	1-DG-82-B-B FO XFER PP #1
1-PNL-276-L112	1-FCV-62-93 PNEUMATIC STOP INST PANEL
1-PSV-1-13B-B	SG-2 MAIN STM HDR
1-PSV-1-13C-A	SOLENOID VALVE
1-PSV-1-24B-A	SG-3 MAIN STM HDR
1-PSV-1-24C-B	SOLENOID VALVE
1-PSV-1-31B-B	SG-4 MAIN STM HDR
1-PSV-1-31C-A	SOLENOID VALVE
1-PSV-1-6B-A	SG-1 MAIN STM HDR
1-PSV-1-6C-B	SOLENOID VALVE
1-PT-1-1C	SG-1 STEAM HEADER PRESSURE TRANSMITTER
1-PT-1-12-F	PROTECT SET III - SG LOOP 2
1-PT-1-13	SG-2 PRESSURE TRANSMITTER FOR PCV-1-12
1-PT-1-19C	SG-3 STEAM HEADER PRESSURE TRANSMITTER
1-PT-1-20A-D	MAIN STEAM LOOP 3 PRESSURE
1-PT-1-20B-E	MAIN STEAM LOOP 3 PRESSURE
1-PT-1-23-F	PROTECT SET III -SG LOOP 3
1-PT-1-24	SG-3 PRESSURE TRANSMITTER FOR PCV-1-23
1-PT-1-26C	SG-4 STEAM HEADER PRESSURE TRANSMITTER
1-PT-1-27A-D	MAIN STEAM LOOP 4 PRESSURE
1-PT-1-27B-E	MAIN STEAM LOOP 4 PRESSURE
1-PT-1-2A-D	MAIN STEAM LOOP 1 PRESSURE
1-PT-1-2B-E	PROTECT SET II - SG LOOP 3

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-PT-1-30-G	PROTECT SET IV - SG LOOP 4
1-PT-1-31	MAIN STEAM LOOP 4 PRESSURE
1-PT-1-5-G	PROTECT SET IV - SG LOOP 1
1-PT-1-6	MAIN STEAM LOOP 1 PRESSURE
1-PT-1-8C	SG-2 STEAM HEADER PRESSURE TRANSMITTER
1-PT-1-9A-D	MAIN STEAM LOOP 2 PRESSURE
1-PT-1-9B-E	MAIN STEAM LOOP 2 PRESSURE
1-PT-68-323-F	PRESSURIZER PRESSURE
1-PT-68-334-E	PRESSURIZER PRESSURE
1-PT-68-340-D	PRESSURIZER PRESSURE
1-PT-68-342C	PRESSURIZER PRESSURE INSTRUMENT
1-PT-68-63	RCS LOOP 1 PRESSURE (RHR INLET)
1-SC-46-57	TDAFW PUMP SPEED CONTROLLER
1-XSW-46-AC-S	AC MANUAL TRANSFER SW
1-XSW-46-DC-S	DC MANUAL TRANSFER SW
1-TANK-1-405A	N2 TANK #1 SUPPLY TO 1-PCV-1-12-B
1-TANK-1-405B	N2 TANK #2 SUPPLY TO 1-PCV-1-12-B
1-TANK-1-406A	N2 TANK #1 SUPPLY TO 1-PCV-1-30-B
1-TANK-1-406B	N2 TANK #2 SUPPLY TO 1-PCV-1-30-B
1-TANK-1-407A	N2 TANK #1 SUPPLY TO 1-PCV-1-23-A
1-TANK-1-407B	N2 TANK #2 SUPPLY TO 1-PCV-1-23-A
1-TANK-1-408A	N2 TANK #1 SUPPLY TO 1-PCV-1-5-A
1-TANK-1-408B	N2 TANK #2 SUPPLY TO 1-PCV-1-5-A
1-TANK-3-402A	N2 TANK #1 SUPPLY TO 1-LCV-3-173-B
1-TANK-3-402B	N2 TANK #2 SUPPLY TO 1-LCV-3-173-B
1-TANK-3-402C	N2 TANK #1 SUPPLY TO 1-LCV-3-174-B
1-TANK-3-402D	N2 TANK #2 SUPPLY TO 1-LCV-3-174-B
1-TANK-3-403A	N2 TANK #1 SUPPLY TO 1-LCV-3-172-A
1-TANK-3-403B	N2 TANK #2 SUPPLY TO 1-LCV-3-172-A
1-TANK-3-403C	N2 TANK #1 SUPPLY TO 1-LCV-3-175-A
1-TANK-3-403D	N2 TANK #2 SUPPLY TO 1-LCV-3-175-A
1-TCO-30-82-B	CONTROL ROD DRIVE CLING 1D-B RM DIVERSION DMPR
1-TCO-30-85-A	CONTROL ROD DRIVE CLING 1A-A RM DIVERSION DMPR
1-TCO-30-90-A	CONTROL ROD DRIVE CLING 1C-A RM DIVERSION DMPR
1-TCO-30-94-B	CONTROL ROD DRIVE CLING 1B-B RM DIVERSION DMPR
1-TCV-67-100-B	LOWER CNTMT VENT CLR B SUPPLY CONTROL VLV
1-TCV-67-101-B	CONTROL ROD DRIVE VENT CLR B SUPPLY CONTROL VLV
1-TCV-67-108-B	LOWER CNTMT VENT CLR D SUPPLY CONTROL VLV
1-TCV-67-109-B	CONTROL ROD DRIVE VENT CLR D SUPPLY CONTROL VLV
1-TCV-67-84-A	LOWER CNTMT VENT CLR A SUPPLY CONTROL VLV
1-TCV-67-85-A	CONTROL ROD DRIVE VENT CLR A SUPPLY CONTROL VLV
1-TCV-67-92-A	LOWER CNTMT VENT CLR C SUPPLY CONTROL VLV
1-TCV-67-93-A	CONTROL ROD DRIVE VENT CLR C SUPPLY CONTROL VLV
1-TCV-70-192	NON-REG LETDOWN HEAT EXCHANGER OUTLET VALVE
1-TE-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1-TE-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1-TE-68-1C	RCS LOOP 1 HOT LEG TEMPERATURE
1-TE-68-24	RCS LOOP 2 HOT LEG TEMPERATURE
1-TE-68-24C	RCS LOOP 2 HOT LEG TEMPERATURE
1-TE-68-41	RCS LOOP 2 COLD LEG TEMPERATURE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
1-TE-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1-TE-68-43C	RCS LOOP 3 HOT LEG TEMPERATURE
1-TE-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
1-TE-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
1-TE-68-65C	RCS LOOP 4 HOT LEG TEMPERATURE
1-TE-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
1-TE-70-154	RHR HEAT EXCHANGE 1B CCS RETURN TEMP
1-TE-70-157	RHR HEAT EXCHANGE 1A CCS RETURN TEMP
1-TE-70-161	ERCW/CCS HX-A OUTLET TEMP (CCS)
1-TE-74-14	RHR PMP 1A-A OUTLET TEMP
1-TE-74-25	RHR PMP 1B-B OUTLET TEMP
1-TE-74-29	RHR HEAT EXCHANGER A OUTLET TEMP
1-TE-74-38C	RCS HEAT EXCHANGER A OUTLET TEMPERATURE
1-TE-74-39	RHR HEAT EXCHANGER B OUTLET TEMP
1-TE-74-40C	RCS HEAT EXCHANGER B OUTLET TEMPERATURE
1-THV-70-546A	RHR HX 1A-A OUTLET VALVE (MANUAL)
1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1-TI-68-1C	RCS LOOP 1 HOT LEG TEMPERATURE
1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1-TI-68-24C	RCS LOOP 2 HOT LEG TEMPERATURE
1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1-TI-68-43C	RCS LOOP 3 HOT LEG TEMPERATURE
1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
1-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
1-TI-68-65C	RCS LOOP 4 HOT LEG TEMPERATURE
1-TI-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
1-TI-70-154	RHR HX-B OUTLET TEMP (CCS)
1-TI-70-157	RHR HX-A OUTLET TEMP (CCS)
1-TI-70-161	ERCW/CCS HX-A OUTLET TEMP (CCS)
1-TI-74-14	RHR HX-A INLET TEMPERATURE
1-TI-74-15	RHR HX-A OUTLET TEMPERATURE
1-TI-74-25	RHR HX-B INLET TEMPERATURE
1-TI-74-27	RHR HX-B OUTLET TEMPERATURE
1-TI-74-38C	RCS HEAT EXCHANGER A OUTLET TEMPERATURE
1-TI-74-40C	RCS HEAT EXCHANGER B OUTLET TEMPERATURE
1-TIS-62-79	LETDOWN FLOW TEMPERATURE DIVERSION CONTROL
1-TR-74-14P002	RHR HX-A TEMPERATURE RECORDER
1-TR-74-25P002	RHR HX-B TEMPERATURE RECORDER
1-XS-99-1-D	REACTOR PROTECTION SET I TRANSFER SWITCH 1-D
1-XSV-32-112	UNIT 1 CONTAINMENT NON-ESSENTIAL HDR DUMP SOLENOID
2-BD-211-A-A	6.9KV SHUTDOWN BOARD 2A-A
2-BD-211-B-B	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV
2-BD-237-A	INSTRUMENT POWER DISTRIBUTION PANEL 2A
2-BD-237-B	INSTRUMENT POWER DISTRIBUTION PANEL 2B
2-BKR-99-L116/1B-A	REACTOR TRIP SWGR A
2-BKR-99-L116/1C-B	REACTOR TRIP SWGR B
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR
2-FCO-30-246A	480V TRANSFORMER RM 2B INTAKE AIR DAMPER
2-FCO-30-246B	480V TRANSFORMER RM 2B INTAKE AIR DAMPER
2-FCO-30-250A	480V TRANSFORMER RM 2A INTAKE AIR DAMPER
2-FCO-30-250B	480V TRANSFORMER RM 2A INTAKE AIR DAMPER
2-FCO-30-444-A	DIESEL GENERATOR VENT FAN DAMPER
2-FCO-30-446-B	DIESEL GENERATOR VENT FAN DAMPER
2-FCO-30-448-A	DG 2A-A ROOM EXHAUST FAN 2A DISCHARGE
2-FCO-30-450-B	DG 2B-B ROOM EXHAUST FAN 2B DISCHARGE
2-FCO-30-452-A	DG 2A-A ROOM EXHAUST FAN 2A DISCHARGE
2-FCO-30-454-B	DG 2B-B ROOM EXHAUST FAN 2B DISCHARGE
2-FCO-30-460-A	DG 2A-A ELECTRIC BOARD ROOM EXHAUST FAN DISCHARGE
2-FCO-30-462-B	DG 2B-B ELECTRIC BOARD ROOM EXHAUST FAN DISCHARGE
2-FCV-1-103	MAIN STEAM COOL DOWN VALVE
2-FCV-1-104	MAIN STEAM DUMP VALVE
2-FCV-1-105	MAIN STEAM DUMP VALVE
2-FCV-1-106	MAIN STEAM DUMP VALVE
2-FCV-1-107	MAIN STEAM COOL DOWN VALVE
2-FCV-1-108	MAIN STEAM DUMP VALVE
2-FCV-1-109	MAIN STEAM DUMP VALVE
2-FCV-1-11	#2 SG MAIN STEAM ISOLATION VALVE
2-FCV-1-110	MAIN STEAM DUMP VALVE
2-FCV-1-111	MAIN STEAM COOL DOWN VALVE
2-FCV-1-112	MAIN STEAM DUMP VALVE
2-FCV-1-113	MAIN STEAM COOL DOWN VALVE
2-FCV-1-114	MAIN STEAM DUMP VALVE
2-FCV-1-147-A	STEAM LINE WARMING VALVE LOOP 1
2-FCV-1-148-B	STEAM LINE WARMING VALVE LOOP 2
2-FCV-1-149-A	STEAM LINE WARMING VALVE LOOP 3
2-FCV-1-14-A	SG 2 BLOWDOWN CONTROL VALVE
2-FCV-1-150-B	STEAM LINE WARMING VALVE LOOP 4
2-FCV-1-15-A	AFWPT STEAM SUPPLY FROM SG 1 FLOW CONTROL VALVE
2-FCV-1-17-A	STEAM FLOW AUX FWPT ISOL VALVE
2-FCV-1-181-A	SG 1 BLOWDOWN ISOLATION VALVE
2-FCV-1-182-B	SG 2 BLOWDOWN ISOLATION VALVE
2-FCV-1-183-A	SG 3 BLOWDOWN ISOLATION VALVE
2-FCV-1-184-B	SG 4 BLOWDOWN ISOLATION VALVE
2-FCV-1-18-B	STEAM FLOW TO AUX FWPT ISOLATION VALVE
2-FCV-1-22	#3 SG MAIN STEAM ISOLATION VALVE
2-FCV-1-25-B	SG 3 BLOWDOWN CONTROL VALVE LOOP 3
2-FCV-1-275	MSR A2 LOW POWER BYPASS CONTROL VALVE
2-FCV-1-277	MSR B2 LOW POWER BYPASS CONTROL VALVE
2-FCV-1-279	MSR C2 LOW POWER BYPASS CONTROL VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FCV-1-284	MSR A1 LOW POWER BYPASS CONTROL VALVE
2-FCV-1-29	#4 SG MAIN STEAM ISOLATION VALVE
2-FCV-1-291	MSR B1 LOW POWER BYPASS CONTROL VALVE
2-FCV-1-298	MSR C1 LOW POWER BYPASS CONTROL VALVE
2-FCV-1-32-A	SG 4 BLOWDOWN CONTROL VALVE LOOP 4
2-FCV-1-36	MAIN FW PUMP TURBINE HP STOP VALVE
2-FCV-1-37	MAIN FW PUMP TURBINE HP CONTROL VALVE
2-FCV-1-4	#1 SG MAIN STEAM ISOLATION VALVE
2-FCV-1-43	MAIN FW PUMP TURBINE HP STOP VALVE
2-FCV-1-44	MAIN FW PUMP TURBINE HP CONTROL VALVE
2-FCV-1-51-S	AFW PUMP TURBINE TRIP & THROTTLE VALVE
2-FCV-1-52	TDAFWP TURBINE GOVERNOR VALVE
2-FCV-1-61	MAIN TURBINE CONTROL VALVE
2-FCV-1-62	MAIN TURBINE CONTROL VALVE
2-FCV-1-64	MAIN TURBINE CONTROL VALVE
2-FCV-1-65	MAIN TURBINE CONTROL VALVE
2-FCV-1-67	MAIN TURBINE CONTROL VALVE
2-FCV-1-68	MAIN TURBINE CONTROL VALVE
2-FCV-1-70	MAIN TURBINE CONTROL VALVE
2-FCV-1-71	MAIN TURBINE CONTROL VALVE
2-FCV-1-75	MOISTURE SEPARATOR REHEATER A2 CONTROL VALVE
2-FCV-1-77	MOISTURE SEPARATOR REHEATER B2 CONTROL VALVE
2-FCV-1-79	MOISTURE SEPARATOR REHEATER C2 CONTROL VALVE
2-FCV-1-7-B	SG 1 BLOWDOWN CONTROL VALVE
2-FCV-1-84	MOISTURE SEPARATOR REHEATER A1 CONTROL VALVE
2-FCV-1-91	MOISTURE SEPARATOR REHEATER B1 CONTROL VALVE
2-FCV-1-98	MOISTURE SEPARATOR REHEATER C1 CONTROL VALVE
2-FCV-26-240-A	CONTAINMENT STANDPIPE ISOLATION VALVE
2-FCV-26-241-B	ANNULUS STANDPIPE ISOLATION VALVE
2-FCV-26-242-A	ANNULUS STANDPIPE ISOLATION VALVE
2-FCV-26-243-A	RCP SPRAY ISOLATION VALVE
2-FCV-26-244-B	ANNULUS SPRINKLER ISOLATION VALVE
2-FCV-26-245-A	ANNULUS SPRINKLER ISOLATION VALVE
2-FCV-30-10-A	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-14-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-15-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-16-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-17-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-19-B	INSTRUMENT ROOM PURGE ISOLATION VALVE
2-FCV-30-20-A	INSTRUMENT ROOM PURGE ISOLATION VALVE
2-FCV-30-37-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-40-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-50-B	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-51-A	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-52-A	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-53-B	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-56-A	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-57-B	LOWER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-58-B	INSTRUMENT ROOM PURGE ISOLATION VALVE
2-FCV-30-59-A	INSTRUMENT ROOM PURGE ISOLATION VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FCV-30-7-A	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-8-B	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-30-9-B	UPPER COMPARTMENT PURGE ISOLATION VALVE
2-FCV-3-100-B	STEAM GENERATOR 4 FEEDWATER ISOLATION VALVE
2-FCV-3-103	STEAM GENERATOR 4 FW CONTROL VALVE
2-FCV-3-103A	STEAM GENERATOR 4 FW BYPASS VALVE
2-FCV-3-116A-A	ERCW HDR A ISOLATION VALVE
2-FCV-3-116B-A	ERCW HDR A ISOLATION VALVE
2-FCV-3-126A-B	ERCW HDR B ISOLATION VALVE
2-FCV-3-126B-B	ERCW HDR B ISOLATION VALVE
2-FCV-3-136A-A	ERCW HDR A ISOLATION VALVE
2-FCV-3-136B-A	ERCW HDR A ISOLATION VALVE
2-FCV-3-179A-B	ERCW HDR B ISOLATION VALVE
2-FCV-3-179B-B	ERCW HDR B ISOLATION VALVE
2-FCV-32-111-B	RB TRAIN B NON-ESSENTIAL CONTROL AIR ISLN VLV
2-FCV-3-236	SG1 FEEDWATER BYPASS ISOLATION VALVE
2-FCV-3-239	SG2 FEEDWATER BYPASS ISOLATION VALVE
2-FCV-3-242	SG3 FEEDWATER BYPASS ISOLATION VALVE
2-FCV-3-245	SG4 FEEDWATER BYPASS ISOLATION VALVE
2-FCV-3-33-A	STEAM GENERATOR 1 FEEDWATER ISOLATION VALVE
2-FCV-3-35	STEAM GENERATOR 1 FEEDWATER CONTROL VALVE
2-FCV-3-355-A	TRAIN A MDAFW PUMP RECIRCULATION VALVE
2-FCV-3-359-B	TRAIN B MDAFW PUMP RECIRCULATION VALVE
2-FCV-3-35A	STEAM GENERATOR 1 FEEDWATER BYPASS VALVE
2-FCV-3-47-B	STEAM GENERATOR 2 FEED WATER ISOL VALVE
2-FCV-3-48	STEAM GENERATOR 2 FW CONTROL VALVE
2-FCV-3-48A	STEAM GENERATOR 2 FW BYPASS VALVE
2-FCV-3-87-A	STEAM GENERATOR 3 FEEDWATER ISOLATION VALVE
2-FCV-3-90	STEAM GENERATOR 3 FW CONTROL VALVE
2-FCV-3-90A	STEAM GENERATOR 3 FW BYPASS VALVE
2-FCV-62-1228-A	CCP SUCTION HI-POINT VENT VALVE
2-FCV-62-1229-B	CCP SUCTION HI-POINT VENT VALVE
2-FCV-62-22	RCP 2 SEAL RETURN FCV
2-FCV-62-35	RCP 3 SEAL RETURN FCV
2-FCV-62-48	RCP 4 SEAL RETURN FCV
2-FCV-62-55	EXCESS LETDOWN ISOLATION VALVE
2-FCV-62-56	EXCESS LETDOWN FLOW CONTROL VALVE
2-FCV-62-69-A	REACTOR COOLANT LOOP 3 LETDOWN FLOW VALVE
2-FCV-62-70-A	REACTOR COOLANT LOOP 3 LETDOWN FLOW VALVE
2-FCV-62-72-A	REGEN HT EXCH LETDOWN ISOL VALVE A
2-FCV-62-73-A	REGEN HT EXCH LETDOWN ISOL VALVE B
2-FCV-62-74-A	REGEN HT EXCH LETDOWN ISOL VALVE C
2-FCV-62-84-A	CHARGING FLOW TO RCS SPRAY VALVE
2-FCV-62-89	CHARGING FLOW CONTROL VALVE
2-FCV-62-9	RCP 1 SEAL RETURN FCV
2-FCV-62-90-A	CHARGING FLOW ISOLATION VALVE
2-FCV-62-91-B	CHARGING FLOW ISOLATION VALVE
2-FCV-62-93	NORMAL MAKEUP FLOW CONTROL VALVE
2-FCV-62-98-A	CHGING PMP 2A-A FCV
2-FCV-62-99-B	CHGING PMP 2A-A FCV

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FCV-63-118-A	SIS ACCUMULATOR TANK 1 FLOW ISOLATION VALVE
2-FCV-63-11-B	RHR PUMP SUPPLY TO SIS PUMPS
2-FCV-63-172-B	RHR TO RCS HOT LEG 1 & 3 ISOLATION VALVE
2-FCV-63-186	RHR SUPPLY TEST LINE VALVE
2-FCV-63-1-A	RWST TO RHR PUMP
2-FCV-63-25-B	SIS BORON INJECTION TANK SHUTOFF VALVE
2-FCV-63-26-A	SIS BORON INJECTION TANK SHUTOFF VALVE
2-FCV-63-39-A	SIS BORON INJ TANK INLET SHUTOFF VALVE
2-FCV-63-40-B	SIS BORON INJ TANK INLET SHUTOFF VALVE
2-FCV-63-67-B	SIS ACCUMULATOR TANK 4 FLOW ISOLATION VALVE
2-FCV-63-72-A	CONTAINMENT SUMP TO RHR PUMP A-A
2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP B-B
2-FCV-63-80-A	SIS ACCUMULATOR TANK 3 FLOW ISOLATION VALVE
2-FCV-63-8-A	RHR HX 2A TO CVCS CHARGING PUMP CONTROL VALVE
2-FCV-63-93-A	SIS TO RCS LOOPS 2 & 3 FLOW CONTROL VALVE
2-FCV-63-94-B	SIS TO RCS LOOPS 1 & 4 FLOW CONTROL VALVE
2-FCV-63-98-B	SIS ACCUMULATOR TANK 2 FLOW ISOLATION VALVE
2-FCV-67-103-B	LOWER CNTMT 2B CLRS DISCH ISLN VLV INSIDE CNTMT
2-FCV-67-104-A	LOWER CNTMT 2B CLRS DISCH ISLN VLV OUTSIDE CNTMT
2-FCV-67-105-B	LOWER CNTMT 2B CLRS SUP ISLN VLV INSIDE CNTMT
2-FCV-67-107-A	LOWER CNTMT 2D CLRS SUP ISLN VLV OUTSIDE CNTMT
2-FCV-67-10A-B	ERCW STRAINER 2B-B BACKWASH VLV
2-FCV-67-10B-B	ERCW STRAINER 2B-B FLUSH VLV
2-FCV-67-111-B	LOWER CNTMT 2D CLRS DISCH ISLN VLV INSIDE CNTMT
2-FCV-67-112-A	LOWER CNTMT 2D CLRS DISCH ISLN VLV OUTSIDE CNTMT
2-FCV-67-113-B	LOWER CNTMT 2D CLRS SUP ISLN VLV INSIDE CNTMT
2-FCV-67-123-B	CNTMT SPRAY HX 2B SUPPLY VLV
2-FCV-67-124-B	CNTMT SPRAY HX 2B DISCHARGE VLV
2-FCV-67-125-A	CONTAINMENT SPRAY HX 2A SUPPLY VLV
2-FCV-67-126-A	CNTMT SPRAY HX 2A DISCHARGE VLV
2-FCV-67-127-A	AUX BLDG AIR COOLERS SUP HDR 2A FCV
2-FCV-67-128-B	AUX BLDG AIR CLRS SUP HDR 2B VLV
2-FCV-67-143-A	CCS HX B ERCW BYPASS FCV
2-FCV-67-146-A	CCS HX B DISCHARGE CONTROL VLV
2-FCV-67-147-B	ERCW SUP HDR 2B TO HDR 1A ISOL VLV
2-FCV-67-168-A	CCP 1A ROOM COOLER ERCW ISOL
2-FCV-67-170-B	CCP-1B ROOM COOLER ISOL VALVE
2-FCV-67-188-A	RHR PUMP 2A-A RM COOLER ERCW ISOL AOV
2-FCV-67-190-B	RHR PUMP 2B-B RM COOLER ERCW ISOL AOV
2-FCV-67-217-A	BA TRANSFER & AUX FW PMPS SPACE CLR A
2-FCV-67-219-B	BA/AFW PUMP ROOM COOLER 2B FLOW CONT AOV
2-FCV-67-223-A	SUPPLY HDR 2A TO HDR 1B ISLN VLV
2-FCV-67-22-A	ERCW HDR 2A ISLN VLV BEFORE STRAINER
2-FCV-67-24-B	ERCW HDR 2B ISLN VLV BEFORE STRAINER
2-FCV-67-66-A	EMERG DSL HEAT EXH 2A1 & 2A2 SUPP VALVE FM HDR 1A
2-FCV-67-67-B	EMERG DSL HEAT EXH 2B1 & 2B2 SUPP VALVE FM HDR 1B
2-FCV-67-81-A	AUX BLDG ERCW SUP HDR 2A ISLN VLV
2-FCV-67-82-B	AUX BLDG ERCW SUP HDR 2B ISLN VLV
2-FCV-67-83-B	LOWER CNTMT 2A CLRS SUP ISLN VLV OUTSIDE CNTMT
2-FCV-67-87-A	LOWER CNTMT 2A CLRS DISCH ISLN VLV INSIDE CNTMT

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FCV-67-88-B	LOWER CNTMT 2A CLRS DISCH ISLN VLV OUTSIDE CNTMT
2-FCV-67-89-A	LOWER CNTMT 2A CLRS SUP ISLN VLV INSIDE CNTMT
2-FCV-67-91-B	LOWER CNTMT 2C CLRS SUP ISLN VLV OUTSIDE CNTMT
2-FCV-67-95-A	LOWER CNTMT 2C CLRS DISCH ISLN VLV INSIDE CNTMT
2-FCV-67-96-B	LOWER CNTMT 2C CLRS DISCH ISLN VLV OUTSIDE CNTMT
2-FCV-67-97-A	LOWER CNTMT 2C CLRS SUP ISLN VLV INSIDE CNTMT
2-FCV-67-99-A	LOWER CNTMT 2B CLRS SUP ISLN VLV OUTSIDE CNTMT
2-FCV-67-9A-A	ERCW STRAINER 2A-A BACKWASH VALVE
2-FCV-67-9B-A	ERCW STRAINER 2A-A FLUSH VLV
2-FCV-68-332-B	REACTOR COOLANT PRESS RELIEF FLOW CONTROL VALVE
2-FCV-68-333-A	REACTOR COOLANT PRESS RELIEF FLOW CONTROL VALVE
2-FCV-70-133-A	RCP THERMAL BARRIER CONTAINMENT ISOLATION VALVE
2-FCV-70-134-B	RCP THERMAL BARRIER CONTAINMENT ISOLATION VALVE
2-FCV-70-143-A	EXCESS LTDN HX INLET ISLN VLV
2-FCV-70-14-B	CCS HX B & C INLET ISOLATION VALVE
2-FCV-70-153-B	RHR HX B-B OUTLET VALVE
2-FCV-70-156-A	RHR HX A-A OUTLET VLV
2-FCV-70-15-A	CCS HX B OUTLET VALVE
2-FCV-70-16-A	CCS HX B INLET VALVE
2-FCV-70-18-A	CCS HX B & C INLET ISOLATION VALVE
2-FCV-70-195-A	CCS HX B & C OUTLET VLV
2-FCV-70-196-B	CCS HX B & C OUTLET VLV
2-FCV-70-28-B	CCS PMPS 2A-A & 2B-B TO C-S OUTLET ISOL VLV- LC
2-FCV-70-29-B	CCS PMPS 2A-A & 2B-B TO C-S OUTLET ISOL VLV- LC
2-FCV-70-2-A	RHR HX A HEADER INLET VALVE
2-FCV-70-39-B	CCS PMP 2A-A TO 2B-B ISLN VLV
2-FCV-70-3-B	RHR HX 2B-B HDR INLET VLV
2-FCV-70-4-A	MISC EQUIPMENT HEADER INLET VALVE
2-FCV-70-75-B	RHR HX 2B-B RETURN HDR ISLN VLV
2-FCV-70-76-B	CCS PMPS 2A-A & 2B-B TO C-S VLV
2-FCV-70-78-B	CCS PMPS 2A-A & 2B-B TO C-S VLV
2-FCV-70-85-B	EXCESS LTDN HX OUTLET VLV
2-FCV-70-87-B	RCP THERMAL BARRIER RETURN CONTAINMENT ISOL VALVE
2-FCV-70-90-A	RCP THERMAL BARRIER RETURN CONTAINMENT ISOL VALVE
2-FCV-72-21-B	RWST TO SPRAY HDR 2B FCV
2-FCV-72-22-A	RWST TO SPRAY HDR 2A FCV
2-FCV-72-2-B	CONTAINMENT SPRAY HEADER 2B ISOLATION VALVE
2-FCV-72-39-A	CONTAINMENT SPRAY HEADER 2A ISOLATION VALVE
2-FCV-72-40-A	RHR SPRAY HDR 2A ISOLATION VALVE
2-FCV-72-41-B	RHR SPRAY HDR 2B ISOLATION VALVE
2-FCV-72-44-A	CONTAINMENT SUMP TO SPRAY HEADER 2A FCV
2-FCV-72-45-B	CONTAINMENT SUMP TO SPRAY HEADER 2B FCV
2-FCV-74-12-A	RHR PUMP 2A-A MINIMUM FLOW VALVE
2-FCV-74-16	RHR HX 2A OUTLET FLOW CONTROL VALVE
2-FCV-74-1-A	RHR SYSTEM ISOLATION VALVE
2-FCV-74-21-B	RHR PUMP 2B-B INLET VALVE
2-FCV-74-24-B	RHR PUMP 2B-B MINIMUM FLOW VALVE
2-FCV-74-28	RHR HX 2B OUTLET FLOW CONTROL VALVE
2-FCV-74-2-B	RHR SYSTEM ISOLATION VALVE
2-FCV-74-32	RHR HEAT EXCHANGER BYPASS

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FCV-74-33-A	RHR PUMP HEAT EXCHANGER 2A BYPASS VALVE
2-FCV-74-35-B	RHR PUMP HEAT EXCHANGER 2B BYPASS VALVE
2-FCV-74-3-A	RHR PUMP 2A-A INLET FCV
2-FCV-74-8-A	RHR SYSTEM ISOLATION BYPASS VALVE
2-FCV-74-9-B	RHR SYSTEM ISOLATION BYPASS VALVE
2-FI-3-142A	TDAFW PUMP DISCHARGE FLOW
2-FI-3-142C	TDAFW PUMP DISCHARGE FLOW
2-FI-3-147A	AFW FLOW TO #3SG
2-FI-3-147B	AFW FLOW TO #3SG
2-FI-3-147C	AFW FLOW TO #3 SG
2-FI-3-155A	SG 2 AFW INLET FLOW
2-FI-3-155B	SG 2 AFW INLET FLOW
2-FI-3-155C	SG 2 AFW INLET FLOW
2-FI-3-163A	SG 1 AFW INLET FLOW
2-FI-3-163B	SG 1 AFW INLET FLOW
2-FI-3-163C	SG 1 AFW INLET FLOW
2-FI-3-170A	AFW FLOW TO #4SG
2-FI-3-170B	AFW FLOW TO #4SG
2-FI-3-170C	SG 4 AFW INLET FLOW
2-FI-62-14A	RCP-2 SEAL INJECTION FLOW INDICATOR
2-FI-62-1A	RCP-1 SEAL INJECTION FLOW INDICATOR
2-FI-62-27A	RCP-3 SEAL INJECTION FLOW INDICATOR
2-FI-62-40A	RCP-4 SEAL INJECTION FLOW INDICATOR
2-FI-62-93A	NORMAL CHARGING FLOW INDICATOR
2-FI-62-93C	NORMAL CHARGING FLOW INDICATOR (ACR)
2-FI-67-222	ERCW SUPPLY HEADER 2A FLOW INDICATOR
2-FI-67-61	ERCW SUPPLY HEADER 2A FLOW INDICATOR
2-FI-67-61C	ERCW SUPPLY HEADER 2A FLOW INDICATOR
2-FI-67-62	ERCW SUPPLY HEADER 2B FLOW INDICATOR
2-FI-67-62C	ERCW SUPPLY HEADER 2B FLOW INDICATOR
2-FIC-3-103	SG 4 FW CONTROL VALVE FLOW CONTROLLER
2-FIC-3-35	SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER
2-FIC-3-48	SG 2 FEEDWATER CONTROL VALVE FLOW CONTROLLER
2-FIC-3-90	SG 3 FW CONTROL VALVE FLOW CONTROLLER
2-FM-62-56	EXCESS LETDOWN FLOW CONTROL VALVE E/P MODULE
2-FSV-1-11A-A	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11B-B	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11D-A	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11E-A	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11F-A	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11G-B	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11H-B	#2SG MSIV OPERATING SOLENOID
2-FSV-1-11J-B	#2SG MSIV OPERATING SOLENOID
2-FSV-1-22A-A	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22B-B	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22D-A	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22E-A	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22F-A	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22G-B	#3SG MSIV OPERATING SOLENOID
2-FSV-1-22H-B	#3SG MSIV OPERATING SOLENOID

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FSV-1-22J-B	#3SG MSIV OPERATING SOLENOID
2-FSV-1-29A-A	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29B-B	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29D-A	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29E-A	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29F-A	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29G-B	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29H-B	#4SG MSIV OPERATING SOLENOID
2-FSV-1-29J-B	#4SG MSIV OPERATING SOLENOID
2-FSV-1-4A-A	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4B-B	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4D-A	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4E-A	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4F-A	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4G-B	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4H-B	#1SG MSIV OPERATING SOLENOID
2-FSV-1-4J-B	#1SG MSIV OPERATING SOLENOID
2-FSV-3-103-A	STEAM GENERATOR 4 FW BYPASS VALVE
2-FSV-3-103AA-A	STEAM GENERATOR 4 FW CONTROL SOLENOID VALVE
2-FSV-3-103AB-A	STEAM GENERATOR 4 FW CONTROL SOLENOID VALVE
2-FSV-3-103BA-B	STEAM GENERATOR 4 FW CONTROL SOLENOID VALVE
2-FSV-3-103BB-B	STEAM GENERATOR 4 FW CONTROL SOLENOID VALVE
2-FSV-3-236A-A	STEAM GENERATOR 1 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-236B-B	STEAM GENERATOR 1 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-239A-A	STEAM GENERATOR 2 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-239B-B	SG 2 FW BYPASS ISOLATION SOLENOID VALVE
2-FSV-3-242A-A	STEAM GENERATOR 3 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-242B-B	STEAM GENERATOR 3 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-245A-A	STEAM GENERATOR 4 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-245B-B	STEAM GENERATOR 4 FW BYPASS ISOL SOLENOID VALVE
2-FSV-3-35AA-A	SG 1 FEEDWATER CONTROL SOLENOID VALVE
2-FSV-3-35AB-A	SG 1 FEEDWATER CONTROL SOLENOID VALVE
2-FSV-3-35-B	SG 1 FW BYPASS SOLENOID VALVE
2-FSV-3-35BA-B	SG 1 FEEDWATER CONTROL SOLENOID VALVE
2-FSV-3-35BB-B	SG 1 FEEDWATER CONTROL SOLENOID VALVE
2-FSV-3-48-A	STEAM GENERATOR 2 FW BYPASS SOLENOID VALVE
2-FSV-3-48AA-A	STEAM GENERATOR 2 FW CONTROL SOLENOID VALVE
2-FSV-3-48AB-A	STEAM GENERATOR 2 FW CONTROL SOLENOID VALVE
2-FSV-3-48BA-B	STEAM GENERATOR 2 FW CONTROL SOLENOID VALVE
2-FSV-3-48BB-B	STEAM GENERATOR 2 FW CONTROL SOLENOID VALVE
2-FSV-3-90AA-A	STEAM GENERATOR 3 FW CONTROL SOLENOID VALVE
2-FSV-3-90AB-A	STEAM GENERATOR 3 FW CONTROL SOLENOID VALVE
2-FSV-3-90-B	STEAM GENERATOR 3 FW BYPASS SOLENOID VALVE
2-FSV-3-90BA-B	STEAM GENERATOR 3 FW CONTROL SOLENOID VALVE
2-FSV-3-90BB-B	STEAM GENERATOR 3 FW CONTROL SOLENOID VALVE
2-FSV-46-36D	MFPT B TRIP SOLENOID VALVE
2-FSV-46-9D	MFPT A TRIP SOLENOID VALVE
2-FSV-47-24	TRAIN A MAIN TURBINE TRIP SOLENOID
2-FSV-47-26A-A	EHC OVERSPEED PROTECTION CONTROL
2-FSV-47-26B-B	EHC OVERSPEED PROTECTION CONTROL

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-FSV-47-27	TRAIN B MAIN TURBINE TRIP SOLENOID
2-FSV-67-217-A	BA TRANSFER AND AFW PMPS SPACE CLR A SUP
2-FSV-67-219-B	BA TRANSFER AND AFW PMPS SPACE CLR B SUP
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE
2-FSV-77-2561	ISOLATION FOR N2 TO MDAFW PUMP LCVS/PCVS
2-FSV-77-2562	ISOLATION FOR N2 TO TDAFW PUMP LCVS
2-FT-3-142	TDAFW PUMP DISCHARGE FLOW
2-FT-3-147A	AFW FLOW TO #3SG
2-FT-3-147B	AFW FLOW TO #3SG
2-FT-3-155A	SG 2 AFW INLET FLOW
2-FT-3-155B	SG 2 AFW INLET FLOW
2-FT-3-163A	SG 1 AFW INLET FLOW
2-FT-3-163B	SG 1 AFW INLET FLOW
2-FT-3-170A	AFW FLOW TO #4SG
2-FT-3-170B	AFW FLOW TO #4SG
2-FT-62-1	RCP-1 SEAL INJECTION FLOW
2-FT-62-14	RCP-2 SEAL INJECTION FLOW INDICATOR
2-FT-62-27	RCP-3 SEAL INJECTION FLOW
2-FT-62-40	RCP-4 SEAL INJECTION FLOW
2-FT-62-93A	NORMAL CHARGING FLOW INDICATOR
2-FT-62-93C	NORMAL CHARGING FLOW (ACR)
2-FT-67-222	FLOW TRANSMITTER
2-FT-67-61	FLOW TRANSMITTER
2-FT-67-61C	ERCW SUPPLY HEADER 2A FLOW TRANSMITTER
2-FT-67-62	ERCW SUPPLY HEADER 2B FLOW TRANSMITTER
2-FT-67-62C	ERCW SUPPLY HEADER 2B FLOW TRANSMITTER
2-FT-70-81A	THERMAL BARRIER SUPPLY HEADER FLOW
2-FT-70-81B	THERMAL BARRIER SUPPLY HEADER FLOW
2-FT-70-81D	THERMAL BARRIER SUPPLY HEADER FLOW
2-FT-70-81E	THERMAL BARRIER SUPPLY HEADER FLOW
2-HCV-74-36	RHR HX-A BYPASS MANUAL ISOL VLV
2-HCV-74-37	RHR HX-B BYPASS MANUAL ISOL VLV
2-HS-30-63A-T	CONTAINMENT ISOLATION PHASE A (CIPA)
2-HS-30-63B-T	CONTAINMENT ISOLATION PHASE A (CIPA)
2-HS-30-64A-T	CONTAINMENT ISOLATION PHASE B (CIPB)
2-HS-30-64B-T	CONTAINMENT ISOLATION PHASE B (CIPB)
2-HS-30-68A-T	CONTAINMENT ISOLATION PHASE B (CIPB)
2-HS-30-68B-T	CONTAINMENT ISOLATION PHASE B (CIPB)
2-HS-63-133A-T	HAND SWITCH
2-HS-63-133B-T	HAND SWITCH
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B
2-HTR-68-341F/D1-D6	PRESSURIZER HEATER CONTROL GROUP 2D
2-HTR-68-341H/C1-C6	PRESSURIZER HEATER CONTROL GROUP 2C
2-HTX-62-66	SEAL WATER HEAT EXCHANGER
2-INV-235-1-D	120V AC VITAL INVERTER 2-I
2-INV-235-2-E	120V AC VITAL INVERTER 2-II

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-INV-235-3-F	120V AC VITAL INVERTER 2-III
2-INV-235-4-G	120V AC VITAL INVERTER 2-IV
2-ISIV-30-42A	2-PDT-30-42-G CTMT PRES XMTR SENSE LINE/ISO VLV
2-ISIV-30-43A	2-PDT-30-43-F CTMT PRES XMTR SENSE LINE/ISO VLV
2-ISIV-30-44A	2-PDT-30-44-E CTMT PRES XMTR SENSE LINE/ISO VLV
2-ISIV-30-45A	2-PDT-30-45-D CTMT PRES XMTR SENSE LINE/ISO VLV
2-ISV-3-827	SG 2 MDAFW LCV ISOLATION VALVE
2-ISV-3-828	SG 1 MDAFW LCV ISOLATION VALVE
2-ISV-62-526	CCP 1A-A SEAL INJECTION BYPASS
2-ISV-62-527	CCP 1A-A DISCHARGE VALVE
2-ISV-62-535	2-FCV-62-93 ISOLATION VALVE
2-ISV-62-537	FCV-62-89 UPSTREAM ISOL
2-ISV-62-549	SEAL WATER INJECTION FILTER OUTLET
2-ISV-62-550	SEAL WATER INJECTION FILTER OUTLET
2-ISV-70-545A	RHR HX 2A-A INLET VALVE (MANUAL)
2-ISV-70-574	CCS SUPPLY TO NON-REGEN LETDOWN HX ISOL
2-ISV-70-587	CCS OUT/SEAL WTR & NON-RGN LETDOWN HX ISO
2-ISV-70-705	EXCESS LETDOWN HX CCS RETURN ISOLATION VALVE
2-PNL-L-276-1000	N2 OPERATING STATION FOR 2-PCV-1-23, -30
2-PNL-L-276-1001	N2 OPERATING STATION FOR 2-PCV-1-5, -12
2-LCV-3-148	MOTOR DRIVEN AUX FEEDWATER PMP SG 3 LVL CONT VALVE
2-LCV-3-156	MOTOR DRIVEN AUX FEEDWATER PMP SG 2 LVL CONT VALVE
2-LCV-3-164	MOTOR DRIVEN AUX FEEDWATER PMP SG 1 LVL CONT VALVE
2-LCV-3-171	MOTOR DRIVEN AUX FEEDWATER PMP SG 4 LVL CONT VALVE
2-LCV-3-172	TDAFW PUMP SG 3 LEVEL CONTROL VALVE
2-LCV-3-173	TDAFW PUMP SG 2 LEVEL CONTROL VALVE
2-LCV-3-174	TDAFW PUMP SG 1 LEVEL CONTROL VALVE
2-LCV-3-175	TDAFW PUMP SG 4 LEVEL CONTROL VALVE
2-LCV-62-132-A	VCT OUTLET ISOLATION VALVE
2-LCV-62-133-B	VCT OUTLET ISOLATION VALVE
2-LCV-62-135-A	RWST TO CHARGING PUMPS VALVE CONTROL
2-LCV-62-136-B	RWST TO CHARGING PUMPS VALVE CONTROL
2-LI-3-106	#4SG LEVEL INDICATOR (NR)
2-LI-3-107	#4SG LEVEL INDICATOR (NR)
2-LI-3-110	#4SG LEVEL INDICATOR (NR)
2-LI-3-111A	#4SG LEVEL INDICATOR (WR)
2-LI-3-148C	SG 3 NARROW RANGE LEVEL
2-LI-3-156C	SG 2 NARROW RANGE LEVEL
2-LI-3-164C	SG 1 NARROW RANGE LEVEL
2-LI-3-171C	SG 4 NARROW RANGE LEVEL
2-LI-3-38	SG 1 NARROW RANGE LEVEL
2-LI-3-39	SG 1 NARROW RANGE LEVEL
2-LI-3-42	SG 1 NARROW RANGE LEVEL
2-LI-3-43A	SG 1 WIDE RANGE LEVEL
2-LI-3-51	SG 2 NARROW RANGE LEVEL
2-LI-3-52	#2SG LEVEL INDICATOR (NR)
2-LI-3-55	#2SG LEVEL INDICATOR (NR)
2-LI-3-56A	#2SG LEVEL INDICATOR (WR)
2-LI-3-93	#3SG LEVEL INDICATOR (NR)
2-LI-3-94	#3SG LEVEL INDICATOR (NR)

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-LI-3-97	#3SG LEVEL INDICATOR (NR)
2-LI-3-98A	#3SG LEVEL INDICATOR (WR)
2-LI-62-129A	VCT LEVEL INDICATION
2-LI-62-129C	VCT LEVEL INDICATION
2-LI-63-50	RWST LEVEL INDICATOR
2-LI-63-52	RWST LEVEL INDICATOR
2-LI-68-320-F	PZR LEVEL INDICATOR
2-LI-68-325C	RCS PRESSURIZER LEVEL
2-LI-68-326C	RCS PRESSURIZER LEVEL
2-LI-68-335A-E	PZR LEVEL INDICATOR
2-LI-68-339A-D	PZR LEVEL INDICATOR
2-LIC-3-103A	STEAM GENERATOR 4 FW BYPASS VALVE CONTROLLER
2-LIC-3-148A	MDAF STEAM GENERATOR 3 LEVEL CONTROLLER
2-LIC-3-156A	SG 2 LEVEL INDICATING CONTROLLER
2-LIC-3-164A	SG 1 LEVEL INDICATING CONTROLLER
2-LIC-3-171A	MDAF STEAM GENERATOR 4 LEVEL CONTROLLER
2-LIC-3-172A	TDAFW PUMP SG 3 LEVEL CONTROLLER
2-LIC-3-173A	TDAFW PUMP SG 2 LEVEL CONTROLLER
2-LIC-3-174A	TDAFW PUMP SG 1 LEVEL CONTROLLER
2-LIC-3-175A	TDAFW PUMP SG 4 LEVEL CONTROLLER
2-LIC-3-35A	STEAM GENERATOR 1 FW BYPASS VALVE CONTROLLER
2-LIC-3-48A	STEAM GENERATOR 2 FW BYPASS VALVE CONTROLLER
2-LIC-3-90A	STEAM GENERATOR 3 FW BYPASS VALVE CONTROLLER
2-LM-3-148A	2-LCV-3-148 MODULATOR
2-LM-3-156A	2-LCV-3-156 MODULATOR
2-LM-3-164A	2-LCV-3-164 MODULATOR
2-LM-3-171A	2-LCV-3-171 MODULATOR
2-LM-3-172A	2-LCV-3-172 MODULATOR
2-LM-3-173A	2-LCV-3-173 MODULATOR
2-LM-3-174A	2-LCV-3-174 MODULATOR
2-LM-3-175A	2-LCV-3-175 MODULATOR
2-LT-3-106	#4SG LEVEL TRANSMITTER (NR)
2-LT-3-107	#4SG LEVEL TRANSMITTER (NR)
2-LT-3-110	#4SG LEVEL TRANSMITTER (NR)
2-LT-3-111	#4SG LEVEL TRANSMITTER (WR)
2-LT-3-148	MDAF STEAM GENERATOR 3 LEVEL TRANSMITTER
2-LT-3-156	SG NO. 2 NARROW RANGE LEVEL TRANSMITTER
2-LT-3-164	SG NO. 1 NARROW RANGE LEVEL TRANSMITTER
2-LT-3-171	MDAF STEAM GENERATOR 4 LEVEL TRANSMITTER
2-LT-3-172	TDAFW PUMP SG 3 LEVEL TRANSMITTER
2-LT-3-173	TDAFW PUMP SG 2 LEVEL TRANSMITTER
2-LT-3-174	TDAFW PUMP SG 1 LEVEL TRANSMITTER
2-LT-3-175	TDAFW PUMP SG 4 LEVEL TRANSMITTER
2-LT-3-38	#1SG LEVEL TRANSMITTER (NR)
2-LT-3-39	#1SG LEVEL TRANSMITTER (NR)
2-LT-3-42	#1SG LEVEL TRANSMITTER (NR)
2-LT-3-43	#1SG LEVEL TRANSMITTER (WR)
2-LT-3-51	#2SG LEVEL TRANSMITTER (NR)
2-LT-3-52	#2SG LEVEL TRANSMITTER (NR)
2-LT-3-55	#2SG LEVEL TRANSMITTER (NR)

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-LT-3-56	#2SG LEVEL TRANSMITTER (WR)
2-LT-3-93	#3SG LEVEL TRANSMITTER (NR)
2-LT-3-94	#3SG LEVEL TRANSMITTER (NR)
2-LT-3-97	#3SG LEVEL TRANSMITTER (NR)
2-LT-3-98	#3SG LEVEL TRANSMITTER (WR)
2-LT-62-129A	VCT LEVEL TRANSMITTER
2-LT-62-129C	VCT LEVEL TRANSMITTER
2-LT-62-130A	VCT LEVEL TRANSMITTER
2-LT-63-50	RWST LEVEL TRANSMITTER
2-LT-63-51	RWST LEVEL TRANSMITTER
2-LT-63-52	RWST LEVEL TRANSMITTER
2-LT-63-53	RWST LEVEL TRANSMITTER
2-LT-63-180-D	CONTAINMENT SUMP LEVEL TRANSMITTER
2-LT-63-181-E	CONTAINMENT SUMP LEVEL TRANSMITTER
2-LT-63-182-F	CONTAINMENT SUMP LEVEL TRANSMITTER
2-LT-63-183-G	CONTAINMENT SUMP LEVEL TRANSMITTER
2-LT-68-320-F	PZR LEVEL TRANSMITTER
2-LT-68-325C	RCS PRESSURIZER LEVEL
2-LT-68-326C	RCS PRESSURIZER LEVEL
2-LT-68-335	PZR LEVEL TRANSMITTER
2-LT-68-339	PZR LEVEL TRANSMITTER
2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2-MCC-213-B1-B	REACTOR MOV BD 2B1-B
2-MCC-213-B2-B	REACTOR MOV BD 2B2-B
2-MCC-214-A1-A	480V CONTROL AND AUX BLDG VENT BOARD 2A1-A
2-MCC-214-A2-A	480V CONTROL AND AUX BLDG VENT BOARD 2A2-A
2-MCC-214-B1-B	480V CONTROL AND AUX BLDG VENT BOARD 2B1-B
2-MCC-214-B2-B	480V CONTROL AND AUX BLDG VENT BOARD 2B2-B
2-MCC-215-A1-A	DIESEL AUX BD 2A1-A
2-MCC-215-A2-A	DIESEL AUX BD 2A2-A
2-MCC-215-B1-B	DIESEL AUX BD 2B1-B
2-MCC-215-B2-B	DIESEL AUX BD 2B2-B
2-MTR-30-175-A	RHR PUMP 2A-A ROOM COOLER FAN
2-MTR-30-176-B	RHR PUMP 2B-B ROOM COOLER FAN
2-MTR-30-182-B	CCP 2B-B ROOM COOLER FAN
2-MTR-30-183-A	CCP 2A-A ROOM COOLER FAN
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR
2-MTR-30-214	TURBINE DRIVEN AUX FW PUMP ROOM VENT FAN
2-MTR-30-246F-B	XMFR RM 2B EXHAUST FAN 2B1-B MOTOR
2-MTR-30-246G-B	XMFR RM 2B EXHAUST FAN 2B2-B MOTOR
2-MTR-30-246H-B	XMFR RM 2B EXHAUST FAN 2B3-B MOTOR
2-MTR-30-250E-A	XMFR RM 2A EXHAUST FAN 2A1-A MOTOR
2-MTR-30-250F-A	XMFR RM 2A EXHAUST FAN 2A2-A MOTOR
2-MTR-30-250G-A	XMFR RM 2A EXHAUST FAN 2A3-A MOTOR
2-MTR-30-38-A	CONTAINMENT AIR RETURN FAN 2A-A
2-MTR-30-39-B	CONTAINMENT AIR RETURN FAN 2B-B
2-MTR-30-448-A	DG 2A-A ROOM EXHAUST FAN 1A MOTOR
2-MTR-30-450-B	DG 2B-B ROOM EXHAUST FAN 1B MOTOR

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-MTR-30-452-A	DG 2A-A ROOM EXHAUST FAN 2A MOTOR
2-MTR-30-454-B	DG 2B-B ROOM EXHAUST FAN 2B MOTOR
2-MTR-30-460-A	DG 2A-A ELECTRIC BOARD ROOM EXHAUST FAN MOTOR
2-MTR-30-462-B	DG 2B-B ELECTRIC BOARD ROOM EXHAUST FAN MOTOR
2-MTR-30-492-A	DG ELEC PANEL/GENERATOR VENT FAN
2-MTR-30-494-B	DG ELEC PANEL/GENERATOR VENT FAN
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B
2-MTR-3-118-A	MDAFW PUMP 2A-A
2-MTR-3-118D-A	AUX FEEDWATER PUMP A-A LUBE OIL PUMP A-A
2-MTR-3-128-B	MDAFW PUMP 2B-B
2-MTR-3-128D-B	AUX FEEDWATER PUMP B-B LUBE OIL PUMP B-B
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A
2-MTR-63-10-A	SAFETY INJECTION PUMP 2A-A
2-MTR-63-15-B	SAFETY INJECTION PUMP 2B-B
2-MTR-67-10-B	ERCW STRAINER 2B-B
2-MTR-67-437-A	ERCW SCREEN WASH PUMP 2A-A
2-MTR-67-439-A	ERCW TRAVELING SCREEN 2A-A
2-MTR-67-447-B	ERCW SCREEN WASH PUMP 2B-B
2-MTR-67-451-B	ERCW TRAVELING SCREEN 2B-B
2-MTR-67-9-A	ERCW STRAINER 2A-A
2-MTR-68-31	REACTOR COOLING PUMP NUMBER 2
2-MTR-68-50	REACTOR COOLING PUMP NUMBER 3
2-MTR-68-73	REACTOR COOLING PUMP NUMBER 4
2-MTR-68-8	REACTOR COOLANT PUMP NUMBER 1
2-MTR-70-130-B	THERMAL BARRIER BOOSTER PUMP 2B-B
2-MTR-70-131-A	THERMAL BARRIER BOOSTER PUMP 2A-A
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2-MTR-72-10-B	CONTAINMENT SPRAY PUMP 2B-B
2-MTR-72-27-A	CONTAINMENT SPRAY PUMP 2A-A
2-MTR-74-10-A	RHR PUMP 2A-A
2-MTR-74-20-B	RHR PUMP 2B-B
2-MTR-81-3	PRIMARY MAKEUP WATER PUMP 2A
2-MTR-81-7	PRIMARY MAKEUP WATER PUMP 2B
2-NI-92-131-D	SOURCE RANGE DETECTOR AND INDICATION
2-NI-92-132-E	SOURCE RANGE DETECTOR AND INDICATION
2-NI-92-138	NEUTRON SOURCE RANGE INDICATOR
2-NM-92-131-D	AMPLIFIER
2-NM-92-132-E	AMPLIFIER
2-NMD-92-131-D	NEUTRON DETECTOR
2-NMD-92-132-E	NEUTRON DETECTOR
2-OXF-212-A1-A	480V SHUTDOWN BOARD XMFR 2A1-A

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-OXF-212-A2-A	480V SHUTDOWN BOARD XMFR 2A2-A
2-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 2B1-B
2-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 2B2-B
2-PCV-1-12	SG 2 POWER RELIEF VALVE
2-PCV-1-23	SG 3 POWER RELIEF VALVE
2-PCV-1-30	SG 4 POWER RELIEF VALVE
2-PCV-1-5	SG 1 POWER RELIEF VALVE
2-PCV-3-122-A	AFW PUMP OUTLET PRESSURE CONTROL VALVE
2-PCV-3-132-B	AFW PUMP OUTLET PRESSURE CONTROL VALVE
2-PCV-3-40	DEAERATION LINE BACK PRESSURE CONTROL VALVE
2-PCV-68-334-B	PRESSURIZER PORV
2-PCV-68-340A-A	PRESSURIZER PORV
2-PCV-68-340B	PRESSURIZER SPRAY VALVE
2-PCV-68-340D	PRESSURIZER SPRAY VALVE
2-PDIC-3-122C	MDAFW PMP 2A-A DISCH PRES CONT ACS(IND)
2-PDIC-3-132C	MDAFW PMP 2B-B DISCH PRES CONT ACS(IND)
2-PDT-30-42-G	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP
2-PDT-30-43-F	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP
2-PDT-30-44-E	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP
2-PDT-30-45-D	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP
2-PI-1-12	#2SG PRESSURE INDICATION
2-PI-1-19C	SG 3 STEAM HEADER PRESSURE
2-PI-1-1C	SG 1 STEAM HEADER PRESSURE
2-PI-1-20A	#3SG PRESSURE INDICATION
2-PI-1-20B	#3SG PRESSURE INDICATION
2-PI-1-23	#3SG PRESSURE INDICATION
2-PI-1-26C	SG 4 STEAM HEADER PRESSURE
2-PI-1-27A	#4SG PRESSURE INDICATION
2-PI-1-27B	#4SG PRESSURE INDICATION
2-PI-1-2A	SG 1 MAIN STEAM HEADER PRESSURE
2-PI-1-2B	SG 1 MAIN STEAM HEADER PRESSURE
2-PI-1-30	#4SG PRESSURE INDICATION
2-PI-1-5	SG 1 MAIN STEAM HEADER PRESSURE POWER RELIEF
2-PI-1-8C	SG 2 STEAM HEADER PRESSURE
2-PI-1-9A	#2SG PRESSURE INDICATION
2-PI-1-9B	#2SG PRESSURE INDICATION
2-PI-3-117	LOCAL MDAFWP A SUCTION PRES INDICATOR
2-PI-3-127	LOCAL MDAFWP B SUCTION PRES INDICATOR
2-PI-3-137	LOCAL TDAFW PUMP SUCTION PRES INDICATOR
2-PI-68-342A	PRESSURIZER PRESSURE INSTRUMENT LOOP
2-PI-68-342C	PRESSURIZER PRESSURE INSTRUMENT LOOP
2-PI-68-63	RCS LOOP 1 PRESSURE (RHR INLET)
2-PIC-1-13A	SG 2 POWER RELIEF VALVE
2-PIC-1-13C	SG 2 POWER RELIEF VALVE
2-PIC-1-24A	SG 3 POWER RELIEF VALVE
2-PIC-1-24C	SG 3 POWER RELIEF VALVE
2-PIC-1-31A	SG 4 POWER RELIEF VALVE
2-PIC-1-31C	SG 4 POWER RELIEF VALVE
2-PIC-1-6A	SG 1 POWER RELIEF VALVE
2-PIC-1-6C	SG 1 POWER RELIEF VALVE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-PM-1-13	SG 2 POWER RELIEF VALVE MODIFIER
2-PM-1-24	SG 3 POWER RELIEF VALVE MODIFIER
2-PM-1-31	SG 4 POWER RELIEF VALVE MODIFIER
2-PM-1-6	SG1 POWER RELIEF VALVE MODIFIER
2-PM-3-122	PCV-3-122 MODULATOR
2-PM-3-132	PCV-3-132 MODULATOR
2-PMP-18-54/3	2-DG-82-A-A FO XFER PP #2
2-PMP-18-54/4	2-DG-82-B-B FO XFER PP #2
2-PMP-18-55/3	2-DG-82-A-A FO XFER PP #1
2-PMP-18-55/4	2-DG-82-B-B FO XFER PP #1
2-PNL-276-L112	CHARGING PUMP 2B & 2C PANEL
2-PSV-1-13B-B	SG 2 POWER RELIEF SOLENOID VALVE
2-PSV-1-13C-A	SG 2 POWER RELIEF SOLENOID VALVE
2-PSV-1-24B-A	SG 3 POWER RELIEF SOLENOID VALVE
2-PSV-1-24C-B	SG 3 POWER RELIEF SOLENOID VALVE
2-PSV-1-31B-B	SG 4 POWER RELIEF SOLENOID VALVE
2-PSV-1-31C-A	SG 4 POWER RELIEF SOLENOID VALVE
2-PSV-1-6B-A	SG 1 POWER RELIEF SOLENOID VALVE
2-PSV-1-6C-B	SG 1 POWER RELIEF SOLENOID VALVE
2-PT-1-1C	SG-1 STEAM HEADER PRESSURE TRANSMITTER
2-PT-1-12-F	LOOP 2 ATMOSPHERIC RELIEF INSTRUMENT LOOP
2-PT-1-13	SG-2 PRESSURE TRANSMITTER FOR PCV-1-12
2-PT-1-19C	SG-3 STEAM HEADER PRESSURE TRANSMITTER
2-PT-1-20A-D	LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-20B-E	LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-23-F	LOOP 3 ATMOSPHERIC RELIEF INSTRUMENT LOOP
2-PT-1-24	SG-3 PRESSURE TRANSMITTER FOR PCV-1-23
2-PT-1-26C	SG-4 STEAM HEADER PRESSURE TRANSMITTER
2-PT-1-27A-D	LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-27B-E	LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-2A-D	LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-2B-E	LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-30-G	LOOP 4 ATMOSPHERIC RELIEF INSTRUMENT LOOP
2-PT-1-31	MAIN STEAM LOOP 4 PRESSURE
2-PT-1-5-G	LOOP 1 ATMOSPHERIC RELIEF INSTRUMENTATION LOOP
2-PT-1-6	MAIN STEAM LOOP 1 PRESSURE
2-PT-1-8C	SG-2 STEAM HEADER PRESSURE TRANSMITTER
2-PT-1-9A-D	LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-1-9B-E	LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2-PT-68-323-F	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2-PT-68-334-E	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2-PT-68-340-D	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2-PT-68-342C	PRESSURIZER PRESSURE INSTRUMENT
2-PT-68-63	RCS LOOP 1 PRESSURE (RHR INLET)
2-SC-46-57	TDAFW PUMP SPEED CONTROLLER
2-XSW-46-AC-S	AC MANUAL TRANSFER SW
2-XSW-46-DC-S	DC MANUAL TRANSFER SW
2-TANK-1-405A	N2 TANK #1 SUPPLY TO 2-PCV-1-12-B
2-TANK-1-405B	N2 TANK #2 SUPPLY TO 2-PCV-1-12-B
2-TANK-1-406A	N2 TANK #1 SUPPLY TO 2-PCV-1-30-B

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-TANK-1-406B	N2 TANK #2 SUPPLY TO 2-PCV-1-30-B
2-TANK-1-407A	N2 TANK #1 SUPPLY TO 2-PCV-1-23-A
2-TANK-1-407B	N2 TANK #2 SUPPLY TO 2-PCV-1-23-A
2-TANK-1-408A	N2 TANK #1 SUPPLY TO 2-PCV-1-5-A
2-TANK-1-408B	N2 TANK #2 SUPPLY TO 2-PCV-1-5-A
2-TANK-3-402A	N2 TANK #1 SUPPLY TO 2-LCV-3-173-B
2-TANK-3-402B	N2 TANK #2 SUPPLY TO 2-LCV-3-173-B
2-TANK-3-402C	N2 TANK #1 SUPPLY TO 2-LCV-3-174-B
2-TANK-3-402D	N2 TANK #2 SUPPLY TO 2-LCV-3-174-B
2-TANK-3-403A	N2 TANK #1 SUPPLY TO 2-LCV-3-172-A
2-TANK-3-403B	N2 TANK #2 SUPPLY TO 2-LCV-3-172-A
2-TANK-3-403C	N2 TANK #1 SUPPLY TO 2-LCV-3-175-A
2-TANK-3-403D	N2 TANK #2 SUPPLY TO 2-LCV-3-175-A
2-TCO-30-82-B	CONTROL ROD DRIVE COOLING 2D-B RM DIVERSION DMPR
2-TCO-30-85-A	CRD COOLING UNIT 2A-A ROOM DIVERSION DAMPER
2-TCO-30-90-A	CONTROL ROD DRIVE COOLING 2C-A RM DIVERSION DMPR
2-TCO-30-94-B	CONTROL ROD DRIVE COOLING 2B-B DIVERSION DMPR
2-TCV-67-100-B	LOWER CNTMT VENT CLR B SUPPLY VLV
2-TCV-67-101-B	CONTROL ROD DRIVE VENT CLR B SUPPLY VLV
2-TCV-67-108-B	LOWER CNTMT VENT CLR D SUPPLY VLV
2-TCV-67-109-B	CONTROL ROD DRIVE VENT COOLER D SUPPLY VLV
2-TCV-67-84-A	LOWER CNTMT VENT CLR A SUPPLY VLV
2-TCV-67-85-A	CONTROL ROD DRIVE VENT CLR A SUPPLY VLV
2-TCV-67-92-A	LOWER CNTMT VENT CLR C SUPPLY VLV
2-TCV-67-93-A	CONTROL ROD DRIVE VENT CLR C SUPPLY VLV
2-TCV-70-192	NON REGEN LETDOWN HEAT EXCHANGER OUTLET VALVE
2-TE-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
2-TE-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
2-TE-68-1C	RCS LOOP 1 HOT LEG TEMPERATURE
2-TE-68-24	RCS LOOP 2 HOT LEG TEMPERATURE
2-TE-68-24C	RCS LOOP 2 HOT LEG TEMPERATURE
2-TE-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
2-TE-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
2-TE-68-43C	RCS LOOP 3 HOT LEG TEMPERATURE
2-TE-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
2-TE-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
2-TE-68-65C	RCS LOOP 4 HOT LEG TEMPERATURE
2-TE-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
2-TE-70-154	RHR HEAT EXCHANGE 2B CCS RETURN TEMP
2-TE-70-157	RHR HEAT EXCHANGE 2A CCS RETURN TEMP
2-TE-70-161	ERCW/CCS HX-B OUTLET TEMP (CCS)
2-TE-74-14	RHR PMP 2A-A OUTLET TEMP
2-TI-74-15	RHR HX-A INLET TEMPERATURE
2-TE-74-25	RHR PMP 2B-B OUTLET TEMP
2-TE-74-29	RHR HEAT EXCHANGER A OUTLET TEMP
2-TE-74-38C	RCS HEAT EXCHANGER 2A OUTLET TEMPERATURE
2-TE-74-39	RHR HEAT EXCHANGER B OUTLET TEMP
2-TE-74-40C	RCS HEAT EXCHANGER 2B OUTLET TEMPERATURE
2-THV-70-546A	RHR HX 2A-A OUTLET VALVE (MANUAL)
2-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE

TABLE 3-2 - SAFE SHUTDOWN EQUIPMENT LIST

<u>EQUIPMENT</u>	<u>DESCRIPTION</u>
2-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
2-TI-68-1C	RCS LOOP 1 HOT LEG TEMPERATURE
2-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
2-TI-68-24C	RCS LOOP 2 HOT LEG TEMPERATURE
2-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
2-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
2-TI-68-43C	RCS LOOP 3 HOT LEG TEMPERATURE
2-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
2-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
2-TI-68-65C	RCS LOOP 4 HOT LEG TEMPERATURE
2-TI-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
2-TI-70-154	RHR HX-B OUTLET TEMP (CCS)
2-TI-70-157	RHR HX-A OUTLET TEMP (CCS)
2-TI-70-161	ERCW/CCS HX-B OUTLET TEMP (CCS)
2-TI-74-14	RHR HX-A INLET TEMPERATURE
2-TI-74-15	RHR HX-A OUTLET TEMPERATURE
2-TI-74-25	RHR HX-B INLET TEMPERATURE
2-TI-74-27	RHR HX-B OUTLET TEMPERATURE
2-TI-74-38C	RCS HEAT EXCHANGER 2A OUTLET TEMPERATURE
2-TI-74-40C	RCS HEAT EXCHANGER 2B OUTLET TEMPERATURE
2-TIS-62-79	LETDOWN FLOW TEMPERATURE IND SWITCH
2-TR-74-14P002	RHR HX-A TEMPERATURE RECORDER
2-TR-74-25P002	RHR HX-B TEMPERATURE RECORDER
2-XSV-32-112	UNIT 2 CONTAINMENT NON-ESSENTIAL HDR DUMP SOLENOID
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP

TABLE 3-3 - ANALYSIS VOLUME BY FIRE AREA LIST

<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-001	674.0-A1	Tritiated Drain Collector Tank Room
	674.0-A2	Tritiated Drain Collector Tank Pumps
	676.0-A1	Corridor
	676.0-A2	Holdup Tank Room A
	676.0-A3	Holdup Tank Room B
	676.0-A4	Floor Drain Collect Pump, Filter & Tank
	676.0-A4a	Floor Drain Collection Tank Room
	676.0-A5	Gas Stripper Feed Pump Room
	676.0-A6	Spare
	676.0-A7	Spare
	676.0-A16	Unit 1 Pipe Chase
	692.0-A1C	Corridor
	692.0-A8	Unit 1 Pipe Chase
	692.0-A31	Spare
	713.0-A28	Unit 1 Pipe Chase
<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-002	692.0-A1A1	Corridor, Column Lines Q-U/A1-A4
	692.0-A1A2	Corridor, Column Lines S-T/A4-A5
	692.0-A2	Gas Decay Tank Valve Gallery
	692.0-A3	Gas Decay Tank Room
	692.0-A4	Chemical Drain Tank Room
	692.0-A5	Gas Decay Tank Room
	676.0-A2	Holdup Tank Room A
	676.0-A3	Holdup Tank Room B
<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-003	692.0-A1A2	Corridor, Column Lines S-T/A4-A5
	692.0-A1A3	Corridor, Column Lines S-T/A5-A6
	692.0-A1AN	Corridor, Column Lines S-U/A6-A8
	676.0-A2	Holdup Tank Room A
	676.0-A3	Holdup Tank Room B
<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-004A AV-004B (Note 1)	692.0-A1AN	Corridor, Column Lines S-U/A6-A8
	692.0-A1BN	Corridor, Column Lines S-U/A8-A10
	676.0-A2	Holdup Tank Room A
	676.0-A3	Holdup Tank Room B
<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-004AC AV-004BC (Note 2)	692.0-A1AN	Corridor, Column Lines S-U/A6-A8
	692.0-A1BN	Corridor, Column Lines S-U/A8-A10
	692.0-A1C	Corridor
<u>FIRE AREA 1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-005	692.0-A1B1692.0-A1B2692.0-A1B3	Corridor, Col Lines S-T/A12-A13, S-U/A13-A14, Q-T/A14-A15Corridor, Col Lines S-T/A11-A12Corridor, Col Lines S-T/A10-A11

<u>FIRE AREA 1</u> AV-005 (cont'd)	<u>ROOM NO.</u> 692.0-A1B2 692.0-A1B3 692.0-A1BN 692.0-A27 692.0-A29 692.0-A30 692.0-A31 676.0-A2 676.0-A3	<u>DESCRIPTION</u> Corridor, Col Lines S-T/A11-A12 Corridor, Col Lines S-T/A10-A11 Corridor, Column Lines S-U/A8-A10 Concentrate Filter Room Boric Acid Evaporator Package Room B Boric Acid Evaporator Package Room A Spare Holdup Tank Room A Holdup Tank Room B
<u>FIRE AREA 1</u> AV-006	<u>ROOM NO.</u> 692.0-A1C 692.0-A17 692.0-A18	<u>DESCRIPTION</u> Corridor, Column Lines U-RxCL/A5-A11 Maintenance and Test Equipment Hot Tool Room Hot Tool Room
<u>FIRE AREA 1</u> AV-007	<u>ROOM NO.</u> 676.0-A8	<u>DESCRIPTION</u> Containment Spray Pump 1B-B
<u>FIRE AREA 1</u> AV-008	<u>ROOM NO.</u> 676.0-A9	<u>DESCRIPTION</u> Containment Spray Pump 1A-A
<u>FIRE AREA 1</u> AV-009	<u>ROOM NO.</u> 692.0-A9	<u>DESCRIPTION</u> Charging Pump 1A-A
<u>FIRE AREA 1</u> AV-010	<u>ROOM NO.</u> 692.0-A12	<u>DESCRIPTION</u> Safety Injection Pump 1B-B
<u>FIRE AREA 1</u> AV-011	<u>ROOM NO.</u> 692.0-A13	<u>DESCRIPTION</u> Safety Injection Pump 1A-A
<u>FIRE AREA 1</u> AV-100	<u>ROOM NO.</u> 676.0-A14	<u>DESCRIPTION</u> Containment Spray Pump 2A-A
<u>FIRE AREA 1</u> AV-101	<u>ROOM NO.</u> 676.0-A15	<u>DESCRIPTION</u> Containment Spray Pump 2B-B
<u>FIRE AREA 1-1</u> AV-102	<u>ROOM NO.</u> 692.0-A20	<u>DESCRIPTION</u> Safety Injection Pump 2B-B
<u>FIRE AREA 1-2</u> AV-012	<u>ROOM NO.</u> 692.0-A19	<u>DESCRIPTION</u> Safety Injection Pump 2A-A
<u>FIRE AREA 2-1</u> AV-013	<u>ROOM NO.</u> 676.0-A10	<u>DESCRIPTION</u> RHR Pump Room 1B-B
<u>FIRE AREA 2-2</u> AV-014	<u>ROOM NO.</u> 676.0-A13	<u>DESCRIPTION</u> RHR Pump Room 2B-B
<u>FIRE AREA 3-1</u> AV-015	<u>ROOM NO.</u> 676.0-A11	<u>DESCRIPTION</u> RHR Pump Room 1A-A

<u>FIRE AREA 3-2</u> AV-016	<u>ROOM NO.</u> 676.0-A12	<u>DESCRIPTION</u> RHR Pump Room 2A-A
<u>FIRE AREA 4</u> AV-017	<u>ROOM NO.</u> 692.0-A6	<u>DESCRIPTION</u> Turbine Driven Auxiliary Feedwater Pump Room 1A-S
<u>FIRE AREA 5</u> AV-018	<u>ROOM NO.</u> 692.0-A7	<u>DESCRIPTION</u> Unit 1 Penetration Rm
<u>FIRE AREA 6</u> AV-019	<u>ROOM NO.</u> 692.0-A10	<u>DESCRIPTION</u> Charging Pump Room 1B-B
<u>FIRE AREA 7</u> AV-020	<u>ROOM NO.</u> 692.0-A11	<u>DESCRIPTION</u> Charging Pump Room 1C
<u>FIRE AREA 8</u> AV-021	<u>ROOM NO.</u> 713.0-A1A1 713.0-A9	<u>DESCRIPTION</u> Corridor, Col Lines S-U/A1-A4, ceiling level only S-CCS Wall/A1-A3 Unit 1 Mixed Bed and Cation Valve Gallery
<u>FIRE AREA 8</u> AV-022	<u>ROOM NO.</u> 713.0-A1A2 713.0-A9	<u>DESCRIPTION</u> Corridor, Col Lines S-U/A1-A4, ceiling level only CCS Wall-U/A1-A3 Unit 1 Mixed Bed and Cation Valve Gallery
<u>FIRE AREA 8</u> AV-023	<u>ROOM NO.</u> 713.0-A1A3 713.0-A24 713.0-A25 713.0-A26 713.0-A27	<u>DESCRIPTION</u> Corridor, Column Lines Q-CCS Wall/A1-A4 Waste Gas Compressor Valve Gallery Waste Gas Compressor B Waste Gas Compressor A Decontamination Room
<u>FIRE AREA 8</u> AV-024	<u>ROOM NO.</u> 713.0-A1A4 713.0-A1AN 713.0-A9 713.0-A10 713.0-A22 713.0-A23 713.0-A24 713.0-A25 713.0-A26	<u>DESCRIPTION</u> Corridor, Column Lines Q-U/A3-A8 Corridor, Column Lines Q-U/A6-A8 Unit 1 Mixed Bed and Cation Valve Gallery Seal Water Heat Exchanger 1A Holdup Tank Valve Gallery CVCS Valve Gallery Waste Gas Compressor Valve Gallery Waste Gas Compressor B Waste Gas Compressor A
<u>FIRE AREA 8</u> AV-025	<u>ROOM NO.</u> 713.0-A1AN	<u>DESCRIPTION</u> Corridor, Column Lines Q-U/A6-A8
<u>FIRE AREA 8</u> AV-025 (cont'd)	<u>ROOM NO.</u> 713.0-A1BN 713.0-A22 713.0-A23	<u>DESCRIPTION</u> Corridor, Column Lines Q-U/A8-A10 Holdup Tank Valve Gallery CVCS Valve Gallery

<u>FIRE AREA 8</u> AV-025C (Note 3)	<u>ROOM NO.</u> 713.0-A1AN 713.0-A1BN 713.0-A1C 713.0-A10 713.0-A17 713.0-A22 713.0-A23	<u>DESCRIPTION</u> Corridor, Column Lines Q-U/A6-A8 Corridor, Column Lines Q-U/A8-A10 Corridor, Column Lines U-W/A7-A9 Seal Water Heat Exchanger 1A Seal Water Heat Exchanger 2A Holdup Tank Valve Gallery CVCS Valve Gallery
<u>FIRE AREA 8</u> AV-026	<u>ROOM NO.</u> 713.0-A1B 713.0-A1BN 713.0-A17 713.0-A18 713.0-A22 713.0-A23	<u>DESCRIPTION</u> Corridor, Column Lines Q-U/A10-A15 Corridor, Column Lines Q-U/A8-A10 Seal Water Heat Exchanger 2A Unit 2 Mixed Bed and Cation Valve Gallery Holdup Tank Valve Gallery CVCS Valve Gallery
<u>FIRE AREA 8</u> AV-26A	<u>ROOM NO.</u> 713.0-A1C 713.0-A13 713.0-A14 713.0-A31	<u>DESCRIPTION</u> Corridor, Column Lines U-W/A7-A9 Sample Room 1 Sample Room 2 Waste Gas Analyzer Room
<u>FIRE AREA 8</u> AV-027	<u>ROOM NO.</u> 713.0-A2 713.0-A3 713.0-A4 713.0-A5 713.0-A30	<u>DESCRIPTION</u> Air Lock Titration Room Radio Chemical Lab Counting Room Air Lock
<u>FIRE AREA 8</u> AV-028	<u>ROOM NO.</u> 713.0-A11	<u>DESCRIPTION</u> Heat Exchanger 1B
<u>FIRE AREA 8</u> AV-029	<u>ROOM NO.</u> 713.0-A12	<u>DESCRIPTION</u> Heat Exchanger 1A
<u>FIRE AREA 8</u> AV-108	<u>ROOM NO.</u> 713.0-A15	<u>DESCRIPTION</u> Heat Exchanger 2A
<u>FIRE AREA 8</u> AV-109	<u>ROOM NO.</u> 713.0-A16	<u>DESCRIPTION</u> Heat Exchanger 2B
<u>FIRE AREA 9</u> AV-030	<u>ROOM NO.</u> 713.0-A6 713.0-A8	<u>DESCRIPTION</u> Unit 1 Penetration Room Unit 1 Reactor Building Access Room
<u>FIRE AREA 9-1</u> AV-031	<u>ROOM NO.</u> 713.0-A7	<u>DESCRIPTION</u> Unit 1 Volume Control Tank (VCT) room

<u>FIRE AREA 10</u> AV-032	<u>ROOM NO.</u> Stair No. 4 692.0-A14 692.0-A15 692.0-A16 728.0-A7 729.0-A5 729.0-A6 729.0-A8 757.0-A13 772.0-A9 776.0-A1 786.0-A1 814.075-ACS	<u>DESCRIPTION</u> Stair No. 4 & Penthouse Cask Decontamination Collection Tank Room Spent Resin Tank Room Valve Gallery Cask Decontamination Room Cask Unloading Area Nitrogen Storage Area Unit 1 Post Accident Sampling Room Refueling Room (Includes New Storage Area 741.5) HEPA Filter Plenum Room Elevator Machine Room Fan Room Stair No. 2 & Penthouse
<u>FIRE AREA 10</u> AV-119	<u>ROOM NO.</u> 729.0-A9	<u>DESCRIPTION</u> Unit 2 Post Accident Sampling Room
<u>FIRE AREA 11</u> AV-033	<u>ROOM NO.</u> 729.0-A3 729.0-A4	<u>DESCRIPTION</u> Waste Package Area Waste Package Area
<u>FIRE AREA 12</u> AV-034	<u>ROOM NO.</u> 729.0-A1 737.0-A6	<u>DESCRIPTION</u> Main Steam Valve Room (Unit 1 South) Air Lock
<u>FIRE AREA 13</u> AV-035	<u>ROOM NO.</u> 729.0-A12 729.0-A14 729.5-A16 737.0-A13 763.5-A1 775.25-A1 786.5-A1	<u>DESCRIPTION</u> Unit 1 Steam Valve Instrument Room A Unit 1 Upper Head Injection Room Unit 1 Shield Building Vent Radiation Monitoring Room Unit 1 Additional Equipment Building (AEB) U1 Ice Bin Equipment Room U1 Ice Machine Equipment Room U2 Chiller Package Equipment Room
<u>FIRE AREA 13</u> AV-035A	<u>ROOM NO.</u> 729.0-A2	<u>DESCRIPTION</u> Main Steam Valve Room (Unit 1 North)
<u>FIRE AREA 14</u> AV-036	<u>ROOM NO.</u> 737.0-A1A 737.0-A1AN	<u>DESCRIPTION</u> Auxiliary Building, Column Lines Q-U/A1-A6 Auxiliary Building, Column Lines Q-U/A6-A8
<u>FIRE AREA 14</u> AV-036 (cont'd)	<u>ROOM NO.</u> 737.0-A2 737.0-A4	<u>DESCRIPTION</u> Hot Instrument Shop Air Lock
<u>FIRE AREA 14</u> AV-037	<u>ROOM NO.</u> 737.0-A1AN 737.0-A1BN	<u>DESCRIPTION</u> Auxiliary Building, Column Lines Q-U/A6-A8 Auxiliary Building, Column Lines Q-U/A8-A10

<u>FIRE AREA 14</u> AV-37A	<u>ROOM NO.</u> 737.0-A7 737.0-A8 737.0-A1C 737.0-A1CN	<u>DESCRIPTION</u> Unit 1 Letdown Heat Exchanger Unit 2 Letdown Heat Exchanger Auxiliary Building, Column Lines U-RxCL/A5-A11 Auxiliary Building, Column Lines V-U/A5-A11
<u>FIRE AREA 14</u> AV-037C (Note 4)	<u>ROOM NO.</u> 737.0-A1AN 737.0-A1BN 737.0-A1CN 737.0-A7 737.0-A8	<u>DESCRIPTION</u> Auxiliary Building, Column Lines Q-U/A6-A8 Auxiliary Building, Column Lines Q-U/A8-A10 Auxiliary Building, Column Lines V-U/A5-A11 Unit 1 Letdown Heat Exchanger Unit 2 Letdown Heat Exchanger
<u>FIRE AREA 14</u> AV-038	<u>ROOM NO.</u> 737.0-A1B 737.0-A1BN 737.0-A11	<u>DESCRIPTION</u> Auxiliary Building, Column Lines Q-U/A10-A15 Auxiliary Building, Column Lines Q-U/A8-A10 Air Lock
<u>FIRE AREA 15-1</u> AV-039	<u>ROOM NO.</u> 737.0-A3	<u>DESCRIPTION</u> Unit 1 Heat and Vent Equipment Room
<u>FIRE AREA 15-2</u> AV-040	<u>ROOM NO.</u> 737.0-A12	<u>DESCRIPTION</u> Unit 2 Heat and Vent Equipment Room
<u>FIRE AREA 16</u> AV-041M	<u>ROOM NO.</u> 737.0-A5M 737.0-A15	<u>DESCRIPTION</u> Ventilation and Purge Air Room, 2' north of column line V to 2'-6" south of Reactor Building centerline Gross Failed Fuel Detector Room
<u>FIRE AREA 16</u> AV-041N AV-041S	<u>ROOM NO.</u> 737.0-A5N 737.0-A5S	<u>DESCRIPTION</u> Ventilation and Purge Air Room, 2' north of 737.0-A15 to the north wall of 737.0-A5 Ventilation and Purge Air Room, column line U to column line W
<u>FIRE AREA 17</u> AV-042 (Note 5 AV-042D, E, F, G)	<u>ROOM NO.</u> 757.0-A2 757.0-A9	<u>DESCRIPTION</u> 6.9kV and 480V Shutdown Board Room A Unit 1 Personnel and Equipment Access
<u>FIRE AREA 18</u> AV-043	<u>ROOM NO.</u> 757.0-A3	<u>DESCRIPTION</u> 125V Vital Battery Board Room II
<u>FIRE AREA 19</u> AV-044	<u>ROOM NO.</u> 757.0-A4	<u>DESCRIPTION</u> 125V Vital Battery Board Room I
<u>FIRE AREA 20</u> AV-045	<u>ROOM NO.</u> 757.0-A1	<u>DESCRIPTION</u> Auxiliary Control Room

<u>FIRE AREA 21</u> AV-046	<u>ROOM NO.</u> 757.0-A25	<u>DESCRIPTION</u> Auxiliary Control Instrument Room 1A
<u>FIRE AREA 22</u> AV-047	<u>ROOM NO.</u> 757.0 A26	<u>DESCRIPTION</u> Auxiliary Control Instrument Room 1B
<u>FIRE AREA 23</u> AV-048	<u>ROOM NO.</u> 757.0-A27	<u>DESCRIPTION</u> Auxiliary Control Instrument Room 2A
<u>FIRE AREA 24</u> AV-049	<u>ROOM NO.</u> 757.0-A28	<u>DESCRIPTION</u> Auxiliary Control Instrument Room 2B
<u>FIRE AREA 25</u> AV-050	<u>ROOM NO.</u> 782.0-A1 782.0-A2 757.0-A10	<u>DESCRIPTION</u> Unit 1 Control Rod Drive Equipment Room Pressurizer Heater Transformer Room 1 Miscellaneous Equipment Room
<u>FIRE AREA 25</u> AV-051	<u>ROOM NO.</u> 757.0-A12	<u>DESCRIPTION</u> Reactor Building Access Room (Unit 1)
<u>FIRE AREA 26</u> AV-052	<u>ROOM NO.</u> 757.0-A11	<u>DESCRIPTION</u> Unit 1 Reactor Bldg Equip Hatch
<u>FIRE AREA 27</u> AV-053	<u>ROOM NO.</u> 757.0-A5	<u>DESCRIPTION</u> 480V Shutdown Board Room 1B
<u>FIRE AREA 28</u> AV-054	<u>ROOM NO.</u> 757.0-A21	<u>DESCRIPTION</u> 480V Shutdown Board Room 2A
<u>FIRE AREA 29</u> AV-055	<u>ROOM NO.</u> 757.0-A22	<u>DESCRIPTION</u> 125V Vital Battery Board Room IV
<u>FIRE AREA 30</u> AV-056	<u>ROOM NO.</u> 757.0-A23	<u>DESCRIPTION</u> 125V Vital Battery Board Room III
<u>FIRE AREA 31</u> AV-057 (Note 5 AV-057D, E, F, G)	<u>ROOM NO.</u> 757.0-A24 757.0-A17	<u>DESCRIPTION</u> 6.9kV and 480V Shutdown Board Room B Unit 2 Personnel and Equipment Access Room
<u>FIRE AREA 32</u> AV-058	<u>ROOM NO.</u> 772.0-A1	<u>DESCRIPTION</u> 480V Board Room 1-A
<u>FIRE AREA 33</u> AV-059	<u>ROOM NO.</u> 772.0-A2A1 772.0-A2A2 772.0-A2A3	<u>DESCRIPTION</u> 480-V Board Room 1-B, Column Lines A8-A6 480-V Board Room 1-B, Column Lines A6-A5 480-V Board Room 1-B, Column Lines A5-A4

<u>FIRE AREA 33</u> AV-060	<u>ROOM NO.</u> 772.0-A2A3 772.0-A2A4	<u>DESCRIPTION</u> 480-V Board Room 1-B, Column Lines A5-A4 480-V Board Room 1-B, Column Lines A4-A3
<u>FIRE AREA 34</u> AV-061	<u>ROOM NO.</u> 772.0-A3	<u>DESCRIPTION</u> 125-V Vital Battery Room II
<u>FIRE AREA 35</u> AV-062	<u>ROOM NO.</u> 772.0-A4	<u>DESCRIPTION</u> 125-V Vital Battery Room I
<u>FIRE AREA 36</u> AV-063	<u>ROOM NO.</u> 772.0-A5	<u>DESCRIPTION</u> 480-V Transformer Room 1-B
<u>FIRE AREA 37</u> AV-064	<u>ROOM NO.</u> 772.0-A6	<u>DESCRIPTION</u> 480-V Transformer Room 1-A
<u>FIRE AREA 38</u> AV-065	<u>ROOM NO.</u> 772.0-A7	<u>DESCRIPTION</u> Unit 1 Mechanical Equipment Room
<u>FIRE AREA 39</u> AV-066 (Note 5 AV-066D, E, F, G)	<u>ROOM NO.</u> 772.0-A8	<u>DESCRIPTION</u> Fifth Vital Battery and Board Room
<u>FIRE AREA 40</u> AV-067	<u>ROOM NO.</u> 772.0-A10	<u>DESCRIPTION</u> Unit 2 Mechanical Equipment Room
<u>FIRE AREA 41</u> AV-068	<u>ROOM NO.</u> 772.0-A11	<u>DESCRIPTION</u> 480-V Transformer Room 2-B
<u>FIRE AREA 42</u> AV-069	<u>ROOM NO.</u> 772.0-A12	<u>DESCRIPTION</u> 480-V Transformer Room 2-A
<u>FIRE AREA 43</u> AV-070	<u>ROOM NO.</u> 772.0-A13	<u>DESCRIPTION</u> 125-V Vital Battery Room IV
<u>FIRE AREA 44</u> AV-071	<u>ROOM NO.</u> 772.0-A14	<u>DESCRIPTION</u> 125-V Vital Battery Room III
<u>FIRE AREA 45</u> AV-072	<u>ROOM NO.</u> 772.0-A15A1 772.0-A15A2	<u>DESCRIPTION</u> 480-V Board Room 2-B, Column Lines A13-A12 480-V Board Room 2-B, Column Lines A12-A11
<u>FIRE AREA 45</u> AV-073	<u>ROOM NO.</u> 772.0-A15A2 772.0-A15A3 772.0-A15A4	<u>DESCRIPTION</u> 480-V Board Room 2-B, Column Lines A12-A11 480-V Board Room 2-B, Column Lines A11-A10 480-V Board Room 2-B, Column Lines A10-A8
<u>FIRE AREA 46</u> AV-074	<u>ROOM NO.</u> 772.0-A16	<u>DESCRIPTION</u> 480-V Board Room 2-A

<u>FIRE AREA 47</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-075	786.0-A2	Roof Access Air Lock
	786.0-A3	Mechanical Equipment Room 2B
	786.0-A4	Mechanical Equipment Room 1B
	786.0-A5	225 kVA DG Room B
	786.0-A6	225 kVA DG Room A
	786.0-AR	Roof
<u>FIRE AREA 48</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-076 (On-Site Power)	Stair C1	Stairwell C1
	Stair C2	Stairwell C2
AV-076A (Off-Site Power)	692.0-C1	Mechanical Equipment Room
	692.0-C2	Mechanical Equipment Room
Power)	692.0-C3	250V Battery Room 1
	692.0-C4	250-V Battery Board Room No. 1
Power)	692.0-C5	250-V Battery Board Room No. 2
	692.0-C6	250-V Battery Room 2
Power)	692.0-C7	24-V and 48-V Battery Room
	692.0-C8	24-V and 48-V Battery Board and Charger Room
Power)	692.0-C9	Communications Room
	692.0-C10	Mechanical Equipment Room
Power)	692.0-C11	Corridor
	692.0-C12	Secondary Alarm Station Room
Power)	708.0-C1	Unit 1 Auxiliary Instrument Room
	708.0-C2	Corridor
Power)	708.0-C3	Computer Room
	708.0-C4	Unit 2 Auxiliary Instrument Room
Power)	729.0-C1	Spreading Room
	755.0-C1	Mechanical Equipment Room
Power)	755.0-C2	Women's Restroom
	755.0-C3	Corridor (Includes space Above OPS Office and Living Area)
Power)	755.0-C4	Kitchen
	755.0-C5	Toilet
<u>FIRE AREA 48</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-076 (On-Site Power)	755.0-C6	Locker Room
	755.0-C7	Shower
AV-076A (Off-Site Power)	755.0-C8	Shower
	755.0-C9	Conference Room
(cont'd)	755.0-C10	Shift Engineer's Office
	755.0-C12	Main Control Room
(cont'd)	755.0-C13	Relay Room
	755.0-C14	Technical Support Center
(cont'd)	755.0-C15	Corridor
	755.0-C16	Conference Room
(cont'd)	755.0-C17	Telephone Room
	755.0-C18	NRC Office
(cont'd)	755.0-C19	Corridor
	755.0-C20	DPSO Shop
(cont'd)	CB Roof	Control Building Roof
	763.0	Deleted (Formerly Assigned to the Space Above

OPS Office and Living Area)

<u>FIRE AREA 49</u> AV-077	<u>ROOM NO.</u> DGB-1A	<u>DESCRIPTION</u> Diesel Generator Building 1A 742.0-D4, Diesel Generator Unit 1A-A 760.5-D3, Unit 1A-A Air Exhaust Room 760.5-D4, 480-V Board Room 1A-A 760.5-D5, Unit 1A-A Air Intake Room
<u>FIRE AREA 50</u> AV-078	<u>ROOM NO.</u> DGB-2A	<u>DESCRIPTION</u> Diesel Generator Building 2A 742.0-D5, Diesel Generator Unit 2A-A 760.5-D6, Unit 2A-A Air Exhaust Room 760.5-D7, 480-V Board Room 2A-A 760.5-D8, Unit 2A-A Air Intake Room
<u>FIRE AREA 51</u> AV-079	<u>ROOM NO.</u> DGB-1B	<u>DESCRIPTION</u> Diesel Generator Building 1B 742.0-D6, Diesel Generator Unit 1B-B 760.5-D9, Unit 1B-B Air Exhaust Room 760.5-D10, 480-V Board Room 1B-B 760.5-D11, Unit 1B-B Air Intake Room
<u>FIRE AREA 52</u> AV-080	<u>ROOM NO.</u> DGB-2B	<u>DESCRIPTION</u> Diesel Generator Building 2B 742.0-D7, Diesel Generator Unit 2B-B 760.5-D12, Unit 2B-B Air Exhaust Room 760.5-D13, 480-V Board Room 2B-B 760.5-D14, Unit 2B-B Air Intake Room
<u>FIRE AREA 53</u> AV-081A	<u>ROOM NO.</u> DGB-PGA	<u>DESCRIPTION</u> Diesel Generator Building Pipe Gallery A 742.0-9A, Pipe Gallery/Corridor, West wall to Door D11
<u>FIRE AREA 53</u> AV-081A (cont'd)	<u>ROOM NO.</u>	<u>DESCRIPTION</u> 742.0-9N, Pipe Gallery/Corridor, Door D11 to Door D12 742.0-3, Toilet
<u>FIRE AREA 53</u> AV-081B	<u>ROOM NO.</u> DGB-PGB	<u>DESCRIPTION</u> Diesel Generator Building Pipe Gallery B 742.0-9B, Pipe Gallery/Corridor, East wall to Door D12 742.0-9N, Pipe Gallery/Corridor, Door D11 to Door D12 742.0-8, Fuel Oil Transfer Room

<u>FIRE AREA 54</u> AV-082	<u>ROOM NO.</u> DGB-CO	<u>DESCRIPTION</u> Diesel Generator Building Corridor 742.0-1, CO ₂ Storage Room 742.0-2, Lube Oil Storage Room 742.0-10, Conduit Interface Room 742.0-760.5, Stairwell D1 760.5-1, Corridor 760.5-2, Radiation Shelter
<u>FIRE AREA 55</u> AV-083	<u>ROOM NO.</u> DGB-A	<u>DESCRIPTION</u> Cable Chase A (From 713.0-A1A3 to DG Building Pipe Gallery A)
<u>FIRE AREA 56</u> AV-084	<u>ROOM NO.</u> DGB-B	<u>DESCRIPTION</u> Cable Chase B (From 713.0-A1B to DG Building Pipe Gallery B)
<u>FIRE AREA 57</u> AV-085	<u>ROOM NO.</u>	<u>DESCRIPTION</u> Deleted (Formerly Assigned to the Additional Diesel Generator Building)
<u>FIRE AREA 58</u> AV-086	<u>ROOM NO.</u> IPS-A EL 741 IPS-A EL 741 IPS-A EL 722	<u>DESCRIPTION</u> ERCW Pump Room A Screen Wash and HPFP A Pumps Room ERCW Strainer Room A
<u>FIRE AREA 59</u> AV-087	<u>ROOM NO.</u> IPS-B EL 741 IPS-B EL 741 IPS-B EL 722	<u>DESCRIPTION</u> ERCW Pump Room B HPFP B Pump Room ERCW Strainer Room B
<u>FIRE AREA 60</u> AV-088	<u>ROOM NO.</u> IPS-CA IPS-CC-A	<u>DESCRIPTION</u> El. 711.0 Board Room, 20ft west of 480V Bd/Transformer El. 711.0 Board Room, Mid to 20ft west of 480V Bd/Transformer
<u>FIRE AREA 60</u> AV-089	<u>ROOM NO.</u> IPS-CC-A IPS-CC-B IPS-EL 728	<u>DESCRIPTION</u> El. 711.0 Board Room, Mid to 20ft west of 480V Bd/Transformer El. 711.0 Board Room, Mid to 20ft east of 480V Bd/Transformer RCW Pump Deck
<u>FIRE AREA 60</u> AV-090	<u>ROOM NO.</u> IPS-CB IPS-CC-B	<u>DESCRIPTION</u> El. 711.0 Board Room, 20ft east of 480V Bd/Transformer El. 711.0 Board Room, Mid to 20ft east of 480V Bd/Transformer
<u>FIRE AREA 61</u> AV-091	<u>ROOM NO.</u> Annulus	<u>DESCRIPTION</u> Unit 1 Reactor Building - Annulus

<u>FIRE AREA 61</u> AV-092A	<u>ROOM NO.</u> RO-2 RO-3 RA2 RF2	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment: Outside Crane Wall (90° – 180°) Outside Crane Wall (180° - 270°) Accumulator Room 2 Fan Room 2
<u>FIRE AREA 61</u> AV-092B	<u>ROOM NO.</u> RO-2 RO-3 RA3 RF2	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Outside Crane Wall (90° – 180°) Outside Crane Wall (180° – 270°) Accumulator Room 3 Fan Room 2
<u>FIRE AREA 61</u> AV-092C	<u>ROOM NO.</u> RO-3 RO-4 RA3 RA4	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Outside Crane Wall (180° - 270°) Outside Crane Wall (270° – 360°) Accumulator Room 3 Accumulator Room 4
<u>FIRE AREA 61</u> AV-092D	<u>ROOM NO.</u> RO-1 RO-4 RF1 RA4	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Outside Crane Wall (0° – 90°) Outside Crane Wall (270° – 360°) Fan Room 1 Accumulator Room 4
<u>FIRE AREA 61</u> AV-092E	<u>ROOM NO.</u> RO-1 RO-1RO-4	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Outside Crane Wall (0° – 90°) Outside Crane Wall (0° – 90°)Outside Crane Wall (270° – 360°)
<u>FIRE AREA 61</u> AV-092E (cont'd)	<u>ROOM NO.</u> RF1 RA1	<u>DESCRIPTION</u> Fan Room 1 Accumulator Room 1
<u>FIRE AREA 61</u> AV-092F	<u>ROOM NO.</u> RIR	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Instrument Room
<u>FIRE AREA 61</u> AV-092G	<u>ROOM NO.</u> RU	<u>DESCRIPTION</u> Unit 1 Reactor Building - Primary Containment Upper Containment
<u>FIRE AREA 61</u> AV-092H	<u>ROOM NO.</u> RI-2 RI-3 RA2 RF2	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Inside Crane Wall (90° – 180°) Inside Crane Wall (180° – 270°) Accumulator Room 2 Fan Room 2

<u>FIRE AREA 61</u> AV-092J	<u>ROOM NO.</u> RI-2 RI-3 RA3 RF2	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Inside Crane Wall (90° – 180°) Inside Crane Wall (180° – 270°) Accumulator Room 3 Fan Room 2
<u>FIRE AREA 61</u> AV-092K	<u>ROOM NO.</u> RI-1 RI-4 RA4 RF1	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Inside Crane Wall (0° – 90°) Inside Crane Wall (270° – 360°) Accumulator Room 4 Fan Room 1
<u>FIRE AREA 61</u> AV-092L	<u>ROOM NO.</u> RI-1 RI-4 RA1 RF1	<u>DESCRIPTION</u> Unit 1 Reactor Building - Lower Containment Inside Crane Wall (0° – 90°) Inside Crane Wall (270° – 360°) Accumulator Room 1 Fan Room 1
<u>FIRE AREA 62</u> AV-093	<u>ROOM NO.</u> CDWE	<u>DESCRIPTION</u> Condensate Demineralizer Waste Evaporator Building (CDWE)
<u>FIRE AREA 63</u> AV-094	<u>ROOM NO.</u> TB	<u>DESCRIPTION</u> Turbine Building
<u>FIRE AREA 64</u> AV-095	<u>ROOM NO.</u> Yard	<u>DESCRIPTION</u> Yard Area
<u>FIRE AREA 65</u> AV-099	<u>ROOM NO.</u> 676.0-A17 692.0-A24 713.0-A29	<u>DESCRIPTION</u> Unit 2 Pipe Chase Unit 2 Pipe Chase Unit 2 Pipe Chase
<u>FIRE AREA 66</u> AV-103	<u>ROOM NO.</u> 692.0-A21	<u>DESCRIPTION</u> Charging Pump 2C
<u>FIRE AREA 67</u> AV-104	<u>ROOM NO.</u> 692.0-A22	<u>DESCRIPTION</u> Charging Pump 2B-B
<u>FIRE AREA 68</u> AV-105	<u>ROOM NO.</u> 692.0-A23	<u>DESCRIPTION</u> Charging Pump 2A-A
<u>FIRE AREA 69</u> AV-107	<u>ROOM NO.</u> 692.0-A26	<u>DESCRIPTION</u> Turbine Driven Aux Feedwater Pump 2A-S
<u>FIRE AREA 70</u> AV-106	<u>ROOM NO.</u> 692.0-A25	<u>DESCRIPTION</u> Unit 2 Penetration Rm
<u>FIRE AREA 71</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>

AV-110	713.0-A19 713.0-A21	Unit 2 Penetration Room Unit 2 RB Access Room
<u>FIRE AREA 71-1</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-111	713.0-A20	Unit 2 VCT Room
<u>FIRE AREA 72</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-113	729.0-A11 737.0-A10	Unit 2 South Main Steam Valve Rm Air Lock
<u>FIRE AREA 73</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-112A	729.0-A10	Unit 2 North Main Steam Valve Rm
AV-112	729.0-A13	Unit 2 Steam Valve Instrument Room B
	729.0-A15	Unit 2 Additional Equipment Building
	729.5-A17	Unit 2 Shield Bldg Vent Rad Monitor Room
	737.0-A14	Air Lock
	763.5-A2	Unit 2 Additional Equipment Building
<u>FIRE AREA 74</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-114S	737.0-A9S	Vent & Purge Air (A11-A13 / Q-W)
AV-114M	737.0-A9M	Vent & Purge Air (A11-A13 / 2ft N of V to 2½ft S of U2 RB Center Line)
	737.0-A16	Unit 2 Gross Failed Fuel Detect. Room
AV-114N	737.0-A9N	Vent & Purge Air (A11-U2 RB/2 ft north of 737.0-A16 to N Wall 737.0-A9)
<u>FIRE AREA 75</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-115	757.0-A16	Emergency Gas Treatment Filter Room
	782.0-A3	Unit 2 CRD Equipment Room
	782.0-A4	Pressurizer Heater Transformer Room 2
<u>FIRE AREA 75</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-116	757.0-A14	Unit 2 RB Access Room
<u>FIRE AREA 76</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-096	757.0-A15	Unit 2 RB Equipment Hatch
<u>FIRE AREA 77</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-117	Annulus	Unit 2 Reactor Building Annulus
<u>FIRE AREA 77</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-118A		Unit 2 Reactor Bldg – Lower Containment
	2RO-2	Outside Crane Wall (90° – 180°)
	2RO-3	Outside Crane Wall (180° – 270°)
	2RA2	Accumulator Room 2
	2RF2	Fan Room 2
<u>FIRE AREA 77</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-118B		Unit 2 Reactor Bldg – Lower Containment
	2RO-2	Outside Crane Wall (90° – 180°)
	2RO-3	Outside Crane Wall (180° – 270°)
	2RA3	Accumulator Room 3

	2RF2	Fan Room 2
<u>FIRE AREA 77</u> AV-118C	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RO-3	Unit 2 Reactor Bldg – Lower Containment Outside Crane Wall (180° – 270°)
	2RO-4	Outside Crane Wall (270° – 360°)
	2RA3	Accumulator Room 3
	2RA4	Accumulator Room 4
<u>FIRE AREA 77</u> AV-118D	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RO-1	Unit 2 Reactor Bldg – Lower Containment Outside Crane Wall (0° – 90°)
	2RO-4	Outside Crane Wall (270° – 360°)
	2RF1	Fan Room 1
	2RA4	Accumulator Room 4
<u>FIRE AREA 77</u> AV-118E	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RO-1	Unit 2 Reactor Bldg – Lower Containment Outside Crane Wall (0°–90°)
	2RO-4	Outside Crane Wall (270° – 360°)
	2RA1	Accumulator Room 1
	2RF1	Fan Room 1
<u>FIRE AREA 77</u> AV-118F	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RIR	Unit 2 Reactor Bldg – Lower Containment Instrument Room
<u>FIRE AREA 77</u> AV-118G	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RU	Unit 2 Reactor Bldg – Primary Containment Upper Containment
<u>FIRE AREA 77</u> AV-118H	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RI-2	Unit 2 Reactor Bldg – Lower Containment Inside Crane Wall (90° – 180°)
	2RI-3	Inside Crane Wall (180° – 270°)
	2RA2	Accumulator Room 2
	2RF2	Fan Room 2
<u>FIRE AREA 77</u> AV-118J	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RI-2	Unit 2 Reactor Bldg – Lower Containment Inside Crane Wall (90° – 180°)
	2RI-3	Inside Crane Wall (180° – 270°)
	2RA3	Accumulator Room 3
	2RF2	Fan Room 2
<u>FIRE AREA 77</u> AV-118K	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
	2RI-1	Unit 2 Reactor Bldg – Lower Containment Inside Crane Wall (0° – 90°)
	2RI-4	Inside Crane Wall (270° – 360°)
	2RA4	Accumulator Room 4
	2RF1	Fan Room 1

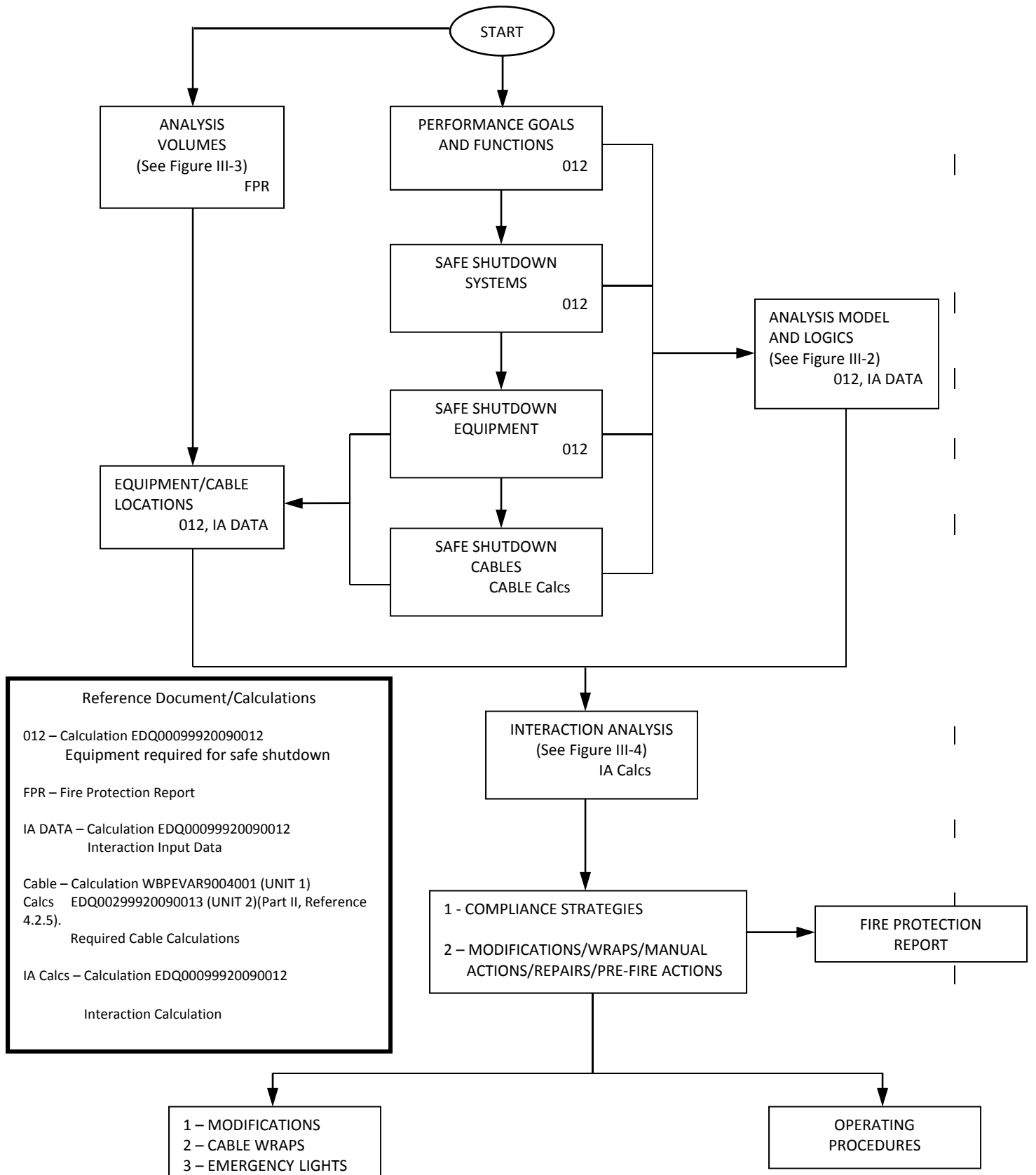
<u>FIRE AREA 77</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-118L	2RI-1	Unit 2 Reactor Bldg – Lower Containment
	2RI-4	Inside Crane Wall (0° – 90°)
	2RA1	Inside Crane (270° – 360°)
	2RF1	Accumulator Room 1
		Fan Room 1
<u>DUCT BANKS</u>	<u>ROOM NO.</u>	<u>DESCRIPTION</u>
AV-097	DBIPS-A	Cable Chase from Auxiliary Building 713.0-A1B to IPS-A
AV-098	DBIPS-B	Cable Chase from Auxiliary Building 713.0-A1B to IPS-B

NOTES:

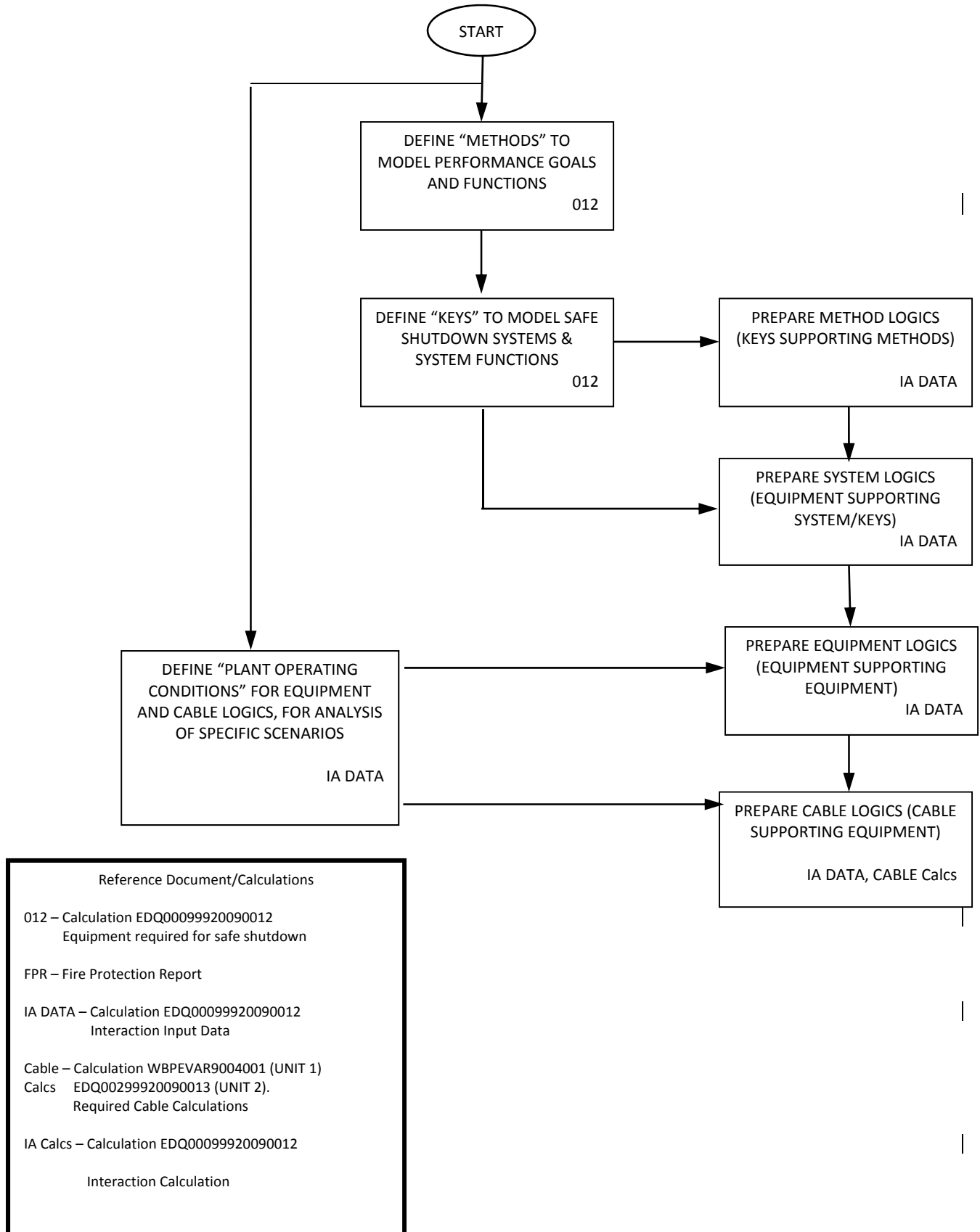
The following notes are applicable to the entire AV or AVs under which they are listed. The lining up of a note with a particular room is only coincidental.

1. This AV contains both RHR power feeds (692.0-A1AN - Train A; 692.0-A1BN - Train B). Therefore, two separate analyses (AV-004A and AV-004B) are performed to address the use of either path depending on the location of the fire within this volume.
2. This AV is analyzed to address the "soft" interface between 692.0-A1C and 692.0-A1AN and 692.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).
3. This AV is analyzed to address the "soft" interface between 713.0-A1C and 713.0-A1AN and 713.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).
4. This AV is analyzed to address the "soft" interface between 737.0-A1CN and 737.0-A1AN and 737.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).
5. This AV contains cables and/or equipment associated with the fifth vital battery. The fifth vital battery is credited as an "installed spare" that can be used during normal plant operation if one of the existing batteries is down for maintenance. There were an additional four analyses performed for this AV to address the various combinations where the fifth vital battery can be used. These AVs have been analyzed to address the effects of a fire on the 125V DC system if the fifth vital battery is in service in replacement of any one of the other four normally credited batteries.

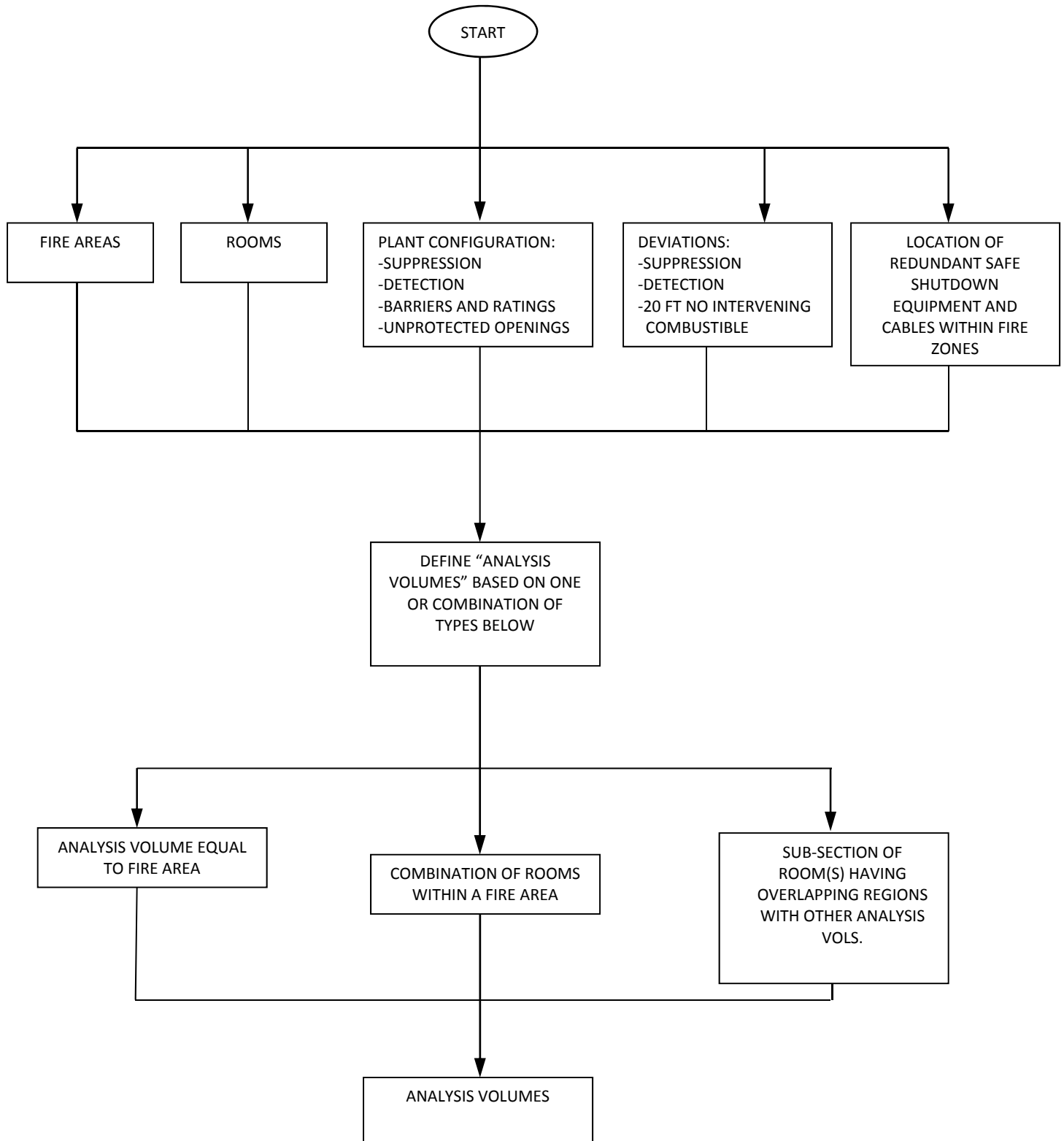
**FIGURE III-1
INTERACTION ANALYSIS FLOW CHART**



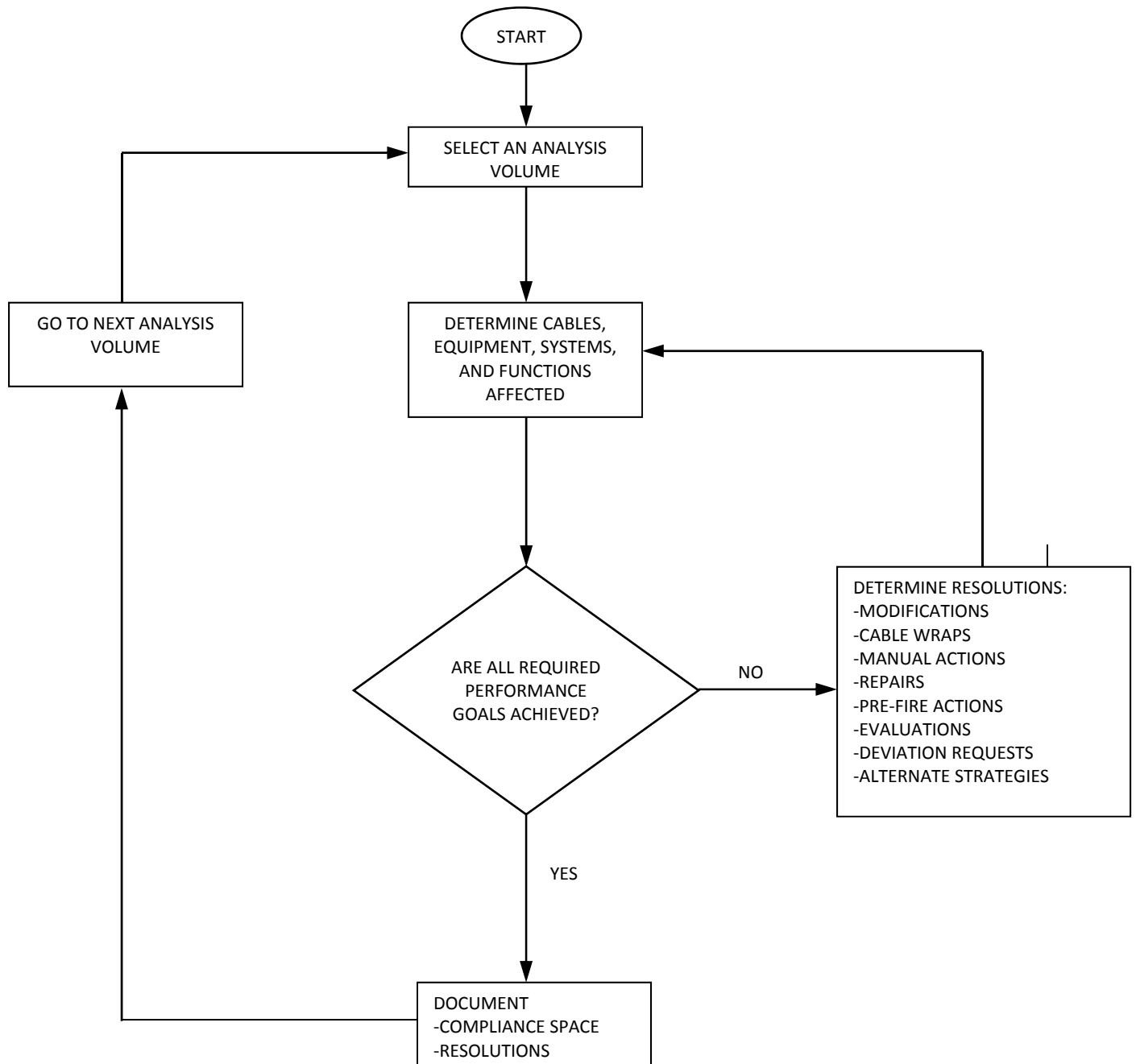
**FIGURE III-2
ANALYSIS MODEL AND LOGICS**



**FIGURE III-3
ANALYSIS VOLUMES**

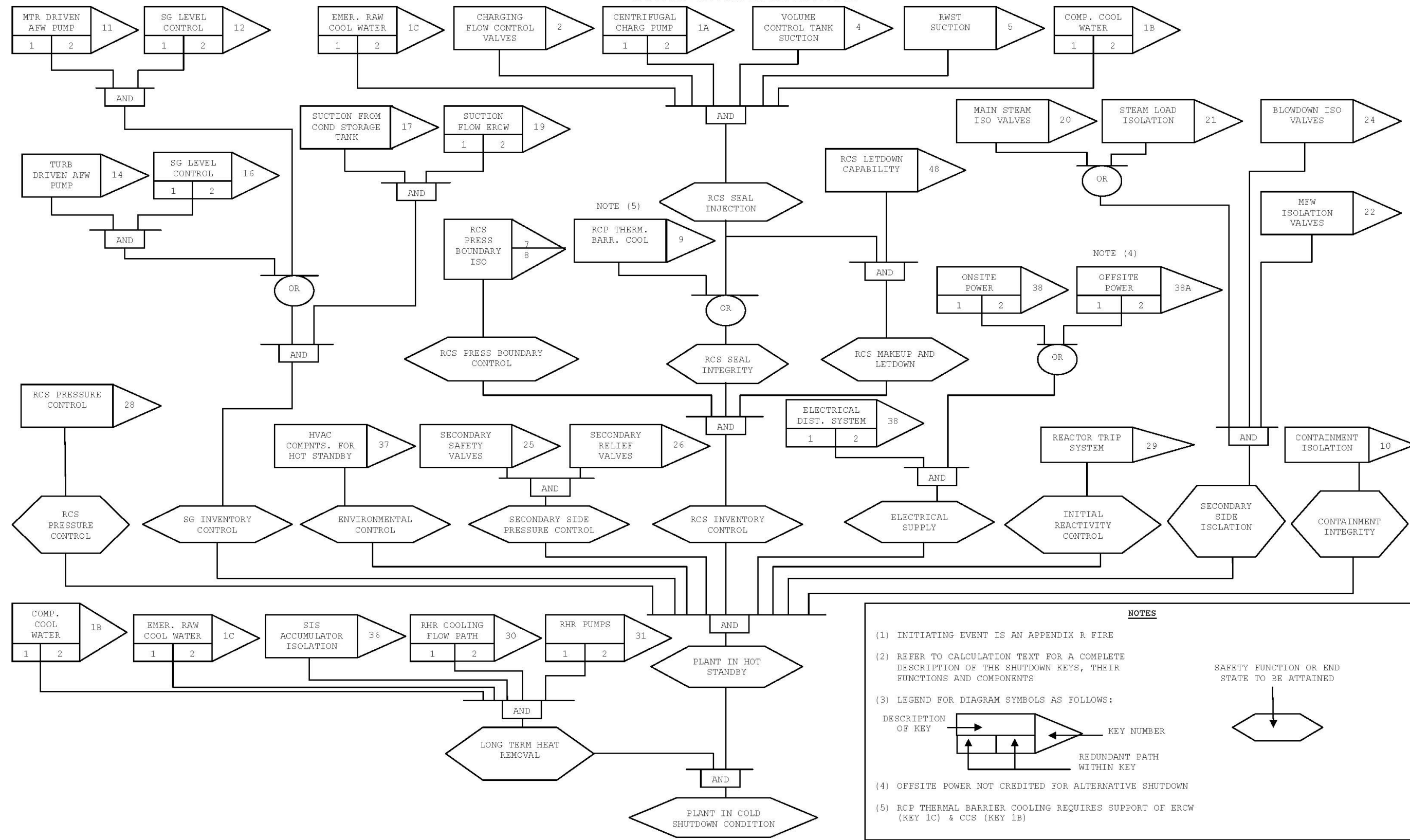


**FIGURE III-4
INTERACTION ANALYSIS**



PART III – SAFE SHUTDOWN CAPABILITIES

FIGURE III-5
SAFE SHUTDOWN LOGIC DIAGRAM



1.0 INTRODUCTION

Part IV provides a description of the alternative shutdown capabilities used to achieve compliance with the requirements of Sections III.G.3 and III.L of Appendix R. For purposes of evaluating conformance to Appendix R, the control building at Watts Bar Nuclear Plant (WBN) is treated as a single fire area comprised of all rooms within the building. Regulatory and non-regulatory fire barriers are used to separate specific rooms within the building. The Appendix R compliance strategy for the control building is based on ensuring alternative shutdown capability for those fires in the building that cause an Appendix R event which results in abandonment of the Main Control Room (MCR). An overview of required operator actions and operator manual actions associated with MCR abandonment and alternative shutdown capabilities is provided in Part V of the FPR.

2.0 DISCUSSION

WBN's design provides an auxiliary control system to address situations requiring MCR abandonment. This system is located outside of the control building and is physically independent of the control building (control room, auxiliary instrument rooms, cable spreading room, etc.). The design provides appropriate means to isolate the necessary safe shutdown equipment and control features from the control building. The system is provided to satisfy General Design Criteria (GDC) 19 in Appendix A to 10 CFR 50 and 10 CFR 50 Appendix R Section III.G.3 and III.L criteria.

In order to meet GDC 19 requirements, the auxiliary control system instrumentation and controls are physically remote from, and their circuits are electrically separated from, their counterparts in the MCR. In order to meet Appendix R requirements, the auxiliary control system is both physically and electrically independent of the control building. Neither GDC 19 nor Appendix R requires redundant auxiliary control systems (e.g., a Train A and Train B auxiliary control systems).

3.0 ALTERNATE CONTROL ROOM CAPABILITIES

The principle feature of alternative shutdown capability at WBN is the Auxiliary Control Room (ACR) complex. It is divided into five independent, dedicated rooms. Each room is separated from the others and from the auxiliary building by 2-hour or 3-hour rated fire barriers and from the control building by 3-hour rated fire barriers. The five independent rooms consist of a Train A and a Train B transfer switch room for each unit and a common ACR containing multiple instrumentation and control panels for both units.

The ACR is designed to be the central control point when operating in the auxiliary control mode. Systems requiring frequent manipulations have the necessary controls located in the ACR along with their associated transfer switches located in the adjacent transfer switch rooms. Adequate instrumentation is provided for monitoring conditions of the plant. (Refer to the deviation request in Part VII of the FPR.).

PART IV – ALTERNATE SHUTDOWN CAPABILITY

Revision XXX

The instruments and controls located in the ACR are separated from, or can be electrically isolated from, the corresponding instrumentation and controls located in the MCR. Operators are periodically trained in shutdown procedures from the ACR. The instrumentation and controls are adequate and sufficiently similar to those available in the MCR to permit a safe and orderly shutdown. The post fire alternate safe shutdown analysis is conducted for both the case with offsite power available, as well as the case with only onsite power available for 72 hours.

The safe shutdown analysis (Part II, Reference 4.2.18) for a fire in the control building demonstrates that the auxiliary control system (ACS) components and electrical circuits necessary to achieve and maintain hot shutdown are free of fire damage and capable of performing the necessary safe shutdown functions or are prevented from causing actions that prevent safe shutdown. The analysis was performed in accordance with the guidance provided in Appendix D to NEI-00-01 revision 2, "Guidance for Post Fire Safe Shutdown" (Part II, Reference 4.3.6), as endorsed by Regulatory Guide 1.189, revision 2, "Fire Protection for Nuclear Power Plants" (Part II, Reference 4.1.45). The analysis considers that offsite power may be available or may not be available for 72 hours. The analysis considers the potential spurious actuations or signals which could occur and evaluates them individually (one at a time) prior to transfer from the main control room to the ACS. Based on potential adverse effects of each spurious actuation or signal, the available time for transfer was established and the worst case (shortest time) applied to transfer completion of each control location. In addition to the single spurious actuation or signal, the analysis considers possible inadvertent safety injection signals which could result from plant conditions reaching the initiation setpoint for safety injection. After control of the plant is transferred to the ACS, consideration is given to the possibility of multiple spurious actuations that could occur due to fire damage in the control building. The plant fire response procedures contain steps to both prevent the initiation of an inadvertent safety injection and steps to mitigate it if it occurs.

WBN utilizes Distributed Control Systems (DCSs) for Non Safety Related Control Systems. Each unit's DCS is intraconnected via fiber optic networks, but is isolated from the other unit. Unit 1 has one DCS network which is located totally in the control building Auxiliary Instrument Room (AIR), Room 708.0-C1. The Unit 1 ACS does not use DCS. The Unit 2 DCS is segmented into two functional segments with one in the Auxiliary Control Room (ACR) and one in the control building AIR, Room 708.0-C4. The network in the ACR is for monitoring and maintenance purposes only and the controls function independent of the network. In order to allow monitoring by the DCS Work Station, the ACR and AIR network segments are intraconnected via the DCS network which is configured to mitigate network failures. This prevents a failure of one network segment (i.e., ACR network segment) from affecting the other segment (i.e., AIR network segment) and vice versa. Packet rate limiters are used on the DCS network to provide redundant assurance that data transmission cannot impede communications in the AIR segment. This isolation between the ACR and AIR ensures that no event arising from equipment failures, such as caused by a fire, can inhibit DCS equipment outside that fire zone.

3.1 Instruments Required for Alternative Shutdown in the ACR

The instruments and controls found in the ACR that are required for MCR abandonment are as follows:

1/2-LI-68-325C	Pressurizer Level
1/2-LI-68-326C	Pressurizer Level
1/2-PI-68-342C	Pressurizer Pressure
1/2-TI-68-1C	Loop 1 RCS Hot Leg Temperature (T-hot)
1/2-TI-68-24C	Loop 2 RCS Hot Leg Temperature (T-hot)
1/2-TI-68-43C	Loop 3 RCS Hot Leg Temperature (T-hot)
1/2-TI-68-65C	Loop 4 RCS Hot Leg Temperature (T-hot)
1/2-PI-1-1C	Loop 1 SG Pressure w/ corresponding T-sat scale
1/2-PI-1-8C	Loop 2 SG Pressure w/ corresponding T-sat scale
1/2-PI-1-19C	Loop 3 SG Pressure w/ corresponding T-sat scale
1/2-PI-1-26C	Loop 4 SG Pressure w/ corresponding T-sat scale
1/2-LI-3-164C	Loop 1 SG Level
1/2-LIC-3-164B	Loop 1 Level Controller
1/2-LI-3-156C	Loop 2 SG Level
1/2-LIC-3-156B	Loop 2 Level Controller
1/2-LI-3-148C	Loop 3 SG Level
1/2-LIC-3-148B	Loop 3 Level Controller
1/2-LI-3-171C	Loop 4 SG Level
1/2-LIC-3-171B	Loop 4 Level Controller
1/2-NI-92-138	Source Range Flux Monitor
1/2-LI-62-129C	Volume Control Tank Level
1/2-FI-3-163C	Loop 1 Auxiliary Feed Water (AFW)Flow
1/2-FI-3-155C	Loop 2 Auxiliary Feed Water (AFW)Flow
1/2-FI-3-147C	Loop 3 Auxiliary Feed Water (AFW)Flow
1/2-FI-3-170C	Loop 4 Auxiliary Feed Water (AFW)Flow
1/2-FI-62-93C	Charging Flow
1/2-FI-67-61C	ERCW Supply Header A Flow
1/2-FI-67-62C	ERCW Supply Header B Flow
1/2-TI-74-38C	RHR Supply A Outlet Temperature
1/2-TI-74-40C	RHR Supply B Outlet Temperature
1/2-PDIC-3-122C	AFW Pump 1A-A/2A-A Discharge Pressure
1/2-PDIC-3-132C	AFW Pump 1B-B/2B-B Discharge Pressure
1/2-PDI-30-30C	Containment Pressure

The above instrumentation was assessed against the guidance provided in IN 84-09.

3.2 Controls Required for Alternative Shutdown in the ACR

The following controls are located in the ACR and are required for MCR abandonment:

1/2-HS-30-82C	CRDM Cooler Unit D-B Room Division Damper
1/2-HS-30-85C	CRDM Cooler Unit A-A Room Division Damper
1/2-HS-30-90C	CRDM Cooler Unit C-A Room Division Damper
1/2-HS-30-94C	CRDM Cooler Unit B-B Room Division Damper
1/2-HS-62-55C	Excess Letdown Isolation Valve
1/2-HIC-62-56C	Excess Letdown Flow Control
1/2-HS-62-69C	RCS Isolation Valve
1/2-HS-62-70C	RCS Isolation Valve
1/2-HS-62-84C	Charging Flow to RCS Spray
1/2-HS-67-84C	Lower Containment Vent Cooler A Supply Control Valve
1/2-HS-67-85C	CRD Vent Cooler A Supply Control Valve
1/2-HS-67-92C	Lower Containment Vent Cooler C Supply Control Valve
1/2-HS-67-93C	CRD Vent Cooler C Supply Control Valve
1/2-HS-67-100C	Lower Containment Vent Cooler B Supply Control Valve
1/2-HS-67-101C	CRD Vent Cooler B Supply Control Valve
1/2-HS-67-108C	Lower Containment Vent Cooler D Supply Control Valve
1/2-HS-67-109C	CRD Vent Cooler D Supply Control Valve
1/2-HS-68-334C	RCS Pressurizer Pressure PORV
1/2-HS-68-340AC	RCS Pressurizer Pressure PORV
1-HS-82-16C	DG 1A-A Emergency Start
1-HS-82-17C	DG 1A-A Emergency Stop
1-HS-82-46C	DG 1B-B Emergency Start
1-HS-82-47C	DG 1B-B Emergency Stop
2-HS-82-76C	DG 2A-A Emergency Start
2-HS-82-77C	DG 2A-A Emergency Stop
2-HS-82-106C	DG 2B-B Emergency Start
2-HS-82-107C	DG 2B-B Emergency Stop
1/2-XS-1-4A	Main Steam Isolation Valve
1/2-XS-1-4B	Main Steam Isolation Valve
1/2-XS-1-11A	Main Steam Isolation Valve
1/2-XS-1-11B	Main Steam Isolation Valve
1/2-XS-1-22A	Main Steam Isolation Valve
1/2-XS-1-22B	Main Steam Isolation Valve
1/2-XS-1-29A	Main Steam Isolation Valve
1/2-XS-1-29B	Main Steam Isolation Valve
1/2-XS-1-6A	Steam Generator PORV
1/2-XS-1-6B	Steam Generator PORV
1/2-XS-1-13A	Steam Generator PORV
1/2-XS-1-13B	Steam Generator PORV
1/2-XS-1-24A	Steam Generator PORV
1/2-XS-1-24B	Steam Generator PORV
1/2-XS-1-31A	Steam Generator PORV
1/2-XS-1-31B	Steam Generator PORV

3.2 Controls Required for Alternative Shutdown in the ACR (continued)

1/2-XS-1-7	Steam Generator Blowdown Control Valve Loop 1
1/2-XS-1-14	Steam Generator Blowdown Control Valve Loop 2
1/2-XS-1-25	Steam Generator Blowdown Control Valve Loop 3
1/2-XS-1-32	Steam Generator Blowdown Control Valve Loop 4
1/2-XS-1-181	Steam Generator Blowdown Isolation Valve Loop 1
1/2-XS-1-182	Steam Generator Blowdown Isolation Valve Loop 2
1/2-XS-1-183	Steam Generator Blowdown Isolation Valve Loop 3
1/2-XS-1-184	Steam Generator Blowdown Isolation Valve Loop 4

3.3 Instruments and Controls Required for Alternative Shutdown Not in the ACR

The controls for the following are located just outside the ACR in the 6.9kV Shutdown Board Rooms. The number in parentheses is the number available for shutdown.

ERCW pumps (8)
 Motor-driven AFW pumps (2 per unit)
 RHR pumps (2 per unit)
 Centrifugal charging pumps (2 per unit)
 Pressurizer heaters (4 groups per unit)
 SI pumps (trip) (2 per unit)
 Containment Spray pumps (trip) (2 per unit)

The controls for the following are located in the 480V Shutdown Board Rooms which are located adjacent to the 6.9kV Shutdown Board Rooms.

CRDM cooler fans (4 per unit)
 Lower compartment cooler fans (4 per unit)
 CCS pumps (5)
 Electric fire pumps (4)

Controls for the valves powered from the 480V boards are located in the 480V MOV board rooms which are one elevation above the ACR.

The following controls are located in the 125V Vital Battery Board Rooms:

1-HS-3-945-A	Unit 1 Main Feedwater Bypass Valves	Bd Rm I
1-HS-30-1080A-A	Unit 1 RB Ventilation Isolation Dampers	Bd Rm I
2-HS-3-945-A	Unit 2 Main Feedwater Bypass Valves	Bd Rm III
2-HS-30-1080A-B	Unit 2 RB Ventilation Isolation Dampers	Bd Rm III

In reviewing the guidance provided in IN 84-09 (Part II, Reference 4.1.20), the instrumentation and control capability listed above exceeds the minimum monitoring and design capability discussed in that Information Notice. There are also local indications and controls available to the operators outside the ACR which provide additional information and control which were not included in the above listing.

1.0 INTRODUCTION

Part V documents the methodology used to satisfy Appendix R Section III.G, III.J, and III.L requirements for actions as a result of fire events that occur in any plant location. This includes the criteria and assumptions used to evaluate feasibility and reliability of operator manual actions (OMAs) credited in achieving and maintaining hot shutdown conditions. Part V also describes the process for determining the need for, and adequacy of, emergency lighting in the access routes to operator manual action locations, and at the specific locations where the operator manual action is required to take place. Part V also identifies the repairs that are required in order to achieve and maintain cold shutdown conditions. The following sections describe these topics in more detail.

2.0 OPERATOR MANUAL ACTIONS

Operator Manual Actions (OMAs) are those actions performed by Nuclear Assistant Unit Operators (NAUOs) or Operators to manipulate components and equipment from outside the main control room to achieve and maintain post fire hot shutdown, but do not include “repairs”. OMAs comprise an integrated set of actions needed to help ensure that hot shutdown can be accomplished, given that a fire has occurred in a particular plant area. Operator Actions (OAs) are actions taken by an Operator while in the Main Control Room (MCR). Actions performed inside the main control room are not included in the definition of OMAs. Additionally, actions performed at auxiliary control system stations (e.g., Auxiliary Control Room) in response to a main control room abandonment event are considered OAs, but are evaluated against the guidance for OMAs. OMAs, OAs and cold shutdown repairs are identified in calculation EDQ00099920090016, “Appendix R – Units 1 & 2 Manual Action Requirements,” (Part II, Reference 4.2.1) which also establishes the allowable time to complete each action.

OMAs have been identified that are required to ensure the proper operation of specific equipment that is relied on for safe shutdown as a result of an Appendix R fire at WBN Units 1 and 2. These actions are based on an analysis of:

1. The location of the fire;
2. The components and cables in the location that may be affected by the fire;
3. The location of the specific component manually operated;
4. The time requirements for completion of the OMA following reactor trip as a result of the Appendix R fire, including the time it takes to get to the OMA location and the time it takes to perform the OMA; and
5. The minimum NAUO staffing level available to perform the OMAs.

For each combination of rooms analyzed for Appendix R compliance, Part VI of the FPR summarizes which major component(s) may be damaged by the fire and assumed unavailable. Part VI of the FPR also identifies the OMAs necessary to mitigate the postulated impact of fire damage to the component(s).

In 10 CFR Part 50, Appendix R, Section III.G.1.a (Part II, Reference 4.1.8), the NRC defined that one train of systems is necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) and that it is free of fire damage. The NRC further described in Regulatory Guide (RG) 1.189, "Fire Protection for Nuclear Power Plants," Revision 2, dated October 2009 (Reference 4.1.45) in Regulatory Position 5.3.1.1 the equipment on the success path necessary to achieve and maintain hot-shutdown conditions (i.e., required for fire safe shutdown). Regulatory Position 5.3.1.2 states that the protection options described in Regulatory Position 5.3.1.1 are available, but not required for the protection of SSCs (including circuits) important to safe shutdown. Additional protection options available for this category are, for example, operator manual actions and fire modeling, but these additional options are not available for safe-shutdown success path equipment without prior NRC approval. The NRC further conveyed that information included in Appendix H of Nuclear Energy Institute (NEI) 00-01, "Guidance for Post Fire Safe Shutdown Circuit Analysis," Revision 2, May 2009 (Reference 4.3.6), may be used in classifying components on the success path required for hot shutdown and important to safe shutdown, when applied in conjunction with RG 1.189.

In accordance with RG 1.189, and the implementation guidance of NEI 00-01, OMAs provide an acceptable protection method for fire-safe shutdown Structures, Systems, and Components (SSC) as well as SSCs that are important to safe shutdown. OMAs for SSCs in the safe-shutdown success path require prior NRC approval. The OMAs relied upon for post fire safe shutdown, as identified for each analysis volume in Part VI of this FPR, fall into three categories as follows:

1. OMAs required for Unit 1 only operation which are approved by the NRC in SSER 18 (Part II, Reference, 4.1.40). In accordance with SSER 18 this category is defined by calculation WBN-OSG4-165 revision 5. Unit 1 OMA demonstrated performance time acceptance criteria is established in SSER 18, Appendix FF, Section 3.5. Feasibility and reliability has been evaluated as indicated in the Demonstration Data Package for 0-TI-2018, "Appendix R Demonstration of Operations Actions Required Following a Fire" (Part II, Reference 4.2.27).
2. OMAs added for Unit 1 after issuance of SSER 18. The added OMAs are for SSCs important to safe shutdown and do not require prior NRC approval. Feasibility and reliability has been evaluated and documented as indicated in the Demonstration Data Package for 0-TI-2018, "Appendix R Demonstration of Operations Actions Required Following a Fire" (Part II, Reference 4.2.27).; or
3. OMAs required for Unit 2 operation (including common equipment). Feasibility and reliability of these OMAs are evaluated as described below. Those requiring prior NRC approval are documented as engineering evaluations in Part VII, Section 8 of this FPR.

2.1 Unit 2 OMA Feasibility and Reliability

OMAs are evaluated to ensure they are feasible (can be performed) and that they are reliable (can be performed reliably under a wide range of plant conditions that an NAUO might encounter during a fire). Feasibility and reliability of WBN Unit 2 and common OMAs (including OMAs for Control Room abandonment) are evaluated to the criteria below which are based on the criteria and technical bases provided in NUREG 1852; "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire" (Part II, Reference 4.1.44).

A robust defense-in-depth fire prevention/protection program provides additional assurance that OMAs are both feasible and reliable. This defense-in-depth at WBN consists of a transient control program, Hot Work Permit procedure, fire rated barriers (including fire doors, fire dampers, and penetration seals), detection and automatic suppression, standpipe and hose station system, and a well trained, dedicated fire brigade. The fire prevention/protection program serves to minimize the possibility and severity of a fire in an area where an OMA is relied upon. Any area crediting OMAs with a required time less than 2 hours and lacking robust defense-in-depth, is given additional consideration in the feasibility and reliability evaluation.

2.1.1 Unit 2 and Common OMA Feasibility and Reliability Analysis Criteria:

1. Adequate time exists for the operator to perform the action considering:
 - a. Differences between analyzed and actual conditions that may be present during a fire; and
 - b. Human performance uncertainties that may be encountered.
2. Appropriate allowances have been made for environmental factors that negatively impact the ability to perform the OMA. Examples of environmental factors considered include;
 - a. Smoke and hot gases;
 - b. Water from firefighting activities;
 - c. Radiation;
 - d. Temperature and humidity;
 - e. Noise; and
 - f. Lighting.
3. Equipment to be operated is available and accessible
 - a. Equipment is functional and accessible;
 - b. Support equipment (if needed) is available and functional;
 - c. Diagnostic instrumentation (if needed) to identify the need for the action and to confirm action results. Diagnostic instrumentation is not required for preventive actions;
 - d. Necessary communications;
 - e. Necessary personnel protective equipment; and
 - f. Necessary portable equipment.
4. Plant procedures directing performance of the OMA exist and procedure training has been conducted. (See Section 2.2)
5. Adequate personnel (staffing) are available to perform the OMAs exclusive of the fire brigade.

2.1.2 Unit 2 and Common OMA Feasibility and Reliability Acceptance Criteria

Unit 2 and common OMAs that meet the following criteria of NUREG 1852 are considered feasible and reliable. As provided in NUREG 1852, specific evaluations can be performed for situations not meeting the acceptance criteria. Specific evaluations are documented in calculation MDQ00299920110381 (Part II, Reference 4.2.16).

1. Adequate time (≥ 10 minutes) is available to perform actions ($t=0$ is defined in Section 2.2.2) and either:
 - a. Use of self-contained breathing apparatus (SCBA) is not required, the demonstrated performance time is less than 50% of the allowable time (100% margin) and the room of fire origin is equipped with cross zoned smoke detection to ensure early detection and NAUO recall.
 - b. Alternatively the following uncertainty allowances, as applicable, should be added to the demonstrated performance time before comparing to the total allowable time:
 - i. A penalty of 50% of the demonstrated performance time up to a maximum of three (3) minutes for human centered uncertainties such as size, physical strength, cognitive differences and experience level,
 - ii. If SCBA is needed and not carried during the performance demonstration, a 15 percent penalty for each applicable OMA (which thus affects the time for all subsequent actions) will be added to the performance demonstration times. The 15 percent penalty is similar in magnitude to the requirement defined in Regulatory Guide 8.15 (Part II, Reference 4.1.46) for ALARA purposes and has been shown to be conservative based on plant walkdowns using SCBA for Appendix R purposes,
 - iii. A three (3) minute delay for visual fire confirmation for rooms without cross zoned detection (i.e., 125 vdc vital battery rooms and 125 vdc vital battery board rooms).

There is no uncertainty allowance required due to entrance into the radiological control area (RCA) since the plant procedures allow NAUO access to the RCA under emergency conditions (e.g., Appendix R fire) without acquiring additional dosimetry. Based on this procedural allowance, the NAUO response time will not be adversely affected for RCA entries.

- c. Unit 2 action(s) taken in the MCR associated with abandoning the MCR in the case of a fire are excluded from NUREG 1852. Additionally, Unit 2 actions performed at auxiliary control system stations (e.g., Auxiliary Control Room) in response to a main control room abandonment event are evaluated against the timing criteria for OMAs.

2. Environmental factors
 - a. Availability of a path for the operator to travel to the control location along the 8-hour battery pack emergency light illuminated paths defined in calculation EDQ00099920090017 (Part II, Reference, 4.2.2) without traversing the fire affected room ensures adequate lighting and minimal impact from fire suppression effects;
 - b. The 100 percent time margin or performance time plus uncertainty allowances from paragraph 1.a and 1.b above ensures adequate time to reach the control location and perform the action including the effects of smoke and hot gases. Additional time margin must be included for OMAs required for a fire in an area lacking robust defense-in-depth fire prevention/protection;
 - c. Communications: Part II section 12.8 and calculation WBPEVAR9205004, Appendix R Analysis for Intraplant Communication System (Part II, Reference 4.2.20), describe the design adequacy of the communication systems for OMAs. This is validated by as-constructed walkdown of OMA locations; and
 - d. OMAs to be performed in the fire affected room in less than an hour are specifically evaluated and documented in FPR Part VII.
3. Equipment functionality and accessibility
 - a. Equipment and associated cables (if required) are unaffected by the fire;
 - b. Support equipment (if needed) is unaffected by the fire;
 - c. Diagnostic instrumentation (not needed for preventive actions) is not affected by the fire; and
 - d. Personal protective equipment and tools (portable equipment) are staged and readily available.
4. Plant procedures are available for the affected room (see Section 2.2 below)
5. Adequate personnel (staffing) are available to perform all of the credited OMAs for the affected fire (including sequential actions performed by the same person).

The OMA feasibility and reliability analyses for Unit 2 and common OMAs are documented in calculation MDQ00299920110381 (Part II, Reference 4.2.16). Additionally a summary of the analysis for Unit 2 and common OMAs of the following types are included in Part VII, Section 8 of the FPR:

1. OMAs involving FSSD success path components with a required time (allowable) less than 120 minutes;
2. OMAs requiring reentry into the fire zone in about 1 hour.

The following assumptions may be applied (if appropriate) in the feasibility and reliability analysis:

1. A bounding analysis can be used for OMA's with similar characteristics; and
2. OMAs with a required completion time (allowable time) of 120 minutes or greater have adequate time for feasible and reliable performance and can be excluded from performance validation demonstrations.

2.2 Unit 1 and Unit 2 Safe Shutdown Procedures

Abnormal Operating Instruction 0-AOI-30.1, “Plant Fires” (Part II, Reference 4.2.59) provides operator actions to respond to and mitigate the consequences of a confirmed plant fire. Plant fires are confirmed by cross zoned fire detection system actuation, High Pressure Fire Pump (HPFP) auto start, CO₂ initiation, sprinkler initiation or by visual observation. The operator response includes the following.

1. Initiate fire alarm.
2. Ensure Fire Operations (fire brigade) is notified.
3. For fire located in the Control Building, Auxiliary Building, Reactor Building (Including Annulus), or Intake Pumping Station, notify the Appendix R NAUOs to report to the control room (or auxiliary control room for control building fires), and to obtain SCBA, radio, and other equipment as required.
4. Announce fire location and the location of the incident command post, over the public address system.
5. Ensure the diesel fire pump or two electric fire pumps are running.

The decision to declare an Appendix R fire and to trip the unit(s) is left to the judgment of the Unit SRO/Shift Manager and must be based on the magnitude of the fire and its potential effect on the System Structures and Components necessary to achieve and maintain safe shutdown.

Abnormal Operating Instruction 0-AOI-30.2, “Fire Safe Shutdown”, (Part II, Reference 4.2.60) has been developed to specify the actions which may be required for fires that damage equipment necessary to achieve and maintain safe shutdown. The fire safe shutdown procedures contained in 0-AOI-30.2 are developed based on calculations EDQ00099920090012, “Unit 1 and 2 Appendix R Safe Shutdown Analysis” (Part II, Reference 4.2.18) and EDQ00099920090016, “Manual Actions Required for Safe Shutdown Following a Fire” (Part II, Reference 4.2.1). The procedure documents the OAs and OMAs that must take place given an Appendix R fire in any room of the plant. The procedure also documents, on an operator-by-operator basis, the locations and sequence in which the OMAs must be performed.

For unit(s) in Modes 1, 2 or 3, the minimum staffing level required to perform the actions for the worst case Appendix R fire is as follows:

POSITION	NUMBER
Shift Manager-Licensed SRO (SM)	1 for one or two units
Unit Supervisor-Licensed SRO (US)	1 per unit
Licensed Unit Operator (UO)	2 per unit
Non-licensed Nuclear Assistant Unit Operator (NAUO)	8 for one or two units
Shift Technical Advisor (STA)	1 for one or two units
Incident Commander (IC)	1 for one or two units

The Shift Technical Advisor and Incident Commander positions require SRO level knowledge and shall be separate from the Shift Manager and Unit Supervisor(s).

2.2.1 Demonstrations

Demonstrations in accordance with NUREG 1852 were conducted to: (i) sequence actions, (ii) verify the amount of time required to accomplish the OAs and OMAs, and (iii) verify the minimum number of NAUOs required to support OMAs given a fire in any plant location. The demonstrations address those actions within the first 2-hours following a reactor trip as a result of the Appendix R fire. The 2-hour time frame corresponds to predicted minimal staffing prior to availability of additional personnel for OMAs as a result of the plant callback procedure.

2.2.2 Operator Locations Prior to Initiating Operator Manual Actions and t=0 Definition

For the purposes of developing the Appendix R fire safe shutdown procedures, NAUOs performing OMAs assemble at and are dispatched from the Main Control Room (MCR) for fires in most plant locations, or the Auxiliary Control Room for control building fires. The basis for dispatch locations is that the NAUOs must obtain the operator-specific safe shutdown procedures from these locations. Upon confirmation of a fire in the control building, auxiliary building, reactor building (including the annulus) or intake pumping station either automatically (e.g., cross zoned detection, HPFP auto start, CO₂ initiation or sprinkler initiation) or visual observation, the MCR recalls NAUOs to the assembly location from their normal duties in various plant locations. Based on NAUO recall exercises (Part II, Reference 4.2.27), NAUOs working near the MCR are available within about three minutes and any NAUOs at the most remote location (intake pumping station) are available within about eight minutes. The other NAUO availability times would be expected to be between these two times. It is expected that in most cases the NAUOs will be assembled with their proper gear before the plant declares an Appendix R event.

The time requirements for completion of OMAs are based on defining the initial time ($t = 0$) as the time when the reactor is tripped. This definition of $t = 0$ is appropriate because the OMAs are not necessary to maintain the operating status of plant equipment prior to tripping the reactor because the reactor is considered to be in a stable operating condition prior to reactor trip. After the reactor is tripped, either automatically or manually, the OMAs are preventive (not reactive) and are performed to prevent spurious equipment operation and to ensure safe shutdown can be accomplished.

The following reactor trip scenarios are postulated and evaluated.

1. Manual trip by the MCR operator after evaluating fire significance and potential for loss of plant control.
2. Automatic reactor trip resulting from fire damage to multiple channels of reactor protection system (RPS) concurrent logic inputs.
3. Spurious reactor trip initiated by fire damage to the manual reactor trip circuit.

MCR operators are alerted in the early stage of fire development by the NFPA Code compliant fire (smoke and/or heat) detection provided in the plant as described in Part II, Section 12.5 and Part X. The fire detection system is installed to provide for prompt detection of a fire in its incipient stage and provide early warning capability. The MCR will be alerted to the fire (even small fires that might slowly degrade devices) before the fire can affect the safe shutdown capability. With this early notification, the decision to trip the reactor manually is expected to be reached prior to or about the same time as needed for fire damage to develop sufficiently to cause an automatic reactor trip. Multiple concurrent RPS logic inputs are necessary to initiate an automatic reactor trip and these input circuits are physically separated in accordance with

Watts Bar Design Criteria WBN-DC-30-4, Separation/Isolation (Part II, Reference 4.2.29) which follows the guidance of Regulatory Guide 1.75, "Physical Independence of Electrical Systems" (Reference 4.1.44a). Since the circuits are in physically separated raceways and there is early warning provided by the fire detection system, reactor trip is not expected to be the first observed indication of a fire or first observed circuit failure resulting from the fire. Defense in depth provided by early detection, automatic fire suppression, and physical separation will delay fire development and automatic reactor trip thereby allowing time for the MCR to recall the NAUOs, evaluate the fire, and manually initiate reactor trip if necessary in accordance with Part II, References 4.2.59 and 4.2.60.

A spurious reactor trip due to fire damage to the manual trip circuits does not adversely affect OMA performance time because for the rooms where the reactor trip circuit is located the allowable time for the first OMA is 60 minutes (except as noted below). Even considering a fire induced reactor trip prior to recalling the NAUOs to the MCR there is more than adequate time for the NAUOs to perform the needed local actions within the allowable time. The spurious manual reactor trip circuit is evaluated in calculation EDQ00099920090012 (Part II, Reference 4.2.18). The worst Unit 2 case for an OMA required for safe shutdown is a fire in 772.0-A16 (480VAC Reactor MOV Board Room 2A). There are two 15-minute OMAs (operate switches on C&A Vent boards just outside the MCR) for a fire in this room. However, the basis for the 15 minute allowable time is not reactor trip, but rather two separate unrelated, but concurrent, spurious motor operated valve operations. Defense in depth provided by early detection, automatic fire suppression, and physical separation will delay fire development and multiple spurious valve operations thereby allowing time for the MCR to recall the NAUOs to perform these OMAs. Plant NAUO recall exercises show that the first two NAUOs will be available in about 5 minutes and can reliably complete the actions within the allowable time as discussed in Part VII.

Once reactor trip is initiated, either automatically or manually, the preventive OMAs are performed to prevent spurious equipment operation and to ensure safe shutdown can be accomplished. Since the OMAs are preventive rather than reactive, they are performed per procedure without diagnostic delays.

There are very few situations where action must be taken based upon fire damage to equipment or cables before reactor trip. In these situations, the System Operating Instructions, various Abnormal Operating Instructions and/or the 0-AOI-30.1 procedure provide the immediate response (before reactor trip) while the 0-AOI-30.2 procedure is preventive to ensure FSSD before the fire causes irrecoverable damage. For example, for an electrical power distribution board fire, the normal response and the safe shutdown action are the same; de-energize the board prior to extinguishing the fire.

For rooms without automatic fire detection it is theoretically possible for a fire to develop slowly and affect cables and equipment before the MCR operators are aware of the fire. Each room without automatic fire detection was evaluated for potential adverse effects on OMA timing due to delayed notification of the fire. The evaluation is documented in calculation EDQ00099920090012 (Part II, Reference 4.2.18). The evaluation determined that there are no OMAs needed to achieve and maintain hot shutdown for rooms without automatic fire detection. Therefore, normal and various abnormal operating instructions are used to address equipment failures.

2.3 Actions Prior to Main Control Room Abandonment

A fire in the Control Building is the only postulated fire event that may require abandonment of the MCR to ensure fire safe shutdown capabilities. Following reactor trip, additional preventative actions are performed: 1) to prevent an inadvertent safety injection caused by the plant conditions reaching the corresponding safety injection setpoints related to reactor coolant system (RCS) pressure or steam generator pressure and 2) to protect the centrifugal charging pump and associated suction path. The actions are performed prior to transferring plant control to the auxiliary control station (ACS) and later confirmed by actions outside the control building.

For prevention of an inadvertent safety injection, one action is to close and isolate the pressurizer power operated relief valves (PORVs) and block valves to prevent loss of RCS pressure/inventory due to possible spurious PORV opening. Another action is to isolate main feedwater by closing the main feedwater isolation valves to prevent steam generator overfill and hence RCS overcooling/depressurization. Another action is to trip the reactor coolant pumps (RCPs) and RCP Start Bus breakers to prevent reactor coolant system (RCS) depressurization caused by a spurious actuation of pressurizer spray valves. Other actions are to close the main steam isolation valves (MSIVs) and the steam generator power operated relief valves (SG PORVs) to prevent steam generator depressurization. In order to protect the centrifugal charging pumps and associated suction flow path, the parallel valves from the refueling water storage tank to the pump suction piping are opened. For all of these actions performed inside the MCR prior to abandonment, controls are available to confirm/perform the same actions outside the control building. In the event any of the MCR actions are not successful in preventing an inadvertent safety injection, the fire response procedures performed after MCR abandonment contain actions performed in locations such as the Auxiliary Control Room to mitigate the effects of the safety injection as well as respond to the other effects of the fire. The procedures contain steps to respond to reactor conditions up to and including water solid RCS conditions. The combination of preventative and mitigative steps will ensure fire safe shutdown is achieved.

The following discussion provides justification for performing the actions prior to main control room abandonment. While the fire safe shutdown analysis typically assumes instantaneous burnout of the entire location of fire influence, it is reasonable to predict that a fire requiring MCR abandonment is a slow growth fire, especially one that occurs in the MCR or a MCR panel. Such a fire is detected in its early stages by either an operator or an installed fire detector. Other Control Building locations that may result in MCR abandonment (e.g., the cable spreading room or auxiliary instrument room) are provided with automatic detection and suppression systems, which also results in detection of the fire in its early stages. The early detection of the fire coupled with fail safe circuit designs and the spatial separation within the control room provides reasonable assurance that the preventative actions can be successfully completed before the fire forces the abandonment of the control room.

The individual RCP breakers and the RCP Start Bus breakers are tripped to ensure the RCPs do not restart. The pressurizer spray valve controls are more than 20 feet from the RCP Start Bus breaker controls. Initiating closure of both the pressurizer PORVs and their block valves provides assurance that a flow path could not be opened by a single spurious operation prior to transfer to the ACS. The MSIVs and the steam generator PORVs fail closed upon removal of power from either train of redundant solenoid valve circuits. A single spurious operation would not re-open the valves prior to transferring to the ACS. Main feed water control system normally controls flow through the control valves located in the turbine building based on steam flow and

steam generator level. Isolation of main feedwater will be performed by promptly closing the main feedwater isolation valves in the MCR. This provides assurance that steam generator overfill will not occur prior to transferring to auxiliary control. The charging pump suction valves from the refueling water storage tank are in parallel and either valve will provide full suction flow. These actions are reasonable and can be accomplished in a short time frame prior to evacuating the MCR.

2.4 Access Routes to Operator Manual Action Locations

For fire events that require OMAs be taken, TVA has evaluated the availability of access routes to reach the OMA location. In recognition that certain OMAs are required in one portion of a large fire area that is separated by more than 20 feet from a different portion of the same fire area in which the fire occurs, an additional access route has been evaluated. The additional route was considered to provide flexibility regarding access through these large areas due to the potential for heat and smoke spread. Fire suppression activities, either automatic by installed suppression systems or manual by the fire brigade, were also considered. Demonstrations are used to verify the viability of the OMAs.

3.0 COLD SHUTDOWN REPAIRS

Appendix R Section III.G.1.b requires that systems necessary to achieve and maintain cold shutdown from either the MCR or emergency control station(s) can be repaired within 72 hours. There are three generic repairs that are potentially required to ensure cold shutdown capabilities. Repair procedures have been developed and the required materials are available onsite to accomplish the repairs. The three repairs are described below.

3.1 RHR Room Cooler Repair

There are a number of plant locations where fire damage could disable the control and/or power cable for the room cooler to an RHR pump that is relied on for cold shutdown capabilities. For Unit 1, the repair requires the installation of a jumper on 1-MCC-214-A1/9A-A in Room 757.0-A2 when the control cable for the RHR Pump A cooler 1-MTR-30-175-A is lost, or on 1-MCC-214-B1/9A-B in room 757.0-A5 when the control cable for the RHR Pump B cooler 1-MTR-30-176-B is lost. With the jumper in place, the appropriate room cooler automatically starts when the associated RHR pump starts. Should the fire damage the power cable for the cooler, the repair consists of replacement of the power cable from the MCC to the room cooler.

A fire in the following plant locations potentially results in the need to implement this repair procedure:

1. Room 676.0-A1, -A16
2. Room 692.0-A1A, -A1B, -A1C, -A8
3. Room 713.0-A1A, -A27, -A28
4. Room 737.0-A1A, -A3
5. Room 757.0-A2, -A9

For Unit 2, the potential repair requires the installation of a jumper, on 2-MCC-214-A1/9A-A in Room 757.0-A21 when the control cable for the RHR Pump A cooler 2-MTR-30-175-A is lost, or on 2-MCC-214-B1/9A-B in room 757.0-A24 when the control cable for the RHR Pump B cooler 2-MTR-30-176-B is lost. With the jumper in place, the appropriate room cooler automatically

starts when the associated RHR pump starts. Should the fire damage the power cable for the cooler, the repair consists of replacement of the power cable from the MCC to the room cooler.

A fire in the following plant locations results in the potential need to implement this repair procedure:

1. Room 676.0-A1, -A16
2. Room 692.0-A1A, -A1B, -A1C, -A8
3. Room 713.0-A1A, -A1B, -A1C, -A27, -A28
4. Room 737.0-A1B, -A1CN, -A1AN

3.2 RHR/RCS High-Low Pressure Boundary Valve Repair

There are a number of locations where fire damage potentially disables the Unit 1 control and/or power cable for RHR/RCS high-low pressure boundary valves 1-FCV-74-1-A, -2-B, -8-A and/or -9-B. The repair requires the installation of a jumper on 1-MCC-213-A1-A and/or on 1-MCC-213-A2-A (both of which are in Room 772.0-A1) when the control cable for 1-FCV-74-1-A and/or 1-FCV-74-8-A are lost. When the control cables for valves 1-FCV-74-2-B and/or 1-FCV-74-9-B are lost, the jumper is installed on 1-MCC-213-B1-B in Room 772.0-A2. The jumper allows the boundary valves to be opened for cold shutdown capability. Should the fire damage the power and limit switch cables for the valve(s), the repair consists of replacement of the power and limit switch cables from the respective MCC to junction boxes located in Room 757.0-A10.

A fire in the following plant locations potentially results in the need to implement this repair procedure:

1. Room 737.0-A1A,
2. Room 757.0-A2, -A9, -A10
3. Room 772.0-A6 (power and limit switch cable replacement)
4. Unit 1 Reactor Building includes Annulus

There are a number of locations where fire damage potentially disables the Unit 2 control cable for RHR/RCS high-low pressure boundary valves 2-FCV-74-1-A, -2-B, -8-A and/or -9-B. The Appendix R analysis for Unit 2 has confirmed the fire will not result in damage to the power cables and thus no power cable repair is necessary. The repair requires the installation of a jumper on 2-MCC-213-A1-A and/or on 2-MCC-213-A2-A (both of which are in Room 772.0-A16) when the control cable for 2-FCV-74-1-A and/or 2-FCV-74-8-A are lost. When the control

cables for valves 2-FCV-74-2-B and/or 2-FCV-74-9-B are lost, the jumper is installed on 2-MCC-213-B1-B in Room 772.0-A15. The jumper allows the boundary valves to be opened for cold shutdown capability. A fire in the following plant locations potentially results in the need to implement this repair procedure:

1. Room 713.0-A1B
2. Room 737.0-A1A, -A1B
3. Room 757.0-A1, A2, -A9, -A21, -A23, -A27
4. Room 772.0-A12, -A15(A1/A2(EAST)), -A15(A2/A3/A4(WEST))

3.3 Long Term RCS Inventory Reduction

During the transition from hot shutdown to cold shutdown RCS inventory reduction may be necessary and fire damage may have made the motive air supply and/or electrical control circuit for valves in the flow path unavailable. Control valves in the flow path between the RHR heat exchanger outlet and the Volume Control Tank (VCT) or the Hold Up Tank (HUT) are air operated. Additionally the Letdown Heat Exchanger cooling water outlet valve may fail closed due to fire damage. Their normal air supply is not included in the post fire safe shutdown analysis and is therefore assumed unavailable. The repair involves connecting portable air supplies to position air operated valves to establish a letdown path to the HUT.

4.0 EMERGENCY LIGHTING

Emergency lighting units with at least an 8-hour battery power supply are provided in areas needed for operation of safe shutdown equipment and in access and egress routes. Offsite power is assumed lost for Control Building fires that require MCR abandonment. While offsite power is not assumed lost for non-alternative shutdown fire locations (i.e., fires outside of the Control Building), cables for normal plant lighting have not been included in the Appendix R separation analysis. Therefore, emergency lighting is provided for Appendix R fire scenarios that result in OMAs in order to ensure safe shutdown capability. The operators carry a portable light when required to perform an OMA in an area that has experienced a fire (time to perform the action is after the fire has been extinguished). Refer to Sections 12.7, "Emergency Lighting," and 14.9, "Emergency Battery Lighting Units," of Part II, "Fire Protection Plan," for additional requirements.

4.1 Adequacy of Emergency Lighting Locations and Illumination Levels

In order to ensure that adequate emergency lighting is installed in the plant and that the requirements of Appendix R Section III.J are met, the following must be performed:

1. For access routes not previously verified, an assessment of the emergency lighting in the access routes to the locations where the OMAs are performed.
2. An assessment is completed of the emergency lighting at the location where each OMA is performed.
3. The above assessments are performed under local or general area blackout conditions.
4. The performance of the above assessments are documented and include the signature of the Operator that performed the assessments.

PART VI – FIRE HAZARDS ANALYSIS

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674.0-A2	Tritiated Drain Collector Tank Pumps
676.0-A1	Corridor
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B
676.0-A4	Floor Drain Collect Pump, Filter & Tank
676.0-A4a	Floor Drain Collection Tank Room
676.0-A5	Gas Stripper Feed Pump Room
676.0-A6	Spare
676.0-A7	Spare
676.0-A8	Containment Spray Pump 1B-B
676.0-A9	Containment Spray Pump 1A-A
676.0-A14	Containment Spray Pump 2A-A
676.0-A15	Containment Spray Pump 2B-B
676.0-A16	Unit 1 Pipe Chase
692.0-A1	Corridor [(Subdivided into 692.0- A1A (692-A1A1, -A1A2, -A1A3, -A1AN), 692-A1B (692-A1B1, -A1B2, -A1B3, A1BN) and 692-A1C]
692.0-A2	Gas Decay Tank Valve Gallery
692.0-A3	Gas Decay Tank Room
692.0-A4	Chemical Drain Tank Room
692.0-A5	Gas Decay Tank Room
692.0-A8	Unit 1 Pipe Chase
692.0-A9	Charging Pump 1A-A
692.0-A12	Safety Injection Pump 1B-B
692.0-A13	Safety Injection Pump 1A-A
692.0-A17	Maintenance and Test Equipment (M&TE) Hot Tool Room
692.0-A18	Hot Tool Room
692.0-A27	Concentrate Filter Room
692.0-A29	Boric Acid Evaporator Package Room B
692.0-A30	Boric Acid Evaporator Package Room A
692.0-A31	Spare
713.0-A28	Unit 1 Pipe Chase

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<u>Room No.</u>	<u>Description</u>
692.0-A20	Safety Injection Pump 2B-B

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<u>Room No.</u>	<u>Description</u>																			
729.0-A9	Unit 2 Post Accident Sampling Room																			
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<u>Room No.</u>	<u>Description</u>																			
729.0-A1	Main Steam Valve Room (Unit 1 South)																			
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<u>Room No.</u>	<u>Description</u>																			
729.0-A2	Main Steam Valve Room (Unit 1 North)																			
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<u>Room No.</u>	<u>Description</u>																			
737.0-A1	Auxiliary Building Corridor (Subdivided into 737.0-A1A, A1AN, A1BN, A1B, A1CN and A1C)																			
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755.0-C17	Telephone Room															
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<u>Room No.</u>	<u>Description</u>															
742.0-D4	Diesel Generator Unit 1A-A															
760.5-D3	Unit 1A-A Air Exhaust Room															
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<u>Room No.</u>	<u>Description</u>															
742.0-D5	Diesel Generator Unit 2A-A															
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<u>Room No.</u>	<u>Description</u>															
742.0-D6	Diesel Generator Unit 1B-B															
760.5-D9	Unit 1B-B Air Exhaust Room															
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<u>Room No.</u>	<u>Description</u>															
742.0-D7	Diesel Generator Unit 2B-B															
760.5-D12	Unit 2B-B Air Exhaust Room															
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<u>Room No.</u>	<u>Description</u>															
742.0-3	Toilet															
742.0-8	Fuel Oil Transfer Room															
742.0-9	Pipe Gallery and Corridor (Subdivided into 742.0-D9A, D9B, -D9N)															

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<u>Room No.</u>	<u>Description</u>															
742.0-1	CO ₂ Storage Room															
742.0-2	Lube Oil Storage Room															
742.0-10	Conduit Interface Room															
760.5-1	Corridor															
760.5-2	Radiation Shelter															
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<u>Room No.</u>	<u>Description</u>															
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<u>Room No.</u>	<u>Description</u>															
IPS-A EL 722	ERCW Strainer Room A															
IPS-A EL 741	ERCW Pump Room A															
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<u>Room No.</u>	<u>Description</u>															
IPS-B EL 722	ERCW Strainer Room B															
IPS-B EL 741	ERCW Pump Room B															
IPS-B EL 741	HPFP B Pump Room															
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>IPS EL 711</td><td>Board Room (Subdivided into IPS-CA, IPS-CC-A, IPS-CB, IPS-CC-B)</td></tr><tr><td>IPS EL 728</td><td>RCW Pump Deck</td></tr></table>	<u>Room No.</u>	<u>Description</u>	IPS EL 711	Board Room (Subdivided into IPS-CA, IPS-CC-A, IPS-CB, IPS-CC-B)	IPS EL 728	RCW Pump Deck									
<u>Room No.</u>	<u>Description</u>															
IPS EL 711	Board Room (Subdivided into IPS-CA, IPS-CC-A, IPS-CB, IPS-CC-B)															
IPS EL 728	RCW Pump Deck															

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<u>Room No.</u>	<u>Description</u>									
Annulus	Unit 1 Reactor Building - Annulus									
Unit 1 Reactor Building - Primary	Unit 1 Reactor Building - Primary Containment (Subdivided Building into RA1, RA2, RA3, RA4, RF1, RF2, RIR, RO-1, RO-2, RO-3, RO-4, RU, RI-1, RI-2, RI-3, RI-4)									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>CDWE</td><td>Condensate Demineralizer Waste Evaporator Building (CDWE)</td></tr></table>	<u>Room No.</u>	<u>Description</u>	CDWE	Condensate Demineralizer Waste Evaporator Building (CDWE)					
<u>Room No.</u>	<u>Description</u>									
CDWE	Condensate Demineralizer Waste Evaporator Building (CDWE)									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>TB</td><td>Turbine Building</td></tr></table>	<u>Room No.</u>	<u>Description</u>	TB	Turbine Building					
<u>Room No.</u>	<u>Description</u>									
TB	Turbine Building									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>Yard</td><td>Yard (Duct Banks to IPS, Tanks, Transformers and H2 Storage Trailers)</td></tr></table>	<u>Room No.</u>	<u>Description</u>	Yard	Yard (Duct Banks to IPS, Tanks, Transformers and H2 Storage Trailers)					
<u>Room No.</u>	<u>Description</u>									
Yard	Yard (Duct Banks to IPS, Tanks, Transformers and H2 Storage Trailers)									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>676.0-A17</td><td>Unit 2 Pipe Chase</td></tr><tr><td>692.0-A24</td><td>Unit 2 Pipe Chase</td></tr><tr><td>713.0-A29</td><td>Unit 2 Pipe Chase</td></tr></table>	<u>Room No.</u>	<u>Description</u>	676.0-A17	Unit 2 Pipe Chase	692.0-A24	Unit 2 Pipe Chase	713.0-A29	Unit 2 Pipe Chase	
<u>Room No.</u>	<u>Description</u>									
676.0-A17	Unit 2 Pipe Chase									
692.0-A24	Unit 2 Pipe Chase									
713.0-A29	Unit 2 Pipe Chase									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>692.0-A21</td><td>Charging Pump 2C</td></tr></table>	<u>Room No.</u>	<u>Description</u>	692.0-A21	Charging Pump 2C					
<u>Room No.</u>	<u>Description</u>									
692.0-A21	Charging Pump 2C									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>692.0-A22</td><td>Charging Pump 2B-B</td></tr></table>	<u>Room No.</u>	<u>Description</u>	692.0-A22	Charging Pump 2B-B					
<u>Room No.</u>	<u>Description</u>									
692.0-A22	Charging Pump 2B-B									
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>692.0-A23</td><td>Charging Pump 2A-A</td></tr></table>	<u>Room No.</u>	<u>Description</u>	692.0-A23	Charging Pump 2A-A					
<u>Room No.</u>	<u>Description</u>									
692.0-A23	Charging Pump 2A-A									

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	<u>Room No.</u> 692.0-A25	<u>Description</u> Unit 2 Penetration Rm
Section 3.77	Title FIRE AREA 71-----	Page VI-1216
	<u>Room No.</u> 713.0-A19	<u>Description</u> Unit 2 Penetration Room
	713.0-A21	Unit 2 RB Access Room
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	<u>Room No.</u> 713.0-A20	<u>Description</u> Unit 2 Volume Control Tank Room
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	<u>Room No.</u> 729.0-A11	<u>Description</u> Unit 2 South Main Steam Valve Rm
	737.0-A10	Air Lock
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	<u>Room No.</u> 729.0-A10	<u>Description</u> Unit 2 North Main Steam Valve Rm
	729.0-A13	Unit 2 North Main Steam Valve Instrument Room B
	729.5-A17	Unit 2 Shield Bldg Vent Rad Monitor Room
	737.0-A14	Air Lock
	729.0-A15	Unit 2 Additional Equipment Building
	763.5-A2	Unit 2 Additional Equipment Building
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	<u>Room No.</u> 737.0-A9	<u>Description</u> Ventilation and Purge Air Room (Subdivided into 737.0-A9S, -A9M, -A9N)
	737.0-A16	Unit 2 Gross Failed Fuel Detect. Room

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<u>Room No.</u>	<u>Description</u>											
757.0-A14	Unit 2 RB Access Room											
757.0-A16	Emergency Gas Treatment Filter Room											
782.0-A3	Unit 2 CRD Equipment Room											
782.0-A4	Pressurizer Heater Transformer Room 2											
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	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>757.0-A15</td><td>Unit 2 RB Equipment Hatch</td></tr></table>	<u>Room No.</u>	<u>Description</u>	757.0-A15	Unit 2 RB Equipment Hatch							
<u>Room No.</u>	<u>Description</u>											
757.0-A15	Unit 2 RB Equipment Hatch											
Section 3.84	Title FIRE AREA 77-----	Page VI-1306										
	<table><tr><td><u>Room No.</u></td><td><u>Description</u></td></tr><tr><td>Annulus</td><td>Unit 2 Reactor Building - Annulus</td></tr><tr><td>Unit 2 Reactor Building - Primary</td><td>Unit 2 Reactor Building - Primary Containment (Subdivided into 2RA1, 2RA2, 2RA3, 2RA4, 2RF1, 2RF2, 2RIR, 2RO-1, 2RO-2, 2RO-3, 2RO-4, 2RU, 2RI-1, 2RI-2, 2RI-3, 2RI-4)</td></tr></table>	<u>Room No.</u>	<u>Description</u>	Annulus	Unit 2 Reactor Building - Annulus	Unit 2 Reactor Building - Primary	Unit 2 Reactor Building - Primary Containment (Subdivided into 2RA1, 2RA2, 2RA3, 2RA4, 2RF1, 2RF2, 2RIR, 2RO-1, 2RO-2, 2RO-3, 2RO-4, 2RU, 2RI-1, 2RI-2, 2RI-3, 2RI-4)					
<u>Room No.</u>	<u>Description</u>											
Annulus	Unit 2 Reactor Building - Annulus											
Unit 2 Reactor Building - Primary	Unit 2 Reactor Building - Primary Containment (Subdivided into 2RA1, 2RA2, 2RA3, 2RA4, 2RF1, 2RF2, 2RIR, 2RO-1, 2RO-2, 2RO-3, 2RO-4, 2RU, 2RI-1, 2RI-2, 2RI-3, 2RI-4)											

1.0 INTRODUCTION

Part VI documents the results of the fire hazards and safe shutdown analyses performed for fire areas and rooms at Watts Bar (WBN). The results are documented on a fire area basis, broken down into separate discussions of classical fire protection features and safe shutdown analyses for each area. This section includes the following:

- (1) A summary of the evaluation performed to document the adequacy of the fire protection capabilities for each fire area.
- (2) A summary of the fire safe shutdown analysis performed to document the ability to achieve safe shutdown in case of a fire in each fire area.

The information in this section describes how each fire area meets the requirements of 10 CFR 50 Appendix R, Sections III.G, III.L and/or III.O. The fire hazards and safe shutdown evaluations were performed by qualified nuclear, mechanical, electrical, and fire protection engineers. The deviation requests and evaluations applicable to each fire area have also been identified in this section.

2.0 FIRE HAZARDS ANALYSIS STRUCTURE

The information for each fire area is presented in two distinct formats, subdivided into a summary of the classical fire protection features, and a summary of the safe shutdown analyses for the fire area. Figures II-27A through II-40A (excluding 37A) identify each plant location by fire area, room number, and room subdivision number referenced in the following sections.

2.1 SUMMARY OF CLASSICAL FIRE PROTECTION FEATURES

Each fire area consists of a single room or a group of rooms. For this discussion the word "area" can be either a single room or a group of rooms. The Classical Fire Protection Features discussed in this section of the Fire Protection Report document the following for each area evaluated.

- (1) Area evaluated (room number[s])
- (2) Description of the area (e.g., Waste Decay Tank Room, RHR Pump 1A-A Room, etc.).
- (3) Fire loading, including the main combustible materials, and severity rating of the combustible loading in the area. The following Fire Severity Index was developed from the Fire Protection Handbook (Part II, Reference 4.4.1).

<u>FIRE SEVERITY INDEX</u>	<u>COMBUSTIBLE LOADING</u>	<u>EQUIVALENT FIRE SEVERITY</u>
Insignificant	< 6,500 Btu/ft ²	< 5 minutes
Low	< 80,000 Btu/ft ²	< 60 minutes
Moderate	< 160,000 Btu/ft ²	< 120 minutes
Moderately Severe	< 240,000 Btu/ft ²	< 180 minutes
Severe	> 240,000 Btu/ft ²	> 180 minutes

- (4) For each area, the following compartmentation information is documented in tabular form:
 - (a) Room number,
 - (b) Barrier description (e.g., North Wall, Ceiling, etc.),

- (c) Adjacent Fire Area/Room,
 - (d) Compartmentation drawing showing the barrier,
 - (e) Fire resistive rating of the barrier if it is a regulatory required fire barrier
- (5) The next table documents any required fire rated doors in the barriers, including the door number and its fire resistive rating.
 - (6) Required fire dampers are identified in the next table, which includes information on the damper number, fire resistive rating, etc.
 - (7) Fire detection within the area.
 - (8) Fire suppression within the area.
 - (9) Identifies if any deviation or engineering evaluation is applicable to the area

(Part VII of the Fire Protection Report documents the deviations for TVA's commitments against applicable NRC regulatory criteria and guidance documents and engineering evaluations of the adequacy of specific fire protection features)

2.2 SUMMARY OF SAFE SHUTDOWN ANALYSES FOR THE FIRE AREA

The summaries of safe shutdown capability for each fire area are presented on an Analysis Volume (AV) basis. An AV can consist of a single room, multiple rooms, or sub-divisions of a large volume for the Appendix R separation analysis; generally all required safe shutdown cables and components in the AV are conservatively assumed damaged by the fire. This assumption is conservative, especially for large AVs composed of many rooms which often have an insignificant fire severity index. Refer to Part III, Section 10, for a more complete description of the application of AVs to the analysis of the safe shutdown separation criteria of Appendix R.

The following information on the safe shutdown analysis is presented for each AV in the fire area:

- (1) Identification of the specific AV for which the summary of safe shutdown information is provided, such as AV-001,
- (2) Identification of the area that is included in the AV,
- (3) Descriptive text of the fire safe shutdown compliance strategy for the AV,
- (4) Tabular listings of the following information:
 - (a) Identification of the power systems and major equipment affected and credited for a fire in the AV. Listed power systems include 6.9kv shutdown boards powered from offsite and onsite sources, 480vac shutdown boards, 125vdc boards and 125vac vital instrument boards. The 480vac motor control centers are included in the analysis, but not listed as they are generally available when their associated 480vac shutdown board is available. The affected and credited equipment listed in the analysis summary are only the large process pumps which identify the train or path of safe shutdown equipment that is credited. Valves and instrumentation associated with the listed equipment are included in the analysis but not listed because they must be available for the train or path to be credited.

- (b) Mitigating actions taken to return the potentially damaged equipment and/or cables to a functional status for fire safe shutdown or an action taken to prevent fire damage to equipment or cables. The mitigating actions to return equipment to an operable status include local manual operator actions, main control room operator actions and repairs. The mitigating actions also include the use of electrical raceway fire barrier systems (ERFBS) or radiant energy shields to protect the cable(s). The cables listed in the "Cable Protection" tables are protected by 1-hour rated ERFBS except for those noted which are protected by 3-hour rated ERFBS. The cables in the "Cable Protection" tables in the Reactor Buildings are protected by radiant energy shields.

In addition to the local and main control room operator actions summarized for each specific AV, Table 6-1 summarizes local manual operator actions and main control room operator actions which may be needed for a fire in any Analysis Volume. These generic actions are for pneumatic controlled valves (control air may not be available) or MCR initiation of Fire Safe Shutdown (FSSD) functions specifically listed to properly align MCR hand switches to prevent spurious actuation from fire damaged automatic process interlocks. Additionally, generic actions may be listed to address the ability to achieve a given FSSD function from the MCR. Each operator action includes a "When Required" time (minutes) in which the action is to be performed. These times are relative with respect to event initiation. Several actions have 0 for "When Required" time which only serves to indicate that they are the initial actions.

The details associated with fire safe shutdown separation analysis for each AV within the WBN fire areas are contained in the references identified in Part II of the FPR.

3.0 FIRE AREA HAZARDS ANALYSIS

3.1 FIRE AREA 1

Fire Area 1 consists of the following rooms on the lower four elevations of the Auxiliary Building as depicted on Figures II-27A, II-28A, II-29A, and II-30A.

Room No.	Description
674.0-A1	TRITIATED DRAIN COLLECTOR TANK ROOM
674.0-A2	TRITIATED DRAIN COLLECTOR TANK PUMPS
676.0-A1	CORRIDOR
676.0-A2	HOLDUP TANK ROOM A
676.0-A3	HOLDUP TANK ROOM B
676.0-A4	FLOOR DRAIN COLLECT PUMP, FILTER & TANK
676.0-A4a	FLOOR DRAIN COLLECTION TANK ROOM
676.0-A5	GAS STRIPPER FEED PUMP ROOM
676.0-A6	SPARE
676.0-A7	SPARE
676.0-A8	CONTAINMENT SPRAY PUMP ROOM 1B-B
676.0-A9	CONTAINMENT SPRAY PUMP ROOM 1A-A
676.0-A14	CONTAINMENT SPRAY PUMP ROOM 2A-A
676.0-A15	CONTAINMENT SPRAY PUMP ROOM 2B-B
676.0-A16	UNIT 1 PIPE CHASE
692.0-A8	UNIT 1 PIPE CHASE
692.0-A1	CORRIDOR (SUBDIVIDED INTO 692.0-A1A (692-A1A1, -A1A2, -A1A3, -A1AN), 692-A1B (-A1B1, -A1B2, -A1B3, -A1BN) AND 692-A1C
692.0-A2	GAS DECAY TANK VALVE GALLERY
692.0-A3	GAS DECAY TANK ROOM

Room No.	Description
692.0-A4	CHEMICAL DRAIN TANK ROOM
692.0-A5	GAS DECAY TANK ROOM
692.0-A9	CHARGING PUMP 1A-A
692.0-A12	SAFETY INJECTION PUMP 1B-B
692.0-A13	SAFETY INJECTION PUMP 1A-A
692.0-A17	MAINTENANCE AND TESTING EQUIPMENT (M&TE) HOT TOOL ROOM
692.0-A18	HOT TOOL ROOM
692.0-A27	CONCENTRATE FILTER ROOM
692.0-A29	BORIC ACID EVAPORATOR PACKAGE ROOM B
692.0-A30	BORIC ACID EVAPORATOR PACKAGE ROOM A
692.0-A31	SPARE
713.0-A28	UNIT 1 PIPE CHASE

3.1.1 Rooms 674.0-A1 and A2

Description: Tritiated Drain Collector Tank Room and Tritiated Drain Collector Tank Pumps

Fire Loading: Combustible materials consist of plastics and small amounts of lube oil associated with the Tritiated Drain Collector Tank Pumps and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The only regulatory barriers are the south walls of both rooms to the RHR pump cubicles and the ceilings of both rooms.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
674.0-A1	South Wall	Area 3-1, Room 676.0-A11	II-27A	2 hours
	Ceiling	Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A17	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A18	II-27A, II-28A	2 hours
674.0-A2	South Wall	Area 3-2, Room 676.0-A12	II-27A	2 hours
	Ceiling	Area 1, Room 692.0-A18	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A fire hose station is available in adjacent room (Corridor 676.0-A1).

Deviations: None

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1. The relaxation of penetration seal surveillance requirements in high radiation areas is documented in Part VII, Section 6.4.2.3 for room 674.0-A1.

3.1.2 Rooms 676.0-A1, A2, A3, A4, A4a, A5, A6, A7, A16, 692.0-A8, 713.0-A28

Room No.	Description
676.0-A1	Corridor
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B
676.0-A4	Floor Drain Collect Pump, Filter & Tank
676.0-A4a	Floor Drain Collector Tank Room
676.0-A5	Gas Stripper Feed Pump Room
676.0-A6	Spare
676.0-A7	Spare
676.0-A16	Unit 1 Pipe Chase
692.0-A8	Unit 1 Pipe Chase
713.0-A28	Unit 1 Pipe Chase

Fire Loading: Combustible loading consists of small amounts of lube oil in the pumps, motors, and valves in the area; polyester and rubber for fire hoses; EFRBS Thermo-Lag; canvas duct; cable insulation; plastics associated with the various electrical panels; small amounts of rubber, cloth, and paper in the Health Physics and Plant Services storage cabinets; anticipated amounts of radwaste trash and laundry; and miscellaneous other materials. The fire severity rating is classified as insignificant in all rooms except the Corridor (676.0-A1), the Gas Stripper Feed Pump room (676.0-A5), and the U1 Pipe Chase (692.0-A8). The fire severity rating classification of these three rooms is low.

Compartmentation: The only regulatory barriers are 3-hour between the Control Building and Auxiliary Building and 2-hour rated barriers to the RHR and Containment Spray pump cubicles and between the Unit 2 pipe and valve gallery and the upper elevations. The walls of rooms 676.0-A2, -A3, -A4, -A4a, -A5, -A6, and -A7 are not required fire barriers except as noted in the table below (ref. Figure II-27A):

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A1	North Wall	Area 1, Room 676.0-A15	II-27A	2 hours
		Area 1, Room 676.0-A14	II-27A	2 hours
		Area 65, Room 676.0-A17	II-27A	2 hours
		Area 1, Room 676.0-A9	II-27A	2 hours
	South Wall	Area 1, Room 676.0-A8	II-27A	2 hours
		Area 3-2, Room 676.0-A12	II-27A, II-28A	2 hours
		Area 1, Room 676.0-A15	II-27A	2 hours
	East Wall	Area 1, Room 676.0-A14	II-27A	2 hours
		Area 1, Room 676.0-A15	II-27A	2 hours
		Area 65, Room 676.0-A17	II-27A	2 hours
		Area 2-2, Room 676.0-A13	II-27A	2 hours
		Area 3-2, Room 676.0-A12	II-27A	2 hours
	West Wall	Area 1, Room 676.0-A8	II-27A	2 hours
		Area 1, Room 676.0-A9	II-27A	2 hours
		Area 2-1, Room 676.0-A10	II-27A	2 hours
		Area 3-1, Room 676.0-A11	II-27A	2 hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	Ceiling	Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A12	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A13	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A17	II-27A, II-28A	2 hours
		Area 1-2, Room 692.0-A19	II-27A, II-28A	2 hours
		Area 1-1, Room 692.0-A20	II-27A, II-28A	2 hours
676.0-A2	South Wall	Area 48, 692.0-C3	II-27A, -28A -33A	3 hours
		Area 48, 692.0-C4	II-27A, -28A -33A	3 hours
		Area 48, 692.0-C5	II-27A, -28A -33A	3 hours
		Area 48, 708.0-C1	II-27A, -28A -33A	3 hours
		Area 48, 708.0-C3	II-27A, -28A -33A	3 hours
	Ceiling	Area 8, Room 713.0-A1	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A23	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A24	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A25	II-27A, -28A, -29A	2 hours
676.0-A3	South Wall	Area 48, 692.0-C5	II-27A, -28A -33A	3 hours
		Area 48, 692.0-C6	II-27A, -28A -33A	3 hours
		Area 48, 708.0-C3	II-27A, -28A -33A	3 hours
		Area 48, 708.0-C4	II-27A, -28A -33A	3 hours
	Ceiling	Area 8, Room 713.0-A1	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A1	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A22	II-27A, -28A, -29A	2 hours
		Area 8, Room 713.0-A23	II-27A, -28A, -29A	2 hours
676.0-A4	North & East Wall	Area 65, Room 676.0-A17	II-27A	2 hours
	Ceiling	Area 1, 692.0-A31	II-27A, II-28A	2 hours
676.0-A5	Ceiling	Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
676.0-A6	Ceiling	Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
676.0-A7	North Wall	Area 1, Room 676.0-A8	II-27A	2 hours
676.0-A16	East Wall	Ceiling	Area 1, 692.0-A1	II-27A, II-28A
		Area 1, Room 676.0-A8	II-27A	2 hours
		Area 1, Room 676.0-A9	II-27A	2 hours
		Area 2-1, Room 676.0-A10	II-27A	2 hours
		Area 3-1, Room 676.0-A11	II-27A	2 hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A8	Ceiling	Area 5, Room 692.0-A7	II-27A, II-28A	2 hours
		Area 6, Room 692.0-A10	II-27A, II-28A	2 hours
		Area 7, Room 692.0-A11	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours
	North and West Walls	Area 5, Room 692.0-A7*	II-28A	2 hours
	East Wall	Area 1, Room 692.0-A1	II-28A	2 hours
		Area 1, Room 692.0-A12	II-28A	2 hours
		Area 1, Room 692.0-A13	II-28A	2 hours
	South Wall	Area 1, Room 692.0-A9	II-28A	2 hours
		Area 6, Room 692.0-A10	II-28A	2 hours
		Area 7, Room 692.0-A11	II-28A	2 hours
	Ceiling	Area 9, Room 713.0-A6	II-28A, II-29A	2 hours
		Area 9-1, Room 713.0-A7	II-28A, II-29A	2 hours
		*Entrance Labyrinth Walls and Ceiling		
713.0-A28	North Wall	Area 10, Room 729.0-A8	II-29A	2 hours
		Area 10, Spent Fuel Pit	II-29A	2 hours
		Area 16, 737.0-A5	II-29A, II-30A	2 hours
		Area 8, 713-A11	II-29A, II-30A	2 hours
	East Wall	Area 8, Room 713.0-A10	II-29A	2 hours
		Area 8, Room 713.0-A11	II-29A, II-30A	2 hours
		Area 8, Room 713.0-A12	II-29A, II-30A	2 hours
		Area 8, Room 713.0-A13	II-29A	2 hours
		Area 65, Room 713.0-A29	II-29A	2 hours
		Area 14, Room 737.0-A7	II-29A, II-30A	2 hours
	South Wall	Area 8, Room 713.0-A1	II-29A	2 hours
		Area 8, Room 713.0-A13	II-29A	2 hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 hours
	West Wall	Area 9, Room 713.0-A6	II-29A	2 hours
		Area 9-1, Room 713.0-A7	II-29A	2 hours
		Area 61, Unit 1 Reactor Building	II-29A	3 hours
		Area 16, Room 737.0-A5	II-28A, II-29A	2 hours
	Floor	Area 1, 692.0-A1	II-28A, II-29A	2 hours
		Area 1, 692.0-A12	II-28A, II-29A	2 hours
		Area 1, 692.0-A7	II-28A, II-29A	2 hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 hours
		Area 14, Room 737.0-A7	II-29A, II-30A	2 hours
		Area 16, Room 737.0-A5	II-29A, II-30A	2 hours
		Area 16, Room 737.0-A15	II-29A, II-30A	2 hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A1	A3	Area 1, Room 676.0-A8	II-27A	1.5 hours
	A4	Area 1, Room 676.0-A9	II-27A	1.5 hours
	A5	Area 2-1, Room 676.0-A10	II-27A	1.5 hours
	A6	Area 3-1, Room 676.0-A11	II-27A	1.5 hours
	A8	Area 3-2, Room 676.0-A12	II-27A	1.5 hours
	A9	Area 2-2, Room 676.0-A13	II-27A	1.5 hours
	A10	Area 1, Room 676.0-A14	II-27A	1.5 hours
	A11	Area 1, Room 676.0-A15	II-27A	1.5 hours
	A12	Area 65, Room 676.0-A17	II-27A	1.5 hours
692.0-A8	A27	Area 5, Room 692.0-A7	II-28A	1.5 hours
713.0-A28	A91	Area 8, Room 713.0-A13	II-29A	1.5 hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A1	1-ISD-31-5441 47A381-767	Area 1, Room 692.0-A1	47W866-2 47W920-3	3 hours
	2-ISD-31-5441 47A381-767	Area 1, Room 692.0-A1	47W866-11 47W920-3	3 hours
	2-ISD-31-5442 47A381-771	Area 1, Room 692.0-A1	47W866-11 47W920-1	3 hours
	2-ISD-31-1001 47A920-A8022	Area 65, Room 676.0-A17	47W920-1	3 hours
676.0-A4a	2-ISD-31-3987 47A381-649F	Area 1, Room 692.0-A31	47W866-11 47W920-2	3 hours
676.0-A5	1-ISD-31-5443 47A381-768	Area 1, Room 692.0-A1	47W866-2 47W920-3	3 hours
676.0-A16	1-ISD-31-3775 47A381-391	Area 1, Room 676.0-A8	47W866-2 47W920-1	1.5 hours
	1-ISD-31-3776 47A381-391	Area 1, Room 676.0-A9	47W866-2 47W920-1	1.5 hours
	1-ISD-31-3777 47A381-391	Area 2-1, Room 676.0-A10	47W866-2 47W920-1	1.5 hours
	1-ISD-31-3778 47A381-391	Area 1, Room 676.0-A11	47W866-2 47W920-1	1.5 hours
	1-ISD-31-3801 47A381-442F	Area 5, Room 692.0-A7	47W866-8 47W920-2, 18	3 hours
692.0-A8	1-ISD-31-3774	Area 1, Room 692.0-A13	47W866-2	1.5 hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A28	47A381-394		47W920-2	
	1-ISD-31-3797 47A381-394	Area 1, Room 692.0-A12	47W866-2 47W920-2	1.5 hours
	1-ISD-31-3798 47A381-394	Area 7, Room 692.0-A11	47W866-2 47W920-2	1.5 hours
	1-ISD-31-3799 47A381-394	Area 6, Room 692.0-A10	47W866-2 47W920-2	1.5 hours
	1-ISD-31-3800 47A381-394F	Area 1, Room 692.0-A9	47W866-2 47W920-2	3 hours
	1-ISD-31-3988 47A381-619F	Area 5, Room 692.0-A7	47W866-2 47W920-2	3 hours
	1-ISD-31-3805 47A381-401F	Area 9-1, Room 713.0-A7	47W866-2 47W920-4	3 hours
	1-ISD-31-3814 47A381-407	Area 14, Room 737.0-A7	47W866-2 47W920-5	1.5 hours
	1-ISD-31-3815 47A381-407F	Area 8, Room 713.0-A11	47W866-2 47W920-5	3 hours
	1-ISD-31-3816 47A381-407F	Area 8, Room 713.0-A12	47W866-2 47W920-5	3 hours
	1-ISD-31-3817 47A381-409F	Area 16, Room 737.0-A5	47W866-2 47W920-5	3 hours
	1-ISD-31-3818 47A381-432	Area 16, Room 737.0-A5	47W866-2 47W920-23	1.5 hours
	1-ISD-31-3819 47A381-398F	Area 14, Room 737.0-A1	47W866-2 47W920-5	1.5 hours
	1-ISD-31-3923 47A381-408F	Area 9, Room 713.0-A6	47W866-8 47W920-4	3 hours

Detection: Ionization smoke detectors are only provided in rooms 676.0-A1 (partial), 676.0-A5 (partial), 676.0-A6, 676.0-A16, 692.0-A8, and 713.0-A28. Rooms 676.0-A2, 676.0-A3, 676.0-A4, 676.0-A4a and 676.0-A7 do not have detection.

Suppression: No automatic suppression is provided. A standpipe and hose station is located in room 676.0-A1, 692.0-A1, and 713.0-A13.

Deviations: The unprotected stair and equipment hatch openings in the floor separating elevations 676.0 from 692.0-A1 are documented in Part VII, Section 2.6.3.4. Spiral welded pipe without fire dampers where the pipe penetrates fire barriers in Rooms 676.0-A1, -A3 is justified

in Part VII, Section 2.6.3.2.a. A sheet metal duct with no damper in Room 676.0-A4 is documented in Part VII, Section 2.6.3.2.b. No deviations are applicable for Rooms 676.0-A4a, -A5, -A6, -A7, -A16, 692.0-A8 and 713.0-A28.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1 for all rooms. The relaxation of penetration seal surveillance requirements in high radiation areas is documented in Part VII, Section 6.4.2.2 for rooms 676.0-A2, -A3.

3.1.3 Rooms 692.0-A1, A2, A3, A4, A5, A17, A18, A27, A29, A30 and A31

Room No.	Description
692.0-A1	Corridor (Subdivided into 692.0-A1A (692-A1A1, -A1A2, -A1A3, -A1AN), 692-A1B (692-A1B1, -A1B2, A1B3, -A1BN) and 692-A1C
692.0-A2	Gas Decay Tank Valve Gallery
692.0-A3	Gas Decay Tank Room
692.0-A4	Chemical Drain Tank Room
692.0-A5	Gas Decay Tank Room
692.0-A17	Maintenance and Testing Equipment (M&TE) Hot Tool Room
692.0-A18	Hot Tool Room
692.0-A27	Concentrate Filter Room
692.0-A29	Boric Acid Evaporator Package Room B
692.0-A30	Boric Acid Evaporator Package Room A
692.0-A31	Spare

Fire Loading: The combustibles consist of various amounts of lube oil associated with several pumps and valves, ERFBS Thermo-Lag, rubber for hoses, plastics associated with various electrical panels, lights, flex conduits, and boxes, transformer oil associated with two transformers, insulation on cables in the cable trays and anticipated amounts of radwaste trash and laundry and miscellaneous other materials in the combustible liquid storage cabinet. The fire severity loading for room 692.0-A1 is classified as moderate and room 692.0-A31 is classified as low. The other rooms contain insignificant amounts of combustibles.

Compartmentation: Room 692.0-A1 has been subdivided into 692.0-A1A (692-A1A1, -A1A2, -A1A3, -A1AN), 692-A1B (692-A1B1, -A1B2, -A1B3, -A1BN) and 692-A1C (see Figure II-28A). There is one rectangular heating, ventilation, and air conditioning (HVAC) duct penetration, one round Emergency Gas Treatment System (EGTS) duct penetration without fire dampers in the 692.0-A1 floor slab, and one round EGTS duct penetration without fire dampers in the ceiling of 692.0-A1. Stairwell No. 3, an equipment hatch, three HVAC duct penetrations, and the elevator shaft are also unprotected openings in the 692.0-A1 floor slab, as well as Stairwell No. 3, 5 and 6, an equipment hatch, and the elevator shaft in the 692.0-A1 ceiling. There is one unprotected steel hatch in 692.0-A27 floor slab. There are two rectangular unprotected openings in 692.0-A31 floor slab. The walls of rooms 692.0-A2, -A3, -A4, -A5, -A17, -A18, -A27, -A29, -A30 and -A31 are not required fire barriers except as indicated in the table below.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A1A (Column Lines A1-A8/S-U)	North Wall	AREA 4, ROOM 692.0-A6*	II-28A	2 Hours
		AREA 5, ROOM 692.0-A7	II-28A	2 Hours
		AREA 6, ROOM 692.0-A10	II-28A	2 Hours
		AREA 7, ROOM 692.0-A11**	II-28A	2 Hours
		AREA 1, ROOM 692.0-A9	II-28A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
		AREA 1, ROOM 692.0-A12	II-28A	2 Hours
		AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
		* TDAFW PUMP ROOM WALLS AND CEILING.		
		**ENTRANCE LABYRINTH WALLS AND CEILINGS		
	South Wall	AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
		AREA 48, ROOM 692.0-C1	II-28A, II-33A	3 Hours
		AREA 63, TURBINE BUILDING	II-28A, II-33A	3 Hours
	East Wall	AREA 1, ROOM 692.0-A9	II-28A	2 Hours
		AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
	West Wall	AREA 4, ROOM 692.0-A6*	II-28A	2 Hours
		AREA 6, ROOM 692.0-A10	II-28A	2 Hours
		AREA 7, ROOM 692.0-A11**	II-28A	2 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A10	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A30	II-28A, II-29A	2 Hours
	Floor	AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A5	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A6	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A7	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A8	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A9	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A16	II-27A, II-28A	2 Hours
692.0-A1B (Column Lines A8-A15/Q-U)	North Wall	AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
		AREA 1-1, ROOM 692.0-A20	II-28A	2 Hours
		AREA 66, ROOM 692.0-A21	II-28A	2 Hours
		AREA 67, ROOM 692.0-A22	II-28A	2 Hours
		AREA 68, ROOM 692.0-A23	II-28A	2 Hours
		AREA 70, ROOM 692.0-A25	II-28A	2 Hours
		AREA 69, ROOM 692.0-A26	II-28A	2 Hours
	East Wall	AREA 66, ROOM 692.0-A21**	II-28A	2 Hours
		AREA 67, ROOM 692.0-A22	II-28A	2 Hours
		AREA 69, ROOM 692.0-A26*	II-28A	2 Hours
	South Wall	AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
		AREA 48, ROOM 692.0-C10	II-28A, II-33A	3 Hours
	West Wall	AREA 10, ELEVATOR SHAFT	II-28A	2 Hours
		AREA 68, ROOM 692.0-A23	II-28A	2 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A17	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A18	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A22	II-28A, II-29A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A1C (Column Lines A5-A11/U-Spent Fuel Pit)	Floor (partial)	AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A5	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A14	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A15	II-27A, II-28A	2 Hours
		AREA 65, ROOM 676.0-A17	II-27A, II-28A	2 Hours
	North Wall	* TDAFW PUMP ROOM WALLS AND CEILING		
		**ENTRANCE LABYRINTH WALLS AND CEILINGS		
		AREA 10, ROOM 692.0-A14	II-28A	2 Hours
		AREA 10 SPENT FUEL PIT	II-28A	2 Hours
	East Wall	AREA 1-1, ROOM 692.0-A20	II-28A	2 Hours
		AREA 1-2, ROOM 692.0-A19	II-28A	2 Hours
		AREA 65, ROOM 692.0-A24	II-28A	2 Hours
	South Wall	AREA 1, ROOM 692.0-A13	II-28A	2 Hours
		AREA 1-2, ROOM 692.0-A19	II-28A	2 Hours
	West Wall	AREA 1, ROOM 692.0-A8	II-28A	2 Hours
		AREA 1, ROOM 692.0-A12	II-28A	2 Hours
		AREA 1, ROOM 692.0-A13	II-28A	2 Hours
		AREA 5, ROOM 692.0-A7	II-28A	2 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A12	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A13	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A15	II-28A, II-29A	2 Hours
		AREA 1, ROOM 713.0-A28	II-28A, II-29A	2 Hours
		AREA 65, ROOM 713.0-A29	II-28A, II-29A	2 Hours
	Floor	AREA 1, ROOM 674.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 674.0-A2	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 Hours
		AREA 3-1, ROOM 676.0-A11	II-27A, II-28A	2 Hours
		AREA 3-2, ROOM 676.0-A12	II-27A, II-28A	2 Hours
692.0-A2	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
692.0-A3	South Wall	AREA 48, ROOM 692.0-C2	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C3	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C1	II-28A, II-33A	3 Hours
	Ceiling	AREA 8, ROOM 713-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713-A24	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713-A25	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713-A26	II-28A, II-29A	2 Hours
	South Wall			
692.0-A5	South Wall	AREA 48, ROOM 692.0-C1	II-28A, II-33A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A18		AREA 48, ROOM 692.0-C2	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C1	II-28A, II-33A	3 Hours
		AREA 63, TURBINE BUILDING	II-28A, II-33A	3 Hours
	Ceiling	AREA 8, ROOM 713-A1A	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713-A27	II-28A, II-29A	2 Hours
	East Wall	AREA 65, ROOM 692.0-A24	II-28A	2 Hours
	Ceiling	AREA 8, ROOM 713.0-A14	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A15	II-28A, II-29A	2 Hours
	Floor	AREA 1, ROOM 674.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 674.0-A2	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 Hours
692.0-A27	South Wall	AREA 48, ROOM 692.0-C10	II-28A, II-33A	3 Hours
		AREA 63, TURBINE BUILDING	II-28A, II-33A	3 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
	Floor	AREA 65, ROOM 676.0-A17	II-27A, II-28A	2 Hours
692.0-A29	South Wall	AREA 48, ROOM 692.0-C9	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C4	II-28A, II-33A	3 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
	Floor (Partial)	AREA 65, ROOM 676.0-A17	II-27A, II-28A	2 Hours
692.0-A30	South Wall	AREA 48, ROOM 692.0-C9	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C4	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C12	II-28A, II-33A	3 Hours
692.0-A30	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
	Floor (Partial)	AREA 65, ROOM 676.0-A17	II-27A, II-28A	2 Hours
692.0-A31	South Wall	AREA 48, ROOM 692.0-C6	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C7	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C8	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C12	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C4	II-28A, II-33A	3 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A23	II-28A, II-29A	2 Hours
	Floor	AREA 1, ROOM 676.0-A4	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A4a	II-27A, II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A1A	A25	Area 4, Room 692.0-A6	II-28A	1.5 Hours
	A26	Area 5, Room 692.0-A7	II-28A	1.5 Hours
	A28	Area 1, Room 692.0-A9	II-28A	1.5 Hours
	A29	Area 6, Room 692.0-A10	II-28A	1.5 Hours
	A30	Area 7, Room 692.0-A11	II-28A	1.5 Hours
	A31	Area 1, Room 692.0-A12	II-28A	1.5 Hours
692.0-A1B	A40	Area 1-1, Room 692.0-A20	II-28A	1.5 Hours
	A41	Area 66, Room 692.0-A21	II-28A	1.5 Hours
	A42	Area 67, Room 692.0-A22	II-28A	1.5 Hours
	A43	Area 68, Room 692.0-A23	II-28A	1.5 Hours
	A44	Area 70, Room 692.0-A25	II-28A	1.5 Hours
	A46	Area 69, Room 692.0-A26	II-28A	1.5 Hours
692.0-A1C	A32	Area 1, Room 692.0-A13	II-28A	1.5 Hours
	A39	Area 1-2, Room 692.0-A19	II-28A	1.5 Hours
	A33	Area 10, Room 692.0-A14	II-28A	1.5 Hours
	A36	Area 10, Room 692.0-A14	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A1A	1-ISD-31-3779 47A381-479F	AREA 4, ROOM 692.0-A6	47W866-2 47W920-2	3 Hours
	1-ISD-31-3780 47A381-392	AREA 4, ROOM 692.0-A6	47W866-2 47W920-2	1.5 Hours
	1-ISD-31-3782 47A381-647F	AREA 4, ROOM 692.0-A6	47W866-2 47W920-2	3 Hours
	1-ISD-31-3783 47A381-647F	AREA 4, ROOM 692.0-A6	47W866-2 47W920-2	3 Hours
	1-ISD-31-3802 47A381-393F	AREA 5, ROOM 692.0-A7	47W866-2 47W920-2	3 Hours
	1-ISD-31-3967 47A381-131F	AREA 4, ROOM 692.0-A6	47W866-2 47W920-2	3 Hours
	1-ISD-31-3995 47A381-651F	AREA 8, ROOM 713.0-A1	47W866-2 47W920-18	3 Hours
	1-ISD-31-5441 47A381-767	AREA 1, ROOM 676.0-A1	47W866-2 47W920-3	3 Hours
	1-ISD-31-5443 47A381-768	AREA 1, ROOM 676.0-A5	47W866-2 47W920-3	3 Hours
	1-ISD-31-5444A 47A381-769	AREA 8, ROOM 713.0-A1	47W866-2 47W920-3	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A1B	1-ISD-31-5444B 47A381-769	AREA 8, ROOM 713.0-A1	47W866-2 47W920-3	3 Hours
	1-ISD-31-5444C 47A381-769	AREA 8, ROOM 713.0-A1	47W866-2 47W920-3	3 Hours
	2-ISD-31-3862 47A381-393F	AREA 70, ROOM 692.0-A25	47W866-11 47W920-2	3 Hours
	2-ISD-31-3865 47A381-647F	AREA 69, ROOM 692.0-A26	47W866-11 47W920-2	3 Hours
	2-ISD-31-3866 47A381-647F	AREA 69, ROOM 692.0-A26	47W866-11 47W920-2	3 Hours
	2-ISD-31-3868 47A381-479F	AREA 69, ROOM 692.0-A26	47W866-11 47W920-2	3 Hours
	2-ISD-31-3958 47A381-131F	AREA 69, ROOM 692.0-A26	47W866-11 47W920-2	3 Hours
	2-ISD-31-3988 47A381-651F	AREA 8, ROOM 713.0-A1	47W866-11 47W920-2, 47W920-3	3 Hours
	2-ISD-31-5441 47A381-767F	AREA 1, ROOM 676.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5442 47A381-771	AREA 1, ROOM 676.0-A1	47W866-11 47W920-1	3 Hours
	2-ISD-31-5444A 47A381-769	AREA 8, ROOM 713.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5444B 47A381-769	AREA 8, ROOM 713.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5444C 47A381-769	AREA 8, ROOM 713.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5445 47A381-772	AREA 8, ROOM 713.0-A1	47W866-11 47W920-2	3 Hours
	1-ISD-31-5446 47A381-770	AREA 8, ROOM 713.0-A1	47W866-2 47W920-2	3 Hours

Detection: Ionization smoke detectors are provided in Rooms 692.0-A1, -A17, -A18, and -A31 (except in the tunnels to the RWSTs and the entrance labyrinths for all other rooms). Room 692.0-A4 is a part-height enclosure with no ceiling; as a result, detection coverage in Room 692.0-A1A provides coverage for this room. Rooms 692.0-A2, -A3, -A5, -A27, -A29, and -A30 do not have detection.

Suppression: Automatic sprinkler systems are provided in Rooms 692.0-A1, -A17, and -A18. There is partial coverage due to the tunnels to the RWSTs in Room 692.0-A1 and partial

coverage due to the entrance labyrinths to Rooms 692.0-A17 and -A18. Room 692.0-A4 is a part-height enclosure with no ceiling; as a result, suppression coverage in Room 692.0-A1 also provides coverage for this room. No automatic suppression is provided in Rooms 692.0-A2, -A3, -A5, -A29, -A30, and -A31

Deviations: Intervening combustibles in the form of insulation on cables in trays and Thermo-Lag on electrical raceways are identified and justified in Part VII, Section 2.4 for Room 692.0-A1. Spiral welded pipe without fire dampers where the pipe penetrates fire barriers in Rooms 676.0-A3 and 692.0-A1, -A31 is justified in Part VII, Section 2.6.3.2.a. Non-rated personnel hatches in Rooms 692.0-A27 and -A31 is justified in Part VII, Section 2.6.3.4. Compliance to III.G.1 with FHA for Rooms 692.0-A29 and -A30 is justified and documented in Part VII, Section 2.9.1. The unprotected stair and equipment hatch openings in the floor separating elevations 676.0 from 692.0-A1 are documented in Part VII, Section 2.6.3.4. No deviations are applicable for Rooms 692.0-A2, -A3, -A4, -A5, -A17, and -A18.

Evaluations: The lack of total area suppression and detection in the tunnels to the RWSTs (that connect with 692.0-A1) and rooms 692.0-A2, -A3, -A5, -A17, -A27, -A29, -A30, and -A31 and the lack of total area suppression in 692.0-A18 is documented in Part VII, Section 3.1.1. The relaxation of penetration seal surveillance requirements in high radiation areas is documented in Part VII, Section 6.4.2.4 for rooms 692.0-A3, -A5. The feasibility and reliability evaluation for Unit 2 Operator Manual Actions is documented in Part VII, Section 8.3.1 for Room 692.0-A1. No evaluations are applicable to Room 692.0-A4.

3.1.4 Room 676.0-A8

Description: Containment Spray Pump Room 1B-B

Fire Loading: The combustibles in the pump room consist of approximately six gallons of lube oil associated with the pump and small amounts of plastics associated with three junction boxes and five light fixtures. The fire severity is classified as insignificant.

Compartmentation: The containment spray pump room is separated from other plant locations by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A8	North Wall	Area 1, Room 676.0-A9	II-27A	2 hours
		Area 1, Room 676.0-A1	II-27A	2 hours
	South Wall	Area 1, Room 676.0-A5	II-27A	2 hours
		Area 1, Room 676.0-A7	II-27A	2 hours
	East Wall	Area 1, Room 676.0-A1	II-27A	2 hours
	West Wall	Area 1, Room 676.0-A16	II-27A	2 hours
	Ceiling	Area 7, Room 692.0-A11	II-27A, II-28A	2 hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A8	A3	Area 1, Room 676.0-A1	II-27A	1.5 hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A8	1-ISD-31-3775	Area 1	47W866-2	1.5 hrs
	47A381-391	Room 676.0-A16	47W920-1	

Detection: Ionization smoke detectors are provided in the pump room (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See Note below)

Deviations: None.

Evaluations: The lack of total area detection and suppression is documented in Part VII, Section 3.1.1.

Note: Although this room is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the room. This room does not contain redundant safe shutdown equipment. Therefore, a fire in this room will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.1.5 Room 676.0-A9

Description: Containment Spray Pump Room 1A-A.

Fire Loading: The combustibles consist of approximately six gallons of lube oil associated with the pump and small amounts of plastics associated with three junction boxes and four light fixtures. The fire severity is classified as insignificant.

Compartmentation: The containment spray pump room is separated from other plant locations by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A9	North Wall	AREA 2-1, ROOM 676.0-A10	II-27A	2 Hours
	South Wall	AREA 1, ROOM 676.0-A1	II-27A	2 Hours
		AREA 1, ROOM 676.0-A8	II-27A	2 Hours
	West Wall	AREA 1, ROOM 676.0-A16	II-27A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	East Wall	AREA 1, ROOM 676.0-A1	II-27A	2 Hours
	Ceiling	AREA 1, ROOM 692.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 692.0-A12	II-27A, II-28A	2 Hours
		AREA 7, ROOM 692.0-A11	II-27A, II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A9	A4	AREA 1, ROOM 676.0-A1	II-27A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A9	1-ISD-31-3776	Area 1, Room 676.0-A16	47W866-2	1.5 Hours
	47A381-391		47W920-1	

Detection: Ionization smoke detectors are provided (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See note below)

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1.

Note: Although this room is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the room. This room does not contain redundant safe shutdown equipment. Therefore, a fire in this room will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.1.6 Rooms 676.0-A2 and A3

Description: Holdup Tank Rooms A and B.

Fire Loading: The combustibles consist of anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The only regulatory fire barriers for these two rooms are the south walls connecting the rooms with the Control Building at elevation 692.0 and up, and their ceilings.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A2	South	Area 48, Room 692.0-C3	II-28A, II-33A	3 Hours
		Area 48, Room 692.0-C4	II-28A, II-33A	3 Hours
		Area 48, Room 692.0-C5	II-28A, II-33A	3 Hours
		Area 48, Room 708.0-C1	II-28A, II-33A	3 Hours
		Area 48, Room 708.0-C3	II-28A, II-33A	3 Hours
	Ceiling	Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A23	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A24	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A25	II-28A, II-29A	2 Hours
	South	Area 48, Room 692.0-C5	II-28A, II-33A	3 Hours
		Area 48, Room 692.0-C6	II-28A, II-33A	3 Hours
		Area 48, Room 708.0-C3	II-28A, II-33A	3 Hours
		Area 48, Room 708.0-C4	II-28A, II-33A	3 Hours
676.0-A3	Ceiling	Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A22	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A23	II-28A, II-29A	2 Hours

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: Spiral welded pipe without fire dampers where the pipe penetrates fire barriers in Room 676.0-A3 is justified in Part VII, Section 2.6.3.2.a. No deviations are applicable for Room 676.0-A2.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1. The relaxation of penetration seal surveillance requirements is documented in Part VII, Section 6.4.2.2.

3.1.7 Rooms 692.0-A3 and A5

Description: Gas Decay Tank Rooms

Fire Loading: There are no significant combustibles in these rooms. The fire severity is classified as insignificant.

Compartmentation: The only regulatory barriers are the south wall to the Control Building and Turbine Building and the ceiling.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A3	South Wall	Area 48, Room 692.0-C2	II-28A, II-33A	3 Hours
		Area 48, Room 692.0-C3	II-28A, II-33A	3 Hours
		Area 48, Room 708.0-C1	II-28A, II-33A	3 Hours
	Ceiling	Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A24	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A25	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A26	II-28A, II-29A	2 Hours
	692.0-A5	South Wall	Area 48, Room 692.0-C1	II-28A, II-33A
Area 48, Room 692.0-C2			II-28A, II-33A	3 Hours
Area 48, Room 708.0-C1			II-28A, II-33A	3 Hours
Area 63, Turbine Building			II-28A, II-33A	3 Hours
Ceiling		Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A27	II-28A, II-29A	2 Hours

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1. The relaxation of penetration seal surveillance requirements is documented in Part VII, Section 6.4.2.4.

3.1.8 Room 692.0-A9

Description: Charging Pump 1A-A

Fire Loading: The combustibles consists of approximately 53 gallons of lube oil in the charging pump, plastics associated with lights and a junction box and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The charging pump room is bounded by regulatory fire barriers, except for the floor which is not adjacent to any other plant location.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A9	North Wall	AREA 1, ROOM 692.0-A8	II-28A	2 Hours
		AREA 5, ROOM 692.0-A7	II-28A	2 Hours
	South Wall	AREA 1, ROOM 692.0-A1	II-28A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	East Wall	AREA 6, ROOM 692.0-A10	II-28A	2 Hours
	West Wall	AREA 1, ROOM 692.0-A1	II-28A	2 Hours
	Ceiling	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0- A9	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A9	A28	AREA 1, ROOM 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A9	1-ISD-31-3800	AREA 1, ROOM 692.0-A8	47W866-2	3 Hours
	47A381-394F		47W920-2	

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). (See note below)

Suppression: An automatic sprinkler system is provided in the room (except the entrance labyrinth). A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1). (See note below)

Deviations: None.

Evaluations: The lack of total area suppression and detection in the entrance labyrinth is documented in Part VII, Section 3.1.1.

Note: Although this room is not provided with full area suppression and detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the room. This room does not contain redundant safe shutdown equipment. Therefore, a fire in this room will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.1.9 Room 692.0-A12

Description: Safety Injection Pump 1B-B.

Fire Loading: The combustibles consist of the lube oil for the pump and two valves, plastics associated with lights and control and junction boxes and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The pump room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A12	North Wall	Area 1, Room 692.0-A13	II-28A	2 Hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
		Area 7, Room 692.0-A11	II-28A	2 Hours
	East Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
	West Wall	Area 1, Room 692.0-A8	II-28A	2 Hours
	Floor	Area 1, Room 676.0-A1	II-27A, II-28A	2 Hours
		Area 1, Room 676.0-A9	II-27A, II-28A	2 Hours
		Area 2-1, Room 676.0-A10	II-27A, II-28A	2 Hours
	Ceiling	Area 1, Room 713.0-A28	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A10	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A11	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A12	A31	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A12	1-ISD-31-3797	Area 1, Room 692.0-A8	47W866-2	1.5 Hours
	47A381-394		47W920-2	

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the area. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None.

3.1.10 Room 692.0-A13

Description: Safety Injection Pump 1A-A

Fire Loading: The combustibles consist of the lube oil in the pump and two valves, plastics associated with lights and a control box and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The pump room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A13	North Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
	South Wall	Area 1, Room 692.0-A12	II-28A	2 Hours
	East Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
	West Wall	Area 1, Room 692.0-A8	II-28A	2 Hours
	Floor	Area 1, Room 676.0-A1	II-27A, II-28A	2 Hours
		Area 2-1, Room 676.0-A10	II-27A, II-28A	2 Hours
		Area 3-1, Room 676.0-A11	II-27A, II-28A	2 Hours
	Ceiling	Area 8, Room 713.0-A11	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A13	A32	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A13	1-ISD-31-3774 47A381-394	AREA 1, ROOM 692.0-A8	47W866-2 47W920-2	1.5 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None.

3.1.11 Room 692.0-A17

Description: Maintenance and Test Equipment (M&TE) Hot Tool Room

Fire Loading: The combustible in the room consist of plastics associated with lighting and miscellaneous covers. The fire severity is classified as insignificant.

Compartmentation: The floor (partial) and ceiling of this room are regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A17	FLOOR (PARTIAL)	AREA 1, ROOM 674.0-A1	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 Hours
	CEILING	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A14	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A31	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A15	II-28A, II-29A	2 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided for this room (except in entrance labyrinth).

Suppression: An automatic preaction sprinkler system is provided in the room (except in the entrance labyrinth). A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression in the entrance labyrinth is documented in Part VII, Section 3.1.1.

3.1.12 Room 692.0-A31

Description: Spare

Fire Loading: The combustibles consist of lube oil in a hoist, plastics associated with lights plywood flooring, miscellaneous amounts of vinyl, cloth, nylon, rubber, combustible liquid storage cabinets, and anticipated amounts of radwaste trash and laundry. The fire severity is classified low.

Compartmentation: The south wall, floor, and ceiling are regulatory fire barriers.

BARRIERS:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A31	SOUTH WALL	AREA 48, ROOM 692.0-C6	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C7	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C8	II-28A, II-33A	3 Hours
		AREA 48, ROOM 692.0-C12	II-28A, II-33A	3 Hours
		AREA 48, ROOM 708.0-C4	II-28A, II-33A	3 Hours
	FLOOR	AREA 1, ROOM 676.0-A4	II-27A, II-28A	2 Hours
		AREA 1, ROOM 676.0-A4A	II-27A, II-28A	2 Hours
	CEILING	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 Hours
		AREA 8, ROOM 713.0-A23	II-28A, II-29A	2 Hours

Doors: None.

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A31	2-isd-31-3987 47A381-649F	AREA 1, ROOM 676.0-A4A	47W866-11 47W920-2	3 Hours

Detection: Ionization smoke detectors are provided for the room (except in entrance labyrinth).

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: There is an unprotected opening in the floor to a chase down to room 676.0-A4a, and a non-fire rated hatch cover in the ceiling to a monolithic enclosure on elevation 713. The non-fire rated hatch cover provides a sufficient level of protection due to the insignificant quantities of combustibles on both sides of the hatch. Justification is documented in Part VII, Section 2.6.3.4. Spiral welded pipe without fire dampers where the pipe penetrates fire barriers in Room 692.0-A31 is justified in Part VII, Section 2.6.3.2.a.

Evaluations: The lack of total area suppression is documented in Part VII, Section 3.1.1.

3.1.13 Room 676.0-A14

Description: Containment Spray Pump Room 2A-A

Fire Loading: The combustibles consist of approximately six gallons of lube oil associated with the pump and small amounts of plastics associated with three junction boxes and four light fixtures. The fire severity is classified as insignificant.

Compartmentation: The room is separated from other plant locations by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A14	North Wall	Area 2-2, Room 676.0-A13	II-27A	2 Hours
	South Wall	Area 1, Room 676.0-A1	II-27A	2 Hours
		Area 1, Room 676.0-A15	II-27A	2 Hours
	West Wall	Area 1, Room 676.0-A1	II-27A	2 Hours
	East Wall	Area 65, Room 676.0-A17	II-27A	2 Hours
	Ceiling	Area 1, Room 692.0-A1	II-27A, II-28A	2 Hours
		Area 1-1, Room 692.0-A20	II-27A, II-28A	2 Hours
		Area 66, Room 692.0-A21	II-27A, II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A14	A10	Area 1, Room 676.0-A1	II-27A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A14	2-ISD-31-3854 47A381-391	AREA 65, ROOM 676.0-A17	47W866-2 47W920-1	1.5 Hours

Detection: Ionization smoke detectors are provided (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See note below)

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.1.

Note: Although this room is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the room. This room does not contain redundant safe shutdown equipment. Therefore, a fire in this room will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.1.14 Room 676.0-A15

Description: Containment Spray Pump Room 2B-B

Fire Loading: The combustibles consist of approximately six gallons of lube oil associated with the pump and small amounts of plastics associated with three junction boxes and five light fixtures. The fire severity is classified as insignificant.

Compartmentation: The room is separated from other plant locations by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A15	North Wall	Area 1, Room 676.0-A14	II-27A	2 Hours
		Area 1, Room 676.0-A1	II-27A	2 Hours
	South Wall	Area 1, Room 676.0-A1	II-27A	2 Hours
		Area 65, Room 676.0-A17	II-27A	2 Hours
	East Wall	Area 65, Room 676.0-A17	II-27A	2 Hours
	West Wall	Area 1, Room 676.0-A16	II-27A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	Ceiling	Area 66, Room 692.0-A21	II-27A, II-28A	2 Hours
		Area 1, Room 692.0-A1	II-27A, II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A15	A11	Area 1, Room 676.0-A1	II-27A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A15	2-ISD-31-3855	Area 65	47W866-11	1.5 Hours
	47A381-391	Room 676.0-A17	47W920-1	

Detection: Ionization smoke detectors are provided in the pump room (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See Note below)

Deviations: None.

Evaluations: The lack of total area detection and suppression is documented in Part VII, Section 3.1.1.

Note: Although this room is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the room. This room does not contain redundant safe shutdown equipment. Therefore, a fire in this room will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.1.15 Fire Area 1 Safe Shutdown Analysis by Analysis Volume**3.1.15.1 AV-001**

Room No.	Description
674.0-A1	Tritiated Drain Collector Tank Room
674.0-A2	Tritiated Drain Collector Tank Pumps
676.0-A1	Corridor
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B
676.0-A4	Floor Drain Collect Pump, Filter & Tank
676.0-A4a	Floor Drain Collection Tank Room
676.0-A5	Gas Stripper Feed Pump Room
676.0-A6	Spare
676.0-A7	Spare
676.0-A16	Unit 1 Pipe Chase
692.0-A1C	Corridor
692.0-A8	Unit 1 Pipe Chase
692.0-A31	Spare
713.0-A28	Unit 1 Pipe Chase

A fire in Analysis Volume 1 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal and steam generator inventory control functions and Unit 2 reactor coolant inventory control function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap (3-hour ERFBS) to selected cables to preclude damage to the Unit 1 and Unit 2 A RHR pump power cable in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and post fire repairs. Operator Manual Actions (OMAs) are not required to mitigate fire in room 674.0-A1 per engineering evaluation in Part VII, section 3.1.1. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-12-A	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-12-A	772-A1	MUST OPERATE	1-BKR-74-12-A	1140
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A11.	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-3-A	772-A16	MUST NOT CLOSE	2-BKR-74-3-A	1140
2-FCV-74-3-A	676-A12	OPEN	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
2PP575A	2-MTR-74-10-A, 2-BKR-74-10-A-OCT	RHR PUMP 2A-A, RHR PMP 2A-A BKR OCT

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Room No.	Description
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B
692.0-A1A1	Corridor, Column Lines Q-U/A1-A4
692.0-A1A2	Corridor, Column Lines S-T/A4-A5
692.0-A2	Gas Decay Tank Valve Gallery
692.0-A3	Gas Decay Tank Room
692.0-A4	Chemical Drain Tank Room
692.0-A5	Gas Decay Tank Room

A fire in Analysis Volume 2 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, containment HVAC, steam generator inventory control and Unit 1 reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown, post fire repairs, and providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-ISV-62-533	692-A10	MUST CLOSE	HANDWHEEL	75
1-ISV-62-534	692-A10	MUST OPEN	HANDWHEEL	75
1-ISV-62-550	713-A1A	THROTTLE	HANDWHEEL	75
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TK-63-RWST	YARD	MONITOR LEVEL	LEVEL GAGE	1440

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-62-104-B	755-C12	STOP	1-HS-62-104A-B	35

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-62-108-A	755-C12	STOP	1-HS-62-108A-A	35
1-MTR-62-104-B	755-C12	MUST START	1-HS-62-104A-B	75
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-92-A	755-C12	CLOSE MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN

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Room No.	Description
692.0-A1A2	Corridor, Column Lines S-T/A4-A5
692.0-A1A3	Corridor, Column Lines S-T/A5-A6
692.0-A1AN	Corridor, Column Lines S-U/A6-A8
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B

A fire in AV-003 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shut down. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown, post fire repairs, and providing fire wrap to selected Unit 2 cables to preclude damage in the event of a fire. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-ISV-62-526	692-A9	MUST OPEN	HANDWHEEL	75
1-ISV-62-527	692-A9	MUST CLOSE	HANDWHEEL	75
1-ISV-62-550	713-A1A	THROTTLE	HANDWHEEL	75
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-MTR-62-104-B	755-C12	STOP	1-HS-62-104A-B	35
1-MTR-62-108-A	755-C12	STOP	1-HS-62-108A-A	35
1-MTR-62-108-A	755-C12	MUST START	1-HS-62-108A-A	75
1-PCV-1-12	755-C12	OPEN/CLOSE	1-PIC-1-13A	75
1-PCV-1-5	755-C12	OPEN/CLOSE	1-PIC-1-6A	75
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT	2-HS-32-111A-B	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-92-A	755-C12	CLOSE MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.4 AV-004A

Room No.	Description
692.0-A1AN	Corridor, Column Lines S-U/A6-A8
692.0-A1BN	Corridor, Column Lines S-U/A8-A10
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B

AV-004 contains both RHR power feeds. Therefore, two separate analyses (AV-004A and AV-004B) are performed to address the use of either path depending upon on the location of the fire within this analysis volume. Only RHR Train A power feeds for both units are provided with a 1-hour fire barrier until a minimum of 20 feet of separation exists between trains. This is an exception to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The Train A RHR pump power cable is protected such that there is greater than 20 feet of separation between the Train A and Train B RHR pump cables to ensure that a fire cannot damage the power cables for both pumps.

A fire in Analysis Volume 4A could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available.

The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to preclude damage to the A RHR pump power cables in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. These features and equipment affected and credited are identified below:

AV-004A

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
2PP575A	2-MTR-74-10-A, 2-BKR-74-10-A-OCT	RHR PUMP 2A-A, RHR PMP 2A-A BKR OCT

3.1.15.5 AV-004B

Room No.	Description
692.0-A1AN	Corridor, Column Lines S-U/A6-A8
692.0-A1BN	Corridor, Column Lines S-U/A8-A10
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B

AV-004 contains both RHR power feeds. Therefore, two separate analyses (AV-004A and AV-004B) are performed to address the use of either path depending upon on the location of the fire within this volume. Only Unit 1 and Unit 2 RHR Train A power feeds are provided with a 1-hour fire barrier until a minimum of 20 feet of separation exists between trains. This is an exception to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The Train A RHR pump power cable is protected such that there is greater than 20 feet of separation between the Train A and Train B RHR pump cables to ensure that a fire cannot damage the power cables for both pumps.

A fire in Analysis Volume 4B could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to preclude damage to the A RHR pump power cables in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. These features and equipment affected and credited are identified below:

AV-004B

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

AV-004B

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

AV-004B

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

AV-004B

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

AV-004B

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-12-A	772-A1	MUST OPERATE	1-BKR-74-12-A	1140
1-FCV-74-12-A	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A11.	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
2PP575A	2-MTR-74-10-A, 2-BKR-74-10-A-OCT	RHR PUMP 2A-A, RHR PMP 2A-A BKR OCT

3.1.15.6 AV-004AC

Room No.	Description
692.0-A1AN	Corridor, Column Lines S-U/A6-A8
692.0-A1BN	Corridor, Column Lines S-U/A8-A10
692.0-A1C	Corridor

This AV is analyzed to address the interface between 692.0-A1C and 692.0-A1AN and 692.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).

A fire in Analysis Volume 4AC could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available.

The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage to the A RHR pump power cables in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. AV-004 contains both RHR power feeds. Therefore, two separate analyses (AV-004AC and AV-004BC) are performed to address the use of either path depending upon the location of the fire within this analysis volume. The Train A RHR pump power feeds for both units are provided with a 1-hour fire barrier until more than 20 feet of separation exists between trains. This is an exception to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The Train A RHR pump power cable is protected such that there is greater than 20 feet of separation between the Train A and Train B RHR pump cables to ensure that a fire cannot damage the power cables for both pumps. These features and equipment affected and credited are identified below:

AV-004AC

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

AV-004AC

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

AV-004AC

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-74-21-B	676-A13	OPEN VALVE	HANDWHEEL	1140
2-FCV-74-21-B	772-A15	OPEN	2-BKR-74-21-B	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-TCV-67-84-A	755-C12	MUST NOT	2-HS-32-112A	120

AV-004AC

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-84-A	755-C12	CLOSE MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
2PP575A	2-MTR-74-10-A, 2-BKR-74-10-A-OCT	RHR PUMP 2A-A, RHR PMP 2A-A BKR OCT

3.1.15.7 AV-004BC

Room No.	Description
692.0-A1AN	Corridor, Column Lines S-U/A6-A8
692.0-A1BN	Corridor, Column Lines S-U/A8-A10
692.0-A1C	Corridor

This AV is analyzed to address the interface between 692.0-A1C and 692.0-A1AN and 692.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).

A fire in Analysis Volume 4BC could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage to the A RHR pump power cables in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. AV-004 contains both RHR power feeds. Therefore, two separate analyses (AV-004AC and AV-004BC) are performed to address the use of either path depending upon the location of the fire within this analysis volume. The Train A RHR pump power feeds for both units are provided with a 1-hour fire barrier until more than 20 feet of separation exists between trains. This is an exception to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The Train A RHR pump power cable is protected such that there is greater than 20 feet of separation between the Train A and Train B RHR pump cables to ensure that a fire cannot damage the power cables for both pumps. These features and equipment affected and credited are identified below:

AV-004BC

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

AV-004BC

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-12-A	772-A1	MUST OPERATE	1-BKR-74-12-A	1140
1-FCV-74-12-A	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A11.	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-3-A	676-A12	OPEN	HANDWHEEL	1140
2-FCV-74-3-A	772-A16	MUST NOT CLOSE	2-BKR-74-3-A	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-TCV-67-84-A	755-C12	MUST NOT	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-84-A	755-C12	CLOSE MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
2PP575A	2-MTR-74-10-A, 2-BKR-74-10-A-OCT	RHR PUMP 2A-A, RHR PMP 2A-A BKR OCT

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Room No.	Description
692.0-A1B1	Corridor, Col Lines S-T/A12-A13, S-U/A13-A14, Q-T/A14-A15
692.0-A1B2	Corridor, Col Lines S-T/A11-A12
692.0-A1B3	Corridor, Col Lines S-T/A10-A11
692.0-A1BN	Corridor, Column Lines S-U/A8-A10
692.0-A27	Concentrate Filter Room
692.0-A29	Boric Acid Evaporator Package Room B
692.0-A30	Boric Acid Evaporator Package Room A
692.0-A31	Spare
676.0-A2	Holdup Tank Room A
676.0-A3	Holdup Tank Room B

A fire in Analysis Volume 5 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 2 containment HVAC functions.

Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include manual operation of equipment required for safe shutdown and repair procedures. Operator Manual Actions (OMAs) are not required to mitigate fire in rooms 692.0-A29 or 692.0-A30 per deviation in Part VII, section 2.9. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
2-MTR-81-7	757-A24	MUST BE TRIPPED	2-BKR-81-007-B	15
2-ISV-62-526	692-A23	MUST OPEN	HANDWHEEL	75
2-ISV-62-527	692-A23	MUST CLOSE	HANDWHEEL	75
2-ISV-62-550	713-A1B	THROTTLE	HANDWHEEL	75
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140
2-TK-63-RWST	YARD	MONITOR LEVEL	LEVEL GAGE	1440

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-MTR-62-104-B	755-C12	STOP	2-HS-62-104A-B	35
2-MTR-62-108-A	755-C12	STOP	2-HS-62-108A-A	35
2-MTR-62-108-A	755-C12	MUST START	2-HS-62-108A-A	75
2-PCV-1-12	755-C12	OPEN/CLOSE	2-PIC-1-13A	75
2-PCV-1-5	755-C12	OPEN/CLOSE	2-PIC-1-6A	75
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.9 AV-006

Room No.	Description
692.0-A1C	Corridor, Column Lines U-RxCL/A5-A11
692.0-A17	Maintenance and Testing Equipment (M&TE) Hot Tool Room
692.0-A18	Hot Tool Room

A fire in Analysis Volume 6 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, Unit 2 reactor coolant inventory control functions, and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

AV-006

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-12-A	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-12-A	772-A1	MUST OPERATE	1-BKR-74-12-A	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A11.	1140
1-MTR-30-175-A	757-A2	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-3-A	772-A16	MUST NOT CLOSE	2-BKR-74-3-A	1140
2-FCV-74-3-A	676-A12	OPEN	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.10 AV-007

Room No.	Description
676.0-A8	Containment Spray Pump 1B-B

A fire in Analysis Volume 7 does not impact major equipment required to maintain safe shutdown functions. Shutdown for both units can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.11 AV-008

Room No.	Description
676.0-A9	Containment Spray Pump 1A-A

A fire in Analysis Volume 8 could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal functions however no mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. Equipment affected and credited to achieve shutdown are identified below:

AV-008

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.12 AV-009

Room No.	Description
692.0-A9	Charging Pump 1A-A

A fire in Analysis Volume 9 could potentially affect systems and components necessary to maintain the Unit 1 reactor coolant inventory control functions however no mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. Equipment affected and credited to achieve shutdown are identified below:

AV-009

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.13 AV-010

Room No.	Description:
692.0-A12	Safety Injection Pump 1B-B

A fire in Analysis Volume 10 does not impact major equipment required to maintain safe shutdown functions. Shutdown for both units can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

AV-010

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.14 AV-011

Room No.	Description
692.0-A13	Safety Injection Pump 1A-A

A fire in Analysis Volume 11 could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.15 AV-100

Room No.	Description
676.0-A14	Containment Spray Pump 2A-A

A fire in Analysis Volume 100 could potentially affect systems and components necessary to maintain the Unit 2 long term decay heat removal functions however no mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. Equipment credited to achieve shutdown is identified below:

AV-100

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.1.15.16 AV-101

Room No.	Description
676.0-A15	Containment Spray Pump 2B-B

A fire in Analysis Volume 101 could potentially affect systems and components necessary to maintain the Unit 2; however, no mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below, as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. Equipment credited to achieve shutdown is identified below:

AV-101

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.2 FIRE AREA 1-1**3.2.1 Room 692.0-A20**

Description: Safety Injection Pump 2B-B

Fire Loading: The combustibles consist of the lube oil in the pump and valves and plastics associated with electrical boxes and lights anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The pump room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A20	NORTH WALL	AREA 1-2, ROOM 692.0-A19	II-28A	2 HOURS
	EAST WALL	AREA 65, ROOM 692.0-A24	II-28A	2 HOURS
	SOUTH WALL	AREA 1, ROOM 692.0-A1	II-28A	2 HOURS
		AREA 66, ROOM 692.0-A21	II-28A	2 HOURS
	WEST WALL	AREA 1, ROOM 692.0-A1	II-28A	2 HOURS
	FLOOR	AREA 1, ROOM 676.0-A1	II-27A, II-28A	2 HOURS
		AREA 1, ROOM 676.0-A14	II-27A, II-28A	2 HOURS
		AREA 2-2, ROOM 676.0-A13	II-27A, II-28A	2 HOURS
	CEILING	AREA 8, ROOM 713.0-A16	II-28A, II-29A	2 HOURS
		AREA 8, ROOM 713.0-A17	II-28A, II-29A	2 HOURS
		AREA 65, ROOM 713.0-A29	II-28A, II-29A	2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A20	A40	AREA 1, 692.0-A1	II-28A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A20	2-ISD-31-3857	Area 65, Room 692.0-A24	47W866-11	1.5
	47A381-394		47W920-2	HOURS

Detection: Ionization smoke detectors are provided in this room.

Suppression: An automatic preaction sprinkler system is provided in this room. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None

3.2.2 Fire Area 1-1 Safe Shutdown Analysis by Analysis Volume**3.2.2.1 AV-102**

Room No.	Description:
692.0-A20	Safety Injection Pump 2B-B

A fire in Analysis Volume 102 does not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

AV-102

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.3 FIRE AREA 1-2

3.3.1 Room 692.0-A19

Description: Safety Injection Pump 2A-A

Fire Loading: The combustibles consist of the lube oil in the pump and valves and plastics associated with electrical boxes and lights anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The pump room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A19	North Wall	Area 1, Room 692.0-A1	II-28A	2 HOURS
	South Wall	Area 1-1, Room 692.0-A20	II-28A	2 HOURS
	East Wall	Area 65, Room 692.0-A24	II-28A	2 HOURS
	West Wall	Area 1, Room 692.0-A1	II-28A	2 HOURS
	Ceiling	Area 8, Room 713.0-A16	II-28A, II-29A	2 HOURS
	Floor	Area 1, Room 676.0-A1	II-27A, II-28A	2 HOURS
		Area 3-2, Room 676.0-A12	II-27A, II-28A	2 HOURS
		Area 2-2, Room 676.0-A13	II-27A, II-28A	2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A19	A39	Area 1, 692.0-A1	II-28A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A19	2-ISD-31-3856	Area 65, Room	47W866-11	1.5 HOURS
	47A381-394	692.0-A24	47W920-2	

Detection: Ionization smoke detectors are provided in this room.

Suppression: An automatic preaction sprinkler system is provided in this room. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None

3.3.2 Fire Area 1-2 Safe Shutdown Analysis by Analysis Volume**3.3.2.1 AV-012**

Room No.	Description:
692.0-A19	Safety Injection Pump 2A-A

A fire in Analysis Volume 12 could potentially affect Unit 2 systems and components necessary to maintain the long term decay heat removal function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.4 FIRE AREA 2-1**3.4.1 Room 676.0-A10**

Description: RHR Pump Room 1B-B

Fire Loading: The combustibles consists of lube oil associated with the RHR pump and valve, small amounts of plastics associated with lights and a control panel and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The pump room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A10	NORTH WALL	AREA 3-1, ROOM 676.0-A11	II-27A	2 HOURS
	SOUTH WALL	AREA 1, ROOM 676.0-A9	II-27A	2 HOURS
	EAST WALL	AREA 1, ROOM 676.0-A1	II-27A	2 HOURS
	WEST WALL	AREA 1, ROOM 676.0-A16	II-27A	2 HOURS
	CEILING	AREA 1, ROOM 692.0-A12 AREA 1, ROOM 692.0-A13	II-27A, II-28A II-27A, II-28A	2 HOURS 2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A10	A5	AREA 1, ROOM 676.0-A1	II-27A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A10	1-ISD-31-3777 47A381-391	AREA 1, ROOM 676.0-A16	47W866-2 47W920-1	1.5 HOURS

Detection: Ionization smoke detectors are provided (except in the entrance labyrinth).
(See Note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (corridor 676.0-A1). (See Note below)

Deviations: None.

Evaluations: None

Note: Although this area is not provided with suppression or full area detection, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A guidelines regarding this issue.

3.4.2 Fire Area 2-1 Safe Shutdown Analysis by Analysis Volume**3.4.2.1 AV-013**

Room No.	Description:
676.0-A10	RHR Pump Room 1B-B

A fire in Analysis Volume 13 could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both Train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.5 FIRE AREA 2-2**3.5.1 Room 676.0-A13**

Description: RHR Pump Room 2B-B

Fire Loading: The combustibles in this room consist of lube oil associated with the RHR pump and valve and small amounts of plastics associated with lights and a control panel. The fire severity is classified as insignificant.

Compartmentation: The pump room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A13	NORTH WALL	AREA 3-2, ROOM 676.0-A12	II-27A	2-HOURS
	SOUTH WALL	AREA 1, ROOM 676.0-A14	II-27A	2 HOURS
	EAST WALL	AREA 65, ROOM 676.0-A17	II-27A	2 HOURS
	WEST WALL	AREA 1, ROOM 676.0-A1	II-27A	2 HOURS
	CEILING	AREA 1-2, ROOM 692.0-A19	II-27A, 2-28A	2 HOURS
		AREA 1-1, ROOM 692.0-A20	II-27A, 2-28A	2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A13	A9	Area 1, Room 676.0-A1	II-27A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A13	2-ISD-31-3853	Area 65, Room 676.0-A17	47W866-11	1.5 Hours
	47A381-391		47W920-1	

Detection: The pump room is provided with ionization smoke detectors (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (corridor 676.0-A1). (See note below)

Deviations: None.

Evaluations: None.

Note: Although this area is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.5.2 Fire Area 2-2 Safe Shutdown Analysis by Analysis Volume**3.5.2.1 AV-014**

Room No.	Description:
676.0-A13	RHR Pump Room 2B-B

A fire in Analysis Volume 14 could potentially affect Unit 2 long term decay heat removal functions through loss of Unit 2 Train B RHR but does not otherwise impact major equipment required to maintain safe shutdown functions. Offsite power is available. Shutdown for Unit 1 and Unit 2 can be achieved by utilizing remaining Train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.6 FIRE AREA 3-1**3.6.1 Room 676.0-A11**

Description: RHR Pump Room 1A-A

Fire Loading: The combustibles consist of lube oil associated with the RHR pump and valve, small amounts of plastics associated with lights and a control panel and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation:

The pump room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A11	North Wall	AREA 1, ROOM 674.0-A1	II-27A	2 Hours
	South Wall	AREA 2-1, ROOM 676.0-A10	II-27A	2 Hours
	East Wall	AREA 1, ROOM 676.0-A1	II-27A	2 Hours
	West Wall	AREA 1, ROOM 676.0-A16	II-27A	2 Hours
	Ceiling	AREA 1, ROOM 692.0-A13 AREA 1, ROOM 692.0-A1	II-27A, II-28A II-27A, II-28A	2 Hours 2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A11	A6	Area 1, Room 676.0-A1	II-27A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A11	1-1SD-31-3778	Area 1, Room 676.0-A16	47W866-2	1.5
	47A381-391		47W920-1	HOURS

Detection: Ionization smoke detectors are provided (except in the entrance labyrinth). (See Note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See Note below)

Deviations: None.

Evaluations: None.

Note: Although this area is not provided with suppression or full area detection, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A guidelines regarding this issue.

3.6.2 Fire Area 3-1 Safe Shutdown Analysis by Analysis Volume**3.6.2.1 AV-015**

Room No.	Description:
676.0-A11	RHR Pump Room 1A-A

A fire in Analysis Volume 15 could potentially affect Unit 1 long term heat decay removal functions through the loss of Unit 1 Train A RHR but does not otherwise impact major equipment required to maintain safe shutdown functions. Offsite power is available. Shutdown for Unit 1 and Unit 2 can be achieved by utilizing remaining Train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.7 FIRE AREA 3-2**3.7.1 Room 676.0-A12**

Description: RHR Pump Room 2A-A

Fire Loading: The combustibles in this room consist of lube oil associated with the RHR pump and valve and small amounts of plastics associated with lights. The fire severity is classified as insignificant.

Compartmentation: The pump room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A12	NORTH WALL	AREA 1, ROOM 674.0-A2	II-27A	2 HOURS
		AREA 1, ROOM 676.0-A1	II-27A	2 HOURS
	SOUTH WALL	AREA 2-2, ROOM 676.0-A13	II-27A	2 HOURS
	EAST WALL	AREA 65, ROOM 676.0-A17	II-27A	2 HOURS
	WEST WALL	AREA 1, ROOM 676.0-A1	II-27A	2 HOURS
	CEILING	AREA 1-2, ROOM 692.0-A19	II-27A, II-28A	2 HOURS
		AREA 1, ROOM 692.0-A1	II-27A, II-28A	2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A12	A8	AREA 1, ROOM 676.0-A1	II-27A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A12	2-ISD-31-3852	AREA 65, ROOM 676.0-A17	47W866-11	1.5
	47A381-391		47W920-1	HOURS

Detection: The pump room is provided with ionization smoke detectors (except in the entrance labyrinth). (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (Corridor 676.0-A1). (See note below)

Deviations: None.

Evaluations: None.

Note: Although this area is not provided with suppression and full area detection, as suggested by Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.7.2 Fire Area 3-2 Safe Shutdown Analysis by Analysis Volume**3.7.2.1 AV-016**

Room No.	Description:
676.0-A12	RHR Pump Room 2A-A

A fire in Analysis Volume 16 could potentially affect Unit 2 long term decay heat removal functions through the loss of Unit 2 Train A RHR but does not otherwise impact major equipment required to maintain safe shutdown functions. Offsite power is available. Shutdown for Unit 1 and Unit 2 can be achieved by utilizing remaining Train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.8 FIRE AREA 4**3.8.1 Room 692.0-A6**

Description: Turbine Driven Auxiliary Feedwater Pump 1A-S

Fire Loading: The combustibles consists of lube oil associated with the feedwater pump, turbine, oil cooler, 2 sump pumps, and 5 valves and various amounts of plastics associated with electrical panels and lights. The fire severity is classified as insignificant.

Compartmentation: The Auxiliary Feedwater Pump Room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A6	North Wall	Area 5, Room 692.0-A7	II-28A	2 Hours
	South and East Walls and Ceiling	Area 1, Room 692.0-A1	II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A6	A25	AREA 1, ROOM 692.0-A1	II-28A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A6	1-ISD-31-3779	AREA 1, ROOM 692.0-A1	47W866-2	3 HRS
	47A381-479F		47W920-2	
	1-ISD-31-3780	AREA 1, ROOM 692.0-A1	47W866-2	1.5 HRS
	47A381-392		47W920-2	
	1-ISD-31-3782	AREA 1, ROOM 692.0-A1	47W866-2	3 HRS
	47A381-647F		47W920-2	
	1-ISD-31-3967	AREA 1, ROOM 692.0-A1	47W866-2	3 HRS
	47A381-131F		47W920-2	
	1-ISD-31-3783	AREA 1, ROOM 692.0-A1	47W866-2	3 HRS
	47A381-647F		47W920-2	

Detection: Ionization smoke detectors are provided in the pump room.

Suppression: An automatic preaction sprinkler system is provided. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None.

3.8.2 Fire Area 4 Safe Shutdown Analysis by Analysis Volume**3.8.2.1 AV-017**

Room No.	Description:
692.0-A6	Turbine Driven Auxiliary Feedwater Pump 1A-S

A fire in Analysis Volume 17 could potentially affect Unit 1 systems and components used to maintain steam generator inventory control functions by affecting the Unit 1 Turbine-Driven AFW pump. Safe shutdown for Unit 1 and Unit 2 can be achieved through the remaining train A and B systems and components without mitigating actions. Offsite power is available. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.9 FIRE AREA 5**3.9.1 Room 692.0-A7**

Description: Unit 1 Penetration RM

Fire Loading: The combustibles located in the room consist of the lube oil and grease associated with the fans, pumps, and valves and the plastics associated with the electrical panels and boxes and lights. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A7	NORTH WALL	Area 61, Reactor Building	II-28A	3 hours
	SOUTH WALL	AREA 1, ROOM 692.0-A1	II-28A	2 HOURS
		AREA 1, ROOM 692.0-A9	II-28A	2 HOURS
		AREA 1, ROOM 692.0-A8*	II-28A	2 HOURS
		AREA 4, ROOM 692.0-A6	II-28A	2 HOURS
692.0-A7 (continued)	EAST WALL	AREA 1, ROOM 692.0-A1	II-28A	2 HOURS
		AREA 1, ROOM 692, 0-A8*	II-28A	2 HOURS
	CEILING	AREA 1, ROOM 713.0-A28	II-28A, II-29A	2 HOURS
		AREA 9, ROOM 713.0-A6	II-28A, II-29A	2 HOURS
		AREA 9-1, ROOM 713.0-A7	II-28A, II-29A	2 HOURS
	FLOOR (Partial)	AREA 1, ROOM 676.0-A16 (*ENTRANCE LABYRINTH WALLS AND CEILING)	II-28A	2 HOURS

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A7	A26	Area 1, Room 692.0-A1	II-28A	1.5 Hours
	A27	Area 1, Room 692.0-A8	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A7	1-ISD-31-3801	AREA 1, ROOM 676.0-A16	47W866-8	3 HOURS
	47A381-442F		47W920-2, 18	
	1-ISD-31-3802	AREA 1, ROOM 692.0-A1	47W866-2	3 HOURS
	47A381-393F		47W920-2	
	1-ISD-31-3925	AREA 9, ROOM 713.0-A6	47W866-8	3 HOURS
	47A381-397F		47W920-2, 4	
	1-ISD-31-3988	AREA 1, ROOM 692.0-A8	47W866-2	3 HOURS
	47A381-619F		47W920-2	

Detection: Ionization smoke detection is provided in the room.

Suppression: An automatic preaction sprinkler system is provided for the room. A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1). Pump enclosures lack suppression.

Deviations: None.

Evaluations: The Unit 1 evaluation for performing a manual action in the room of fire origin is documented in Part VII, section 7.1.3.1. |

3.9.2 Fire Area 5 Safe Shutdown Analysis by Analysis Volume**3.9.2.1 AV-018**

Room No.	Description:
692.0-A7	Unit 1 Penetration RM

A fire in Analysis Volume 18 could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, reactor coolant inventory control and containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features for Unit 1 include manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	692-A7	OPEN	HANDWHEEL	75
1-LCV-62-136-B	772-A2	MUST OPEN	1-BKR-62-136-B	75
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FT-70-81A	755-C12	OPEN	1-HS-70-81EA-A	4
1-FT-70-81B	755-C12	OPEN	1-HS-70-81BA-B	4
1-FT-70-81D	755-C12	OPEN	1-HS-70-81BA-B	4
1-FT-70-81E	755-C12	OPEN	1-HS-70-81EA-A	4
1-MTR-62-104-B	755-C12	MUST STOP	1-HS-62-104A-B	4
1-MTR-62-108-A	755-C12	MUST STOP	1-HS-62-108A-A	4
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
1-LCV-62-133-B	755-C12	CLOSE	1-HS-62-133A-B	70
1-MTR-62-108-A	755-C12	MUST START	1-HS-62-108A-A	75
1-PCV-1-12	755-C12	OPEN/CLOSE	1-PIC-1-13A	75
1-PCV-1-5	755-C12	OPEN/CLOSE	1-PIC-1-6A	75
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.10 FIRE AREA 6**3.10.1 Room 692.0-A10**

Description: Charging Pump Room 1B-B

Fire Loading: The combustibles consist of the lube oil in the charging pump and plastics associated with lights and a junction box and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The pump room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A10	NORTH WALL	AREA 1, ROOM 692.0-A8	II-28A	2 HOURS
		AREA 7, ROOM 692.0-A11	II-28A	2 HOURS
	SOUTH WALL	AREA 1, ROOM 692.0-A1	II-28A	2 HOURS
		AREA 7, ROOM 692.0-A11	II-28A	2 HOURS
	EAST WALL	AREA 1, ROOM 692-A1	II-28A	2 HOURS
		AREA 1, ROOM 692.0-A9	II-28A	2 HOURS
	WEST WALL	AREA 8, ROOM 713.0-A1	II-28A, II-29A	2 HOURS
		AREA 8, ROOM 713.0-A9	II-28A, II-29A	2 HOURS
	CEILING	AREA 1, ROOM 676.0-A16	II-27A, II-28A	2 HOURS
	FLOOR (partial)			

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A10	A29	Area 1, Room 692.0-A1	II-28A	1.5 HOURS

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A10	1-ISD-31-3799	Area 1, Room 692.0-A8	47W866-2	1.5 HOURS
	47A381-394		47W920-2	

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). (See Note below)

Suppression: An automatic preaction sprinkler system is provided in the room (except in the entrance labyrinth). A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1). (See Note below)

Deviations: None.

Evaluations: The lack of total area suppression and detection in the entrance labyrinth is addressed in the Centrifugal Charging Pump discussion in Part VI, Section 3.1.1 for Fire Area 1. The Unit 1 evaluation for performing a manual action in the room of fire origin is documented in Part VII, Section 7.1.3.1.

Note: Although this area is not provided with full area detection and suppression, as suggested by Appendix a guideline, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Paragraph F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.10.2 Fire Area 6 Safe Shutdown Analysis by Analysis Volume**3.10.2.1 AV-019**

Room No.	Description:
692.0-A10	Charging Pump Room 1B-B

A fire in Analysis Volume 19 could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal and reactor coolant inventory control functions through the loss of Unit 1 Train B RHR and Charging pumps. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components. The required mitigating features include manual operation of Unit 1 equipment. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-93	692-A10	THROTTLE SEAL INJECTION FLOW	HANDWHEEL	75
1-ISV-62-550	713-A1A	THROTTLE	HANDWHEEL	75

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-62-104-B	755-C12	STOP	1-HS-62-104A-B	35
1-MTR-62-108-A	755-C12	STOP	1-HS-62-108A-A	35
1-MTR-62-108-A	755-C12	MUST START	1-HS-62-108A-A	75
1-PCV-1-12	755-C12	OPEN/CLOSE	1-PIC-1-13A	75
1-PCV-1-5	755-C12	OPEN/CLOSE	1-PIC-1-6A	75

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.11 FIRE AREA 7**3.11.1 Room 692.0-A11**

Description: Charging Pump Room 1C

Fire Loading: The combustibles consist of the lube oil in the charging pump and a valve; plastics associated with lights and a junction box and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The pump room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A11	North Wall	Area 1, Room 692.0-A8	II-28A	2 hours
		Area 1, Room 692.0-A12	II-28A	2 hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 hours
		Area 6, Room 692.0-A10	II-28A	2 hours
	East Wall	Area 1, Room 692.0-A1	II-28A	2 hours
	West Wall	Area 6, Room 692.0-A10	II-28A	2 hours
	Ceiling	Area 1, Room 692.0-A1*	II-28A, II-29A	2 hours
		Area 8, Room 713.0-A1	II-28A, II-29A	2 hours
	Floor	Area 1, Room 676.0-A8	II-27A, II-28A	2 hours
		Area 1, Room 676.0-A9	II-27A, II-28A	2 hours
		Area 1, Room 676.0-A16	II-27A, II-28A	2 hours
		(*Entrance Labyrinth Ceiling)		

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A11	A30	Area 1, Room 692.0-A1	II-28A	1.5 hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A11	1-ISD-31-3798	Area 1, Room 692.0-A8	47W866-2	1.5 hrs
	47A381-394		47W920-2	

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). (See Note below)

Suppression: An automatic preaction sprinkler system is provided in the room (except in the entrance labyrinth). A standpipe and hose station is provided in the adjacent room (Corridor 692.0-A1). (See Note below)

Deviations: None.

Evaluations: None.

Note: Although this area is not provided with full area detection and suppression, per the guidelines of Appendix A, Section F.11, fire barrier ratings are sufficient given the combustible loadings in the area. This is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Section F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.11.2 Fire Area 7 Safe Shutdown Analysis by Analysis Volume**3.11.2.1 AV-020**

Room No.	Description:
692.0-A11	Charging Pump Room 1C

A fire in Analysis Volume 20 does not impact major equipment required to maintain safe shutdown functions. Shutdown for both units can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.12 FIRE AREA 8

Fire Area 8 consists of several rooms on Auxiliary Building Elevation 713.0.

3.12.1 Rooms 713.0-A1, A9, A10, A17, A18, A22, A23, A24, A25, A26 and A27

Room No.	Description:
713.0-A1	Auxiliary Building Subdivided into 713.0-A1A (713-A1A1, -A1A2, -A1A3, -A1A4, A1AN), -A1B (713-A1BN) and -A1C
713.0-A9	Unit 1 Mixed Bed and Cation Valve Gallery
713.0-A10	Seal Water Heat Exchanger 1A
713.0-A17	Seal Water Heat Exchanger 2A
713.0-A18	Unit 2 Mixed Bed and Cation Valve Gallery
713.0-A22	Holdup Tank Valve Gallery
713.0-A23	CVCS Valve Gallery
713.0-A24	Waste Gas Compressor Valve Gallery
713.0-A25	Waste Gas Compressor B
713.0-A26	Waste Gas Compressor A
713.0-A27	Decontamination Room

Fire Loading: The fire severity for rooms 713.0-A9, A17, A18, A23, and A24 is classified as insignificant. The combustibles in room 713.0-A1 consist of lube oil in the pumps, motors, and valves, ERFBS Thermo-Lag plastics associated with the electrical panels, boxes and lights, insulation on cables routed in cable trays and anticipated amounts of radwaste trash and laundry and other miscellaneous combustibles. The fire severity for this room is classified as moderately severe. The combustibles in rooms 713.0-A10 and A22 consist of anticipated amounts of radwaste trash and laundry. Rooms 713.0-A25 and A26 have combustibles consisting of lube oil in compressors, plastics associated with electrical panels, equipment, light covers and radwaste/laundry. Room 713.0-A27 has combustibles consisting of plastics associated with electrical panels, equipment, light covers, trash, and temporary shielding blankets. The fire severity for all of these rooms is classified as low.

Compartmentation: Room 713.0-A1 has been subdivided into 713.0-A1A (column lines A1-A8/Q-U), 713.0-A1B (A8-A15/Q-U), and 713.0-A1C (A7-A9/U-W), each of which is identified in the tabular listing of regulatory barriers. All of these rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A1A	North Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
		Area 8, Room 713.0-A11	II-29A	2 Hours
		Area 8, Room 713.0-A30	II-29A	3 Hours
		Area 9, Room 713.0-A6	II-29A	2 Hours
		Area 9-1, Room 713.0-A7	II-29A	2 Hours
		Area 10, Elevator Shaft	II-29A	2 Hours
		Area 12, Room 729.0-A1	II-29A, II-30A	2 Hours
	South Wall	Area 8, Room 713.0-A30	II-29A	3 Hours
		Area 10, Elevator Shaft	II-29A	2 Hours
		Area 48, Room 708.0-C1	II-29A, II-33A	3 Hours
		Area 48, Room 708.0-C3	II-33A	3 Hours
		Area 48, Room 729.0-C1	II-29A, II-34A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A1B	East Wall	Area 63, Turbine Building	II-29A, II-33A	3 Hours
		Area 10, Elevator Shaft	II-29A	2 Hours
		Area 8, Room 713.0-A2	II-29A	3 Hours
	West Wall	Area 8, Room 713.0-A3	II-29A	3 Hours
		Area 8, Room 713.0-A4	II-29A	3 Hours
		Area 8, Room 713.0-A5	II-29A	3 Hours
		Area 8, Room 713.0-A30	II-29A	3 Hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A2	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A4	II-29A, II-30A	2 Hours
		Area 15-1, Room 737.0-A3	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A2	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A3	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A2	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A3	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A5	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A9	II-28A, II-29A	2 Hours
		Area 6, Room 692.0-A10	II-28A, II-29A	2 Hours
		Area 7, Room 692.0-A11	II-28A, II-29A	2 Hours
	North Wall	Area 8, Room 713.0-A16	II-29A	2 Hours
		Area 71, Room 713.0-A19	II-29A	2 Hours
		Area 71-1, Room 713.0-A20	II-29A	2 Hours
		Area 65, Room 713.0-A29	II-29A	2 Hours
		Area 10, Elevator Shaft	II-29A	2 Hours
	South Wall	Area 48, Room 708.0-C3	II-29A, II-33A	3 Hours
		Area 48, Room 708.0-C4	II-29A, II-33A	3 Hours
		Area 48, Room 729.0-C1	II-29A, II-34A	3 Hours
		Area 63, Turbine Building	II-29A, II-33A II-34A	3 Hours
	West Wall	Area 10, Elevator Shaft	II-29A	2 Hours
	Ceiling	Area 15-2, Room 737.0-A12	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A11	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 676.0-A3	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
		Area 66, Room 692.0-A21	II-28A, II-29A	2 Hours
		Area 67, Room 692.0-A22	II-28A, II-29A	2 Hours
		Area 68, Room 692.0-A23	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A27	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A29	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A30	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A31	II-28A, II-29A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A1C	North Wall	Area 8, Room 713.0-A12	II-29A	2 Hours
		Area 8, Room 713.0-A15	II-29A	2 Hours
	East Wall	Area 8, Room 713.0-A15	II-29A	2 Hours
		Area 8, Room 713.0-A16	II-29A	2 Hours
	West Wall	Area 8, Room 713.0-A11	II-29A	2 Hours
713.0-A9	North Wall	Area 8, Room 713.0-A12	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A7	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29	2 Hours
713.0-A10	North and East Walls	Area 1, Room 692.0-A17	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A17	II-28A, II-29A	2 Hours
	West Wall	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A12	II-28A, II-29A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
713.0-A17	Ceiling (partial)	Area 7, Room 692.0-A11	II-28A, II-29A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Ceiling (partial)	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A7	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
713.0-A18	North and West Walls	Area 8, Room 713.0-A16	II-29A	2 Hours
		Area 8, Room 713.0-A16	II-29A	2 Hours
	East Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
		Area 65, Room 713.0-A29	II-29A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
713.0-A22	Ceiling (partial)	Area 1-1, Room 692.0-A20	II-28A, II-29A	2 Hours
		Area 66, Room 692.0-A21	II-28A, II-29A	2 Hours
	Ceiling (partial)	Area 66, Room 692.0-A21	II-28A, II-29A	2 Hours
		Area 66, Room 692.0-A21	II-28A, II-29A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
713.0-A23	North Wall	Area 71-1, Room 713.0-A20	II-29A	2 Hours
		Area 71-1, Room 713.0-A20	II-29A	2 Hours
	Floor	Area 67, Room 692.0-A22	II-28A, II-29A	2 Hours
		Area 68, Room 692.0-A23	II-28A, II-29A	2 Hours
	Floor	Area 67, Room 692.0-A22	II-28A, II-29A	2 Hours
713.0-A23	Floor	Area 68, Room 692.0-A23	II-28A, II-29A	2 Hours
		Area 68, Room 692.0-A23	II-28A, II-29A	2 Hours
	Floor	Area 1, Room 676.0-A3	II-28A, II-29A	2 Hours
		Area 1, Room 676.0-A3	II-28A, II-29A	2 Hours
	Floor	Area 1, Room 676.0-A3	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A1A	A57	Air Lock, Room 713.0-A2	II-29A	3 Hours
	A60	Area 8, Room 713.0-A30	II-29A	3 Hours
	A62	Area 9, Room 713.0-A6	II-29A	1.5 Hours
713.0-A1B	A75	Area 71, Room 713.0-A19	II-29A	1.5 Hours
713.0-A1C	A68	Area 8, 713.0-A11	II-29A	1.5 Hours
	A69	Area 8, 713.0-A12	II-29A	1.5 Hours
	A71	Area 8, 713.0-A15	II-29A	1.5 Hours
	A72	Area 8, 713.0-A16	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A1A	1-ISD-31-3803 47A381-443F	Area 15-1, Room 737.0-A3	47W866-2 47W920-18	3 Hours
	1-ISD-31-3804 47A381-400F	Area 9, Room 713.0-A6	47W866-2 47W920-4	3 Hours
	1-ISD-31-3995 47A381-651F	Area 1, Room 692.0-A1	47W866-2 47W920-18	3 Hours
	1-ISD-31-3996 47A381-652F	Area 14, Room 737.0-A1	47W866-2 47W920-5,7	3 Hours
	1-ISD-31-5150 47A381-726	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours
	1-ISD-31-5444A 47A381-769	Area 1, Room 692.0-A1	47W866-11 47W920-3	3 Hours
	1-ISD-31-5444B 47A381-769	Area 1, Room 692.0-A1	47W866-2 47W920-3	3 Hours
	1-ISD-31-5444C 47A381-769	Area 1, Room 692.0-A1	47W866-2 47W920-3	3 Hours
713.0-A1B	2-ISD-31-3869 47A381-443F	Area 15-2, Room 737.0-A12	47W866-11 47W920-18	3 Hours
	2-ISD-31-3871 47A381-403F	Area 71, Room 713.0-A19	47W866-11 47W920-4	3 Hours
	2-ISD-31-3988 47A381-651F	Area 1, Room 692.0-A1	47W866-11 47W920-2,3	3 Hours
	2-ISD-31-5444A 47A381-769	Area 1, Room 692.0-A1	47W866-11 47W920-3	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A1C	2-ISD-31-5444B 47A381-769	Area 1, Room 692.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5444C 47A381-769	Area 1, Room 692.0-A1	47W866-11 47W920-3	3 Hours
	2-ISD-31-5447A 47A381-773	Area 14, Room 737.0-A1	47W866-11 47W920-4	3 Hours
	2-ISD-31-5447B 47A381-773	Area 14, Room 737.0-A1	47W866-11 47W920-4	3 Hours
	2-ISD-31-5445 47A381-772	Area 1, Room 692.0-A1	47W866-11 47W920-2	3 Hours
	1-ISD-31-5446 47A381-770	Area 1, Room 692.0-A1	47W866-2 47W920-2	3 Hours

Detection: Rooms 713.0-A9, A10, A17, A18, A23, A24, A25, and A26 do not have detection. Room 713.0-A1 is provided with ionization smoke detectors. Room 713.0-A22 is enclosed by part-height walls with no ceiling; as a result, detection coverage in room 713.0-A1 also provides coverage for room 713.0-A22. Room 713.0-A27 is provided with ionization smoke detection.

Suppression: Automatic sprinklers are provided for room 713.0-A1 and 713.0-A27 (Suppression in 713.0-A1 does not extend over Boric Acid equipment). No automatic suppression provided in the other rooms. Room 713.0-A22 is enclosed by part-height walls with no ceiling; as a result, suppression coverage in room 713.0-A1 also provides coverage for room 713.0-A22. Standpipe and hose stations are provided for all these rooms from 713.0 A1.

Deviations: Intervening combustibles in the form of insulation on cables routed in cable trays and ERFBS are present, but are compensated for by an enhanced automatic preaction sprinkler system. Justification is documented in Part VII, Section 2.4 (713.0-A1). The CCS pumps are separated by a partial 1 hour fire barrier. Justification is documented in Part VII, Section 2.5 (713.0-A1). The floor slabs at elevation 713.0 and 737.0 have stairwells that are protected with draft stops and water curtains in lieu of enclosed stairwells. Justification is documented in Part VII, Section 2.6.3.1. There is a 12 inch round spiral welded HVAC duct that penetrates the floor of 713.0-A1B. The duct continues through the ceiling of 713.0-A1B onto elevation 737. The penetrations are not provided with fire dampers. This duct is part of the Emergency Gas Treatment System (EGTS). Spiral welded pipe is treated like a pipe and is provided with fire rated seals between the pipe and the sleeve. Justification is documented in Part VII, Section 2.6.3.2.a. A non-rated personnel hatch in Room 713.0-A1 is justified in Part VII, Section 2.6.3.4. No deviations are applicable for Rooms 713.0-A9, A10, A17, A18, A22, A23, A24, A25, A26 and A27.

Evaluations: The lack of total area suppression in 713.0-A1 over the boric acid transfer pumps, tanks and filters (column lines A11.5-A14/Q-R) is documented in Part VII, Section 3.1.2. The other portions of Fire Area 8 that are not provided with total area suppression and detection are documented in Part VII, Section 3.1.2 for Rooms 713.0-A1, -A9, -A10, -A17, -A18, -A23, -A24, -A25, and -A26. The feasibility and reliability evaluations for Unit 2 Operator Manual

Actions are documented in Part VII, Sections 8.3.4, 5, 63 and 64 for room 713.0-A1 and 8.3.6, 63, and 64 for Room 713.0-A27.. No evaluations are applicable to room 713.0-A22.

3.12.2 Rooms 713.0-A13, A14, and A31

Room No.	Description:
713.0-A13	Sample Room 1
713.0-A14	Sample Room 2
713.0-A31	Waste Gas Analyzer Room

Fire Loading: The combustibles in Sample Room 1 (713.0-A13) consist of lube oil in a chiller, valve and radiation monitor, plastic associated with electrical panels, boxes and lights, and anticipated amounts of radwaste trash and laundry and a wood countertop. The fire severity is classified as low. The combustibles in the Waste Gas Analyzer Room (713.0-A31) consist of plastic associated with electrical panels. The fire severity is classified as insignificant. The combustibles in Sample Room 2 (713.0-A14) consist of lube oil in a chiller and valve, plastic associated with electrical panels, boxes and lights, and anticipated amounts of radwaste trash and laundry and a wood countertop. The fire severity is classified as insignificant.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A13	North and West Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
	South Wall	Area 8, Room 713.0-A12	II-29A	2 Hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
713.0-A14	North and East Walls	Area 65, Room 713.0-A29	II-29A	2 Hours
	South Wall	Area 8, Room 713.0-A15	II-29A	2 Hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A17 Area 1, Room 692.0-A18	II-28A, II-29A II-28A, II-29A	2 Hours 2 Hours
713.0- A31	North Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
	Floor	Area 1, Room 692.0-A17	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A13	A91	Area 1, Room 713.0-A28	II-29A	1.5 Hours
713.0-A14	A92	Area 65, Room 713.0-A29	II-29A	1.5 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the sample rooms. The Waste Gas Analyzer room is not provided with detection.

Suppression: Automatic preaction sprinkler systems are provided in the sample rooms. The Waste Gas Analyzer room is not provided with suppression. A standpipe and hose station is available from the room 713.0-A1.

Deviations: None.

Evaluations: The lack of total area suppression and detection in the Waste Gas Analyzer rooms is documented in Part VII, Section 3.1.2 for room 713.0-A31.

3.12.3 Rooms 713.0-A2, A3, A4, A5, and A30

Room No.	Description:
713.0-A2	Air Lock
713.0-A3	Titration Room
713.0-A4	Radio Chemical Lab
713.0-A5	Counting Room
713.0-A30	Air Lock

Fire Loading: The combustibles in the Air Lock (713.0-A2) consist of plastics associated with junction boxes and a lighting unit and anticipated amounts of radwaste trash and laundry. The combustibles in the Titration Room (713.0-A3) consist of lube oil in two pumps, plastic associated with electrical panels and other plastics, rubber and paper. The combustibles in the Radio Chemical Lab (713.0-A4) consist of lube oil in a pump, miscellaneous plastic, rubber, wood, and paper, and anticipated amounts of radwaste trash and laundry, and miscellaneous combustibles in a liquid storage cabinet and diesel fuel. The combustibles in the Counting Room (713.0-A5) consist of miscellaneous plastic, paper and wood. The fire severity for these rooms is classified as low. The fire severity in the Air Lock (713.0-A30) is classified as insignificant.

Compartmentation: These rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A2	East Wall	Area 8, Room 713.0-A1	II-29A	3 Hours
713.0-A3	East Wall	Area 8, Room 713.0-A1	II-29A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A4	East Wall	Area 8, Room 713.0-A1	II-29A	3 Hours
713.0-A5	North Wall	Area 9, Room 713.0-A6	II-29A	3 Hours
	East Wall	Area 8, Room 713.0-A1	II-29A	3 Hours
713.0-A30	North, East, South Wall	Area 8, Room 713.0-A1	II-29A	3 Hours
	Ceiling	Area 8, Room 713.0-A1	II-29A	3 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A2	A57	Area 8, Room 713.0-A1	II-29A	3 Hours
713.0-A30	A60	Area 8, Room 713.0-A1	II-29A	3 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in all of these rooms except in the 713.0-A30 Airlock. Room 713.0-A2 contains one of two cross-zoned detectors.

Suppression: Automatic sprinklers are provided in all of these rooms except in the 713.0-A30 Airlock. Room 713.0-A3 does not have coverage inside the large instrument panel. Standpipe and hose stations are provided from the adjacent room (Corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection in the Air Lock (713.0-A30) is documented in Part VII, Section 3.1.2.

3.12.4 Rooms 713.0-A24, A25, A26, and A27

Room No.	Description:
713.0-A24	Waste Gas Compressor Valve Gallery
713.0-A25	Waste Gas Compressor B
713.0-A26	Waste Gas Compressor A
713.0-A27	Decontamination Room

Fire Loading: The combustibles in the Waste Gas Compressor rooms consist of lube oil in the compressors, plastic associated with panels and lights, and anticipated amounts of radwaste trash and laundry. The fire severity in 713.0-A25 and -A26 are classified as low. The fire severity is insignificant in 713.0-A24. The fire severity in the Decontamination Room (Room 713.0-A27) consists of plastic associated with electrical panels, equipment, lights and temporary shielding blankets is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A24	Floor	Area 1, Room 676.0-A2	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A3	II-28A, II-29A	2 Hours
713.0-A25	South Wall	Area 48, Room 708.0-C1	II-29A, II-33A	3 Hours
	Floor	Area 1, Room 676.0-A2	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A3	II-28A, II-29A	2 Hours
713.0-A26	South Wall	Area 48, Room 708.0-C1	II-29A, II-33A	3 Hours
	Floor	Area 1, Room 692.0-A3	II-28A, II-29A	2 Hours
713.0-A27	South Wall	Area 48, Room 708.0-C1	II-29A, II-33A	3 Hours
		Area 48, Room 729.0-C1	II-29A, II-34A	3 Hours
		Area 63, Turbine Building	II-29A, II-33A	3 Hours
	Ceiling	Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A5	II-28A, II-29A	2 Hours

Doors: None.

Dampers: None.

Detection: The Decontamination Room (713.0-A27) is provided with ionization smoke detectors. The remaining rooms are not provided with detection systems.

Suppression: The Decontamination Room (713.0-A27) is provided with automatic sprinklers. The remaining rooms are not provided with suppression systems. Standpipe and hose stations are provided in the adjacent room (Corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.2 for rooms 713.0-A24, -A25, and -A26. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.6, 63 and 64 for room 713.0-A27.

3.12.5 Room 713.0-A11

Description: Heat Exchanger 1B

Fire Loading: The combustibles consist of lube oil in four valves, plastic associated with lights, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A11	North Wall	Area 8, Room 713.0-A12	II-29A	2 Hours
	South Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
		Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 8, Room 713.0-A10	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A7	II-30A	2 Hours
	East Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	West Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
	Ceiling	Area 10, Room 757.0-A13	II-29A, II-31A	2 Hours
		Area 14, Room 737.0-A7	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1, Room 692.0-A12	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A13	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A11	A68	Area 8, Room 713.0-A1	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A11	1-ISD-31-3815 47A381-407F	Area 1, Room 713.0-A28	47W866-2 47W920-5	3 Hours

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.2.

3.12.6 Room 713.0-A12

Description: Heat Exchanger 1A

Fire Loading: The combustibles consist of lube oil in three valves, plastic associated with lights, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A12	North Wall	Area 8, Room 713.0-A13	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	South Wall	Area 8, Room 713.0-A11	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A1	II-29A	2 Hours
	East Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	West Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
	Ceiling	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
		Area 10, Room 757.0-A13	II-29A, II-31A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A12	A69	Area 8, Room 713.0-A1	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A12	1-ISD-31-3816	Area 1, Room 713.0-A28	47W866-2	3 Hours
	47A381-407		47W920-5	

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.2.

3.12.7 Room 713.0-A16

Description: Heat Exchanger 2B

Fire Loading: The combustibles consist of lube oil in four valves, plastic associated with lights, and anticipated amounts of radwaste trash and laundry and miscellaneous plastic and rubber items for outage work. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A16	North Wall	Area 8, Room 713.0-A15	II-29A	2 Hours
	South Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
		Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 8, Room 713.0-A17	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A8	II-30A	2 Hours
	West Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	East Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
	Ceiling	Area 10, Room 757.0-A13	II-29A, II-31A	2 Hours
		Area 14, Room 737.0-A8	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A1	II-29A, II-30A	2 Hours
	Floor	Area 1-1, Room 692.0-A20	II-28A, II-29A	2 Hours
		Area 1-2, Room 692.0-A19	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A16	A72	Area 8, Room 713.0-A1	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A16	2-ISD-31-3874	Area 65, Room 713.0-A29	47W866-11	3 Hours
	47A381-407F		47W920-5	

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.2.

3.12.8 Room 713.0-A15

Description: Heat Exchanger 2A

Fire Loading: The combustibles consist of lube oil in three valves, plastic associated with lights, and anticipated amounts of radwaste trash and laundry and miscellaneous plastic and rubber items for outage work. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A15	North Wall	Area 8, Room 713.0-A14	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	South Wall	Area 8, Room 713.0-A16	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A1	II-29A	2 Hours
	West Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	East Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
		Area 74, Room 737.0-A9	II-30A	2 Hours
	Floor	Area 1, Room 692.0-A1	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A17	II-28A, II-29A	2 Hours
		Area 1, Room 692.0-A18	II-28A, II-29A	2 Hours
	Ceiling	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 10, Room 757.0-A13	II-29A, II-31A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A15	A71	Area 8, Room 713.0-A1	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A15	2-ISD-31-3873	Area 1, Room 713.0-A29	47W866-11	1.5 Hours
	47A381-407		47W920-5	

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.2.

3.12.9 Fire Area 8 Safe Shutdown Analysis by Analysis Volume**3.12.9.1 AV-021**

Room No.	Description:
713.0-A1A1	Corridor, Col Lines S-U/A1-A4, ceiling level only S-CCS Wall/A1-A3
713.0-A9	Unit 1 Mixed Bed and Cation Valve Gallery

A fire in Analysis Volume 21 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control and reactor coolant inventory control functions and Unit 1 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-51-S	692-A6	OPERATE	1-HS-46-56B	13
1-FCV-1-51-S	692-A1A1	TURBINE MUST OPERATE	1-XS-46-57, 1- XS-46-57A	13
1-FCV-1-52	692-A1A1	TRANSFER DC POWER FOR TDAFWP VALVES	1-XSW-46-DC-S	13
1-FCV-1-52	692-A1A1	TRANSFER AC POWER FOR TDAFWP VALVES	1-XSW-46-AC-S	13
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-LCV-62-133-B	713-A7	CLOSE	HANDWHEEL	70
1-LCV-62-133-B	772-A2	MUST CLOSE	1-BKR-62-133-B	70
1-FCV-3-136A-A	772-A1	MUST OPEN	1-BKR-3-136A-A	125
1-FCV-3-136A-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-136B-A	772-A1	MUST OPEN	1-BKR-3-136B-A	125
1-FCV-3-136B-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-MTR-67-10-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-10-B	757-A5	MUST OPERATE	1-BKR-67-10B/1- B	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST CLOSE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	CLOSE	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-176-B	757-A5	MUST OPERATE	PROCEDURE (INSTALL JUMPERS) REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-FSV-77-2561	755-C12	CLOSE	1-HS-77-2561A	13
1-LCV-3-173	755-C12	MUST OPERATE	1-LIC-3-173A	13
1-LCV-3-174	755-C12	MUST OPERATE	1-LIC-3-174A	13
1-MTR-3-118-A	755-C12	TRIP	1-HS-3-118A-A	13
1-MTR-3-128-B	755-C12	TRIP	1-HS-3-128A-B	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL4735S	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
1PL4736S	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
1PM1086F	1-LI-68-320-F	PZR LEVEL INDICATOR
1PM1223F	1-LI-3-43A	#1SG LEVEL INDICATOR (WR)
1PM1232G	1-LI-3-56A	#2SG LEVEL INDICATOR (WR)
1PM1807F	1-TI-74-25	RHR HX-B INLET TEMPERATURE
1PM3870D	1-LI-63-50, 1-LT-63-50	RWST LEVEL INDICATOR, RWST

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP550A	1-BKR-62-108-A-OCT, 1-MTR-62-108-A	LEVEL TRANSMITTER CC PMP 1A-A BREAKER OCT, CENTRIFUGAL CHARGING PUMP 1A-A
1V2633B	1-FCV-1-18-B, 1-FCV-1-18-B-P	STEAM FLOW TO AUX FWPT ISOLATION VALVE, STEAM FLOW TO AUX FWPT ISOLATION VALVE
2PL4725A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4726A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A

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Room No.	Description:
713.0-A1A2	Corridor, Col Lines S-U/A1-A4, Ceiling level only CCS Wall-U/A1-A3
713.0-A9	Unit 1 Mixed Bed and Cation Valve Gallery

A fire in Analysis Volume 22 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control, reactor coolant inventory control functions and MCR HVAC functions and Unit 1 containment HVAC. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and post fire repairs. The following is an exception to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The control cables for CCS Pumps 1A/2A and 1B/2B are protected such that there is greater than 20 feet separation between the two different train pumps to ensure that A train CCS header is available for both units. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
	PUMP 1A-A	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL	KEY 12 P 1 KEY 16 P 1
	DOWN	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-51-S	692-A1A1	MUST OPERATE	1-XS-46-57, 1- XS-46-57A	13
1-FCV-1-51-S	692-A6	OPERATE	1-HS-46-56B	13
1-FCV-1-52	692-A1A1	TURBINE TRANSFER DC POWER FOR TDAFWP VALVES	1-XSW-46-DC-S	13
1-FCV-1-52	692-A1A1	TRANSFER AC POWER FOR TDAFWP VALVES	1-XSW-46-AC-S	13
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-LCV-62-133-B	772-A2	MUST CLOSE	1-BKR-62-133-B	70
1-LCV-62-133-B	713-A7	CLOSE	HANDWHEEL	70
1-FCV-3-136A-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-136A-A	772-A1	MUST OPEN	1-BKR-3-136A-A	125
1-FCV-3-136B-A	772-A1	MUST OPEN	1-BKR-3-136B-A	125
1-FCV-3-136B-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-MTR-67-10-B	757-A5	MUST OPERATE	1-BKR-67-10B/1- B	720
1-MTR-67-10-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-10-A	737-A1A	OPEN	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-70-64-B	713-A1A2	OPEN	HANDWHEEL	1140
1-FCV-70-74-B	713-A1A2	OPEN	HANDWHEEL	1140
1-FCV-70-9-B	737-A1A	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-FSV-77-2561	755-C12	CLOSE	1-HS-77-2561A	13
1-LCV-3-173	755-C12	MUST OPERATE	1-LIC-3-173A	13
1-LCV-3-174	755-C12	MUST OPERATE	1-LIC-3-174A	13
1-MTR-3-118-A	755-C12	TRIP	1-HS-3-118A-A	13
1-MTR-3-128-B	755-C12	TRIP	1-HS-3-128A-B	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-94-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
0-FCV-70-197-A	755-C12	CLOSE CLOSE	0-HS-70-197A-A	1140

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3001A	1-MTR-30-183-A	CCP 1A-A ROOM COOLER FAN
1PL3003A	1-MTR-30-183-A	CCP 1A-A ROOM COOLER FAN
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PM1086F	1-LI-68-320-F	PZR LEVEL INDICATOR
1PM1223F	1-LI-3-43A	#1SG LEVEL INDICATOR (WR)
1PM1232G	1-LI-3-56A	#2SG LEVEL INDICATOR

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1807F	1-TI-74-25	(WR) RHR HX-B INLET TEMPERATURE
1PM3870D	1-LI-63-50, 1-LT-63-50	RWST LEVEL INDICATOR, RWST LEVEL TRANSMITTER
1PP550A	1-BKR-62-108-A-OCT, 1-MTR- 62-108-A	CC PMP 1A-A BREAKER OCT, CENTRIFUGAL CHARGING PUMP 1A-A
1V2633B	1-FCV-1-18-B, 1-FCV-1-18-B-P	STEAM FLOW TO AUX FWPT ISOLATION VALVE, STEAM FLOW TO AUX FWPT ISOLATION VALVE
2PL4742B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B
2PL4743B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B

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Room No.	Description:
713.0-A1A3	Corridor, Column Lines Q-CCS Wall/A1-A4
713.0-A24	Waste Gas Compressor Valve Gallery
713.0-A25	Waste Gas Compressor B
713.0-A26	Waste Gas Compressor A
713.0-A27	Decontamination Room

A fire in Analysis Volume 23 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, MCR & containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-51-S	692-A6	OPERATE	1-HS-46-56B	13
1-FCV-1-51-S	692-A1A1	TURBINE MUST OPERATE	1-XS-46-57, 1- XS-46-57A	13
1-FCV-1-52	692-A1A1	TRANSFER DC POWER FOR TDAFWP VALVES	1-XSW-46-DC-S	13
1-FCV-1-52	692-A1A1	TRANSFER AC POWER FOR TDAFWP VALVES	1-XSW-46-AC-S	13
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-LCV-62-133-B	713-A7	CLOSE	HANDWHEEL	70
1-LCV-62-133-B	772-A2	MUST CLOSE	1-BKR-62-133-B	70
1-FCV-3-136A-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-136A-A	772-A1	MUST OPEN	1-BKR-3-136A-A	125
1-FCV-3-136B-A	772-A1	MUST OPEN	1-BKR-3-136B-A	125
1-FCV-3-136B-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-10-B	757-A5	MUST OPERATE	1-BKR-67-10B/1- B	720
1-MTR-67-10-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-10-A	737-A1A	OPEN	HANDWHEEL	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-70-64-B	713-A1A2	OPEN	HANDWHEEL	1140
1-FCV-70-74-B	713-A1A2	OPEN	HANDWHEEL	1140
1-FCV-70-9-B	737-A1A	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-33-A	713-A12	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-33-A	713-A15	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-FSV-77-2561	755-C12	CLOSE	1-HS-77-2561A	13
1-LCV-3-173	755-C12	MUST OPERATE	1-LIC-3-173A	13
1-LCV-3-174	755-C12	MUST OPERATE	1-LIC-3-174A	13
1-MTR-3-118-A	755-C12	TRIP	1-HS-3-118A-A	13
1-MTR-3-128-B	755-C12	TRIP	1-HS-3-128A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-85-A	755-C12	CLOSE MUST NOT	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	CLOSE MUST NOT	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	CLOSE MUST NOT	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	120
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	1140
2-FCV-70-153-B	755-C12	CLOSE	2-HS-70-153A-B	1140

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3001A	1-MTR-30-183-A	CCP 1A-A ROOM COOLER FAN
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PM1086F	1-LI-68-320-F	PZR LEVEL INDICATOR
1PM1223F	1-LI-3-43A	#1SG LEVEL INDICATOR (WR)
1PM1232G	1-LI-3-56A	#2SG LEVEL INDICATOR (WR)
1PM1807F	1-TI-74-25	RHR HX-B INLET TEMPERATURE
1PM3870D	1-LI-63-50, 1-LT-63-50	RWST LEVEL INDICATOR, RWST LEVEL TRANSMITTER
1PP550A	1-BKR-62-108-A-OCT, 1-MTR-62-108-A	CC PMP 1A-A BREAKER OCT, CENTRIFUGAL CHARGING PUMP 1A-A
1V2633B	1-FCV-1-18-B, 1-FCV-1-18-B-P	STEAM FLOW TO AUX FWPT ISOLATION VALVE, STEAM FLOW TO AUX FWPT ISOLATION VALVE

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Room No:	Description:
713.0-A1A4	Corridor, Column Lines Q-U/A3-A8
713.0-A1AN	Corridor, Column Lines Q-U/A6-A8
713.0-A9	Unit 1 Mixed Bed and Cation Valve Gallery
713.0-A10	Seal Water Heat Exchanger 1A
713.0-A22	Holdup Tank Valve Gallery
713.0-A23	CVCS Valve Gallery
713.0-A24	Waste Gas Compressor Valve Gallery
713.0-A25	Waste Gas Compressor B
713.0-A26	Waste Gas Compressor A

A fire in Analysis Volume 24 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, MCR HVAC, steam generator inventory control, and reactor coolant inventory control and functions and Unit 1 containment HVAC. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and Unit 1 and Unit 2 manual operation of equipment required for safe shutdown and post fire repairs. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 1B-B	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-51-S	692-A6	OPERATE TURBINE	1-HS-46-56B	13
1-FCV-1-51-S	692-A1A1	MUST OPERATE	1-XS-46-57, 1- XS-46-57A	13
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-ISV-62-535	692-A10	MODULATE VALVE	HANDWHEEL	60
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-FCV-3-136A-A	772-A1	MUST OPEN	1-BKR-3-136A-A	125
1-FCV-3-136A-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-136B-A	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-136B-A	772-A1	MUST OPEN	1-BKR-3-136B-A	125
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	713-A1AN	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST CLOSE	1-BKR-70-153-B	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-28	713-A11	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	713-A12	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-TI-74-27	713-A11	MONITOR	LOCAL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-11-B	772-A15	TEMPERATURE MUST NOT OPEN	INDICATOR 2-BKR-63-11-B	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-74-28	713-A16	OPEN	VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
1-FSV-77-2561	755-C12	CLOSE	1-HS-77-2561A	13
1-LCV-3-173	755-C12	MUST OPERATE	1-LIC-3-173A	13
1-LCV-3-174	755-C12	MUST OPERATE	1-LIC-3-174A	13
1-MTR-3-118-A	755-C12	TRIP	1-HS-3-118A-A	13
1-MTR-3-128-B	755-C12	TRIP	1-HS-3-128A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	70
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-90-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCO-30-94-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3001A	1-MTR-30-183-A	CCP 1A-A ROOM COOLER FAN
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PM1008F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM1086F	1-LI-68-320-F	PZR LEVEL INDICATOR

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1223F	1-LI-3-43A	#1SG LEVEL INDICATOR (WR)
1PM1232G	1-LI-3-56A	#2SG LEVEL INDICATOR (WR)
1PM1807F	1-TI-74-25	RHR HX-B INLET TEMPERATURE
1PM3870D	1-LI-63-50, 1-LT-63-50	RWST LEVEL INDICATOR, RWST LEVEL TRANSMITTER
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE
1PP550A	1-BKR-62-108-A-OCT, 1-MTR-62-108-A	CC PMP 1A-A BREAKER OCT, CENTRIFUGAL CHARGING PUMP 1A-A

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Room No.	Description:
713.0-A1AN	Corridor, Column Lines Q-U/A6-A8
713.0-A1BN	Corridor, Column Lines Q-U/A8-A10
713.0-A22	Holdup Tank Valve Gallery
713.0-A23	CVCS Valve Gallery

A fire in Analysis Volume 25 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control, reactor coolant inventory control and Unit 1 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
	PUMP 1B-B	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 2A-A	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST CLOSE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	CLOSE	HANDWHEEL	1140
1-FCV-70-156-A	713-A1A	OPEN	HANDWHEEL	1140
1-FCV-70-156-A	772-A1	MUST OPEN	1-BKR-70-156-A	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-70-153-B	772-A15	MUST OPEN	2-BKR-70-153-B	1140
2-FCV-70-153-B	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-28	713-A16	OPEN	VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-PCV-3-132-B	755-C12	MODULATE	2-PDIC-3-132A	13
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	70
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1041D	1-LI-68-339A-D	PZR LEVEL INDICATOR
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE

3.12.9.6 AV-025C

Room No.	Description:
713.0-A1AN	Corridor, Column Lines Q-U/A6-A8
713.0-A1BN	Corridor, Column Lines Q-U/A8-A10
713.0-A1C	Corridor, Column Lines U-W/A7-A9
713.0-A10	Seal Water Heat Exchanger 1A
713.0-A17	Seal Water Heat Exchanger 2A
713.0-A22	Holdup Tank Valve Gallery
713.0-A23	CVCS Valve Gallery

This AV is analyzed to address the interface between 713.0-A1C and 713.0-A1AN and 713.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).

A fire in Analysis Volume 25C could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control, reactor coolant inventory control and Unit 1 containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire, manual operation of Unit 1 and Unit 2 equipment required for safe shutdown, and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-62-108-A	MOTOR COOLER 1C-A	KEY 1 PATH 1
1-MTR-70-38-B	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-10-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST CLOSE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	CLOSE	HANDWHEEL	1140
1-FCV-70-156-A	713-A1A	OPEN	HANDWHEEL	1140
1-FCV-70-156-A	772-A1	MUST OPEN	1-BKR-70-156-A	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-70-153-B	772-A15	MUST OPEN	2-BKR-70-153-B	1140
2-FCV-70-153-B	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-28	713-A16	OPEN	VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-MTR-30-176-B	757-A24	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A13.	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-PCV-3-132-B	755-C12	MODULATE	2-PDIC-3-132A	13
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	70
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE

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Room No.	Description:
713.0-A1B	Corridor, Column Lines Q-U/A10-A15
713.0-A1BN	Corridor, Column Lines Q-U/A8-A10
713.0-A17	Seal Water Heat Exchanger 2A
713.0-A18	Unit 2 Mixed Bed and Cation Valve Gallery
713.0-A22	Holdup Tank Valve Gallery
713.0-A23	CVCS Valve Gallery

A fire in Analysis Volume 26 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, MCR & containment HVAC, steam generator inventory control, reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown, and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

AV-026

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
1-MTR-62-104-B	MOTOR COOLER 1B-B CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-51-S	692-A26	MUST OPERATE	2-HS-46-56B	13
2-FCV-1-51-S	692-A1B1	MUST OPERATE	2-XS-46-57, 2- XS-46-57A	13
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
2-MTR-81-7	757-A24	MUST BE TRIPPED	2-BKR-81-007-B	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-ISV-62-535	692-A22	MODULATE VALVE	HANDWHEEL	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
2-FCV-62-1228-A	757-A23	CLOSE VALVE	2-HS-62-1228-A	70
2-FCV-3-136A-A	692-A26	OPEN	HANDWHEEL	125
2-FCV-3-136A-A	772-A16	MUST OPEN	2-BKR-3-136A-A	125
2-FCV-3-136B-A	692-A26	OPEN	HANDWHEEL	125
2-FCV-3-136B-A	772-A16	MUST OPEN	2-BKR-3-136B-A	125
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-MTR-67-9-A	757-A21	MUST OPERATE	2-BKR-67-9C-A	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-63-93-A	772-A16	MUST NOT	2-BKR-63-93-A	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		CLOSE		
2-FCV-63-93-A	713-A29	OPEN VALVE	HANDWHEEL	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-72-40-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-72-40-A	772-A16	MUST NOT OPEN	2-BKR-72-40-A	1140
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-9-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-HS- 74-9-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140
2-ISV-70-705	692-A25	CLOSE	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-TI-74-15	713-A15	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-LCV-62-135-A	755-C12	OPEN	2-HS-62-135A-A	4
2-FSV-77-2561	755-C12	CLOSE	2-HS-3-164A	13
2-LCV-3-172	755-C12	MODULATE VALVE	2-LIC-3-172A	13
2-LCV-3-174	755-C12	MODULATE VALVE	2-LIC-3-174A	13
2-MTR-3-118-A	755-C12	TRIP	2-HS-3-118A-A	13
2-MTR-3-128-B	755-C12	TRIP	2-HS-3-128A-B	13
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A

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Room No.	Description:
713.0-A1C	Corridor, Column Lines U-W/A7-A9
713.0-A13	Sample Room 1
713.0-A14	Sample Room 2
713.0-A31	Waste Gas Analyzer Room

A fire in Analysis Volume 26A could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal and reactor inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	713-A15	OPEN/CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN/CLOSE	HANDWHEEL	1140
2-TI-74-15	713-A15	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Room No.	Description:
713.0-A2	Air Lock
713.0-A3	Titration Room
713.0-A4	Radio Chemical Lab
713.0-A5	Counting Room
713.0-A30	Air Lock

A fire in Analysis Volume 27 does not result in the loss of safe shutdown functions. No damage to other safe shutdown equipment is expected. The specific equipment affected and credited is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Room No.	Description:
713.0-A11	Heat Exchanger 1B

A fire in Analysis Volume 28 could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.12.9.11 AV-029

Room No.	Description:
713.0-A12	Heat Exchanger 1A

A fire in Analysis Volume 29 could potentially affect systems and components necessary to maintain the long term decay heat removal function for Unit 1. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment credited are identified below:

AV-029

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.12.9.12 AV-108

Room No.	Description:
713.0-A15	Heat Exchanger 2A

A fire in Analysis Volume 108 could potentially affect systems and components necessary to maintain the long term decay heat removal function for Unit 2. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.12.9.13 AV-109

Room No.	Description:
713.0-A16	Heat Exchanger 2B

A fire in Analysis Volume 109 could potentially affect systems and components necessary to maintain the long term decay heat removal function for Unit 2. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

AV-109

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-TI-74-15	713-A15	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.13 FIRE AREA 9**3.13.1 Room 713.0-A6**

Description: Unit 1 Penetration Room

Fire Loading: The combustibles consist of lube oil and grease in a valve and air handling unit, ERFBS Thermo-Lag, charcoal in an air exhaust filter assembly, plastics associated with electrical panels, radiation monitors and lights, insulation on cables in cable trays, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A6	North Wall	Area 9-1, Room 713.0-A7	II-29A	2 Hours
		Area 61, Unit 1 Reactor Bldg	II-29A	3 Hours
		Area 1, Room 713.0-A28	II-29A	2 Hours
	South Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 8, Room 713.0-A5	II-29A	3 Hours
		Area 9-1, Room 713.0-A7	II-29A	2 Hours
	East Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
		Area 9-1, Room 713.0-A7	II-29A	2 Hours
	West Wall	Area 12, Room 729.0-A1	II-29A, II-30A	2 Hours
		Area 5, Room 692.0-A7	II-28A, II-29A	2 Hours
	Floor	Area 12, Room 729.0-A1	II-29A, II-30A	2 Hours
	Ceiling	Area 12, Room 737.0-A6	II-29A, II-30A	2 Hours
		Area 16, Room 737.0-A5	II-29A, II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A6	A62	Area 8, Room 713.0-A1	II-29A	1.5 Hours
	A63	Area 9-1, Room 713.0-A7	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A6	1-ISD-31-3804 47A381-400F	Area 8, Room 713.0-A1	47W866-2 47W920-4	3 Hours
	1-ISD-31-3923 47A381-408F	Area 1, Room 713.0-A28	47W866-8 47W920-4	3 Hours
	1-ISD-31-3925 47A381-397F	Area 5, Room 692.0-A7	47W866-8 47W920-2, 4	3 Hours
	1-ISD-31-3976 47A381-331	Area 9-1, Room 713.0-A7	47W866-2 47W920-4	1.5 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided for the room. Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: Detection and suppression capability is discussed in Part VII, Section 3.1.3. Justification for the lack of fire dampers in the containment purge air system return and exhaust air duct openings to the annulus is documented in Part VII, Section 3.2. Justification of the fire door in this room is documented in Part VII, Section 3.5.

3.13.2 Room 713.0-A8

Description: Unit 1 Reactor Building Access Room

Fire Loading: The combustibles consist of plastic associated with electrical panels and boxes and lights and miscellaneous items for outage work. The fire severity is classified as insignificant.

Compartmentation: The Reactor Building Access Room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A8	North Wall	Area 61, Unit 1 Reactor Bldg	II-29A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A8	A65	Area 61, Unit 1 Reactor Bldg	II-29A	3 Hours

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the room.

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.3. .

3.13.3 Fire Area 9 Safe Shutdown Analysis by Analysis Volume**3.13.3.1 AV-030**

Room No.	Description:
713.0-A6	Unit 1 Penetration Room
713.0-A8	Unit 1 Reactor Building Access Room

A fire in Analysis Volume 30 could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal, containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include providing a 1-hour fire barrier for selected cables and manual operation of Unit 1 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-LCV-62-132-A	772-A1	MUST CLOSE	1-BKR-62-132-A	70
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1521F	1-LI-3-52	#2SG LEVEL INDICATOR (NR)
1PM1641F	1-LI-3-94	#3SG LEVEL INDICATOR (NR)

3.14 FIRE AREA 9-1**3.14.1 Room 713.0-A7**

Description: Unit 1 Volume Control Tank (VCT) Room

Fire Loading: The combustibles consist of the hydrogen in the VCT, lube oil in two valves, plastic associated with electrical boxes and lights, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The VCT room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A7	NORTH AND WEST WALLS	Area 9, Room 713.0-A6	II-29A	2 Hours
	SOUTH WALL	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 8, Room 713.0-A9	II-29A	2 Hours
		Area 9, Room 713.0-A6	II-29A	2 Hours
	EAST WALL	Area1, Room 713.0-A28	II-29A	2 Hours
	CEILING	Area 16, Room 737.0-A5	II-29A, II-30A	2 Hours
		Area 9, Room 713.0-A6	II-29A	2 Hours
	FLOOR	Area 1, Room 692.0-A8	II-28A, II-29A	2 Hours
		Area 5, Room 692.0-A7	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A7	A63	Area 9, Room 713.0-A6	II-29A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A7	1-ISD-31-3805	Area 1, Room 713.0-A28	47W866-2	3 Hours
	47A381-401F		47W920-4	
	1-ISD-31-3976	Area 9, Room 713.0-A	47W866-2	1.5 Hours
	47A381-331		47W920-4	

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room (except in the entrance labyrinth). Standpipe and hose stations are provided from the adjacent room (corridor 713.0-A1).

Deviations: None.

Evaluations: Refer to Part VII, Section 3.1.3a for the evaluation of the lack of full suppression and Part VII, Section 3.5 for the evaluation of the fire damper in the VCT room door. The Unit 1 evaluation for performing a manual action in the room of fire origin is documented in Part VII, Section 7.1.3.2.

3.14.2 Fire Area 9-1 Safe Shutdown Analysis by Analysis Volume**3.14.2.1 AV-031**

Room No.	Description:
713.0-A7	Unit 1 Volume Control Tank (VCT) room

A fire in Analysis Volume 31 could potentially affect Unit 1 systems and components necessary to maintain the reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-LCV-62-132-A	772-A1	MUST CLOSE	1-BKR-62-132-A	70

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.15 FIRE AREA 10

Fire Area 10 consists of several rooms in the Auxiliary Building on elevations 692.0, 729.0, 757.0, and 772.0, and connecting spaces.

3.15.1 Auxiliary Building Elevation 729.0**Description:**

Room No.	Description:
728.0-A7	Cask Decontamination Room
729.0-A6	Nitrogen Storage Area
729.0-A8	Unit 1 Post Accident Sampling Room
729.0-A9	Unit 2 Post Accident Sampling Room
Stair No. 4	Stair No. 4 & Penthouse

Fire Loading: The combustibles consist of lube oil in motors, charcoal in the filter units, and plastic associated with electrical panels and boxes and lights and ERFBS Thermo-Lag. The Fuel Transfer Valve Rooms contain small compressed gas cylinders of hydrogen at concentrations of less than 10 percent by volume. The fire severity, for each of the rooms, is classified as insignificant except 729.0-A8, -A9 which are classified as low.

Compartmentation: The rooms are of reinforced concrete construction. The barriers of the rooms in this fire area have been evaluated in accordance with the guidelines of Appendix A, Section D.1.j. The barrier ratings are adequate for the level of fire hazard (i.e., insignificant fire severity) in the area/rooms.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
728.0-A7	South Wall	Area 10, Spent Fuel Pit	II-38A	2 Hours
	Ceiling (hatch)	Area 10, Room 757.0-A13	II-31A, II-38A	See Part VII Section 2.6
729.0-A6	West Wall	Area 13, Room 729.0-A14	II-38A	3 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours
		Area 10, Spent Fuel Pit	II-38A	2 Hours
		Area 16, Room 729.0-A8	II-30A	2 Hours
	South Wall	Area 10, Spent Fuel Pit	II-38A	2 Hours
		Area 10, Room 737.0-A1	II-30A	2 Hours
	East Wall	Area 73, Room 729.0-A15	II-38A	3 Hours
		Area 10, Spent Fuel Pit	II-30A	2 Hours
		Area 10, Room 729.0-A9	II-30A	2 Hours
		Area 10, New Fuel Storage Vault	II-38A	2 Hours
		Area 74, Room 737.0-A9	II-30A	2 Hours
	Ceiling	Area 10, New Fuel Storage Vault	II-38A	2 Hours
		Area 10, Room 757.0-A13	II-38A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A8	North Wall	Area 13, Room 729.0-A14	II-38A	3 Hours
	South Wall	Area 1, Room 713.0-A28	II-29A	2 Hours
	East Wall	Area 10, Spent Fuel Pit	II-38A	2 Hours
		Area 10, Room 729.0-A6	II-30A, II-38A	2 Hours
	West Wall	Area 61, Unit 1 Reactor Bldg	II-29A	3 Hours
	Ceiling	Area 16, Room 737.0-A5	II-30A, II-38A	2 Hours
		Area 13, Room 737.0-A13	II-29A, II-30A	3 Hours
729.0-A9	North Wall	Area 73, Room 729.0-A15	II-30A, II-38A	3 Hours
	East Wall	Area 77, Unit 2 Reactor Bldg	II-30A	3 Hours
	South Wall	Area 65, Room 713.0-A29	II-38A	2 Hours
	West Wall	Area 10, Spent Fuel Pit	II-30A	2 Hours
		Area 10, Room 729.0-A6	II-30A, II-38A	2 Hours
	Ceiling	Area 74, Room 737.0-A9	II-30A	2 Hours
		Area 73, Room 737.0-A14	II-30A	3 Hours
Stair No. 4	Ceiling, North, East, and South Walls at EL 757	Area 10, Room 757.0-A13	II-38A	2 Hours
	West Wall	Area 13, Room 729.0-A14	II-38A	3 Hours
	West Wall at EL 757	Area 13, Room 763.5-A1	II-38A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Stair No. 4	A173	Area 10, Room 757.0-A13	II-38A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
729.0-A6	0-ISD-31-3823 47A381-510F	Area 1, Room 692.0-A14	47W866-10 47W920-6	3 Hours
	0-ISD-31-3824 47A381-418F	Area 1, Room 692.0-A14	47W866-10 47W920-6	3 Hours
	0-ISD-31-3827	Area 1, Room 692.0-A14	47W866-10	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	47A381-494F		47W920-6	
	0-ISD-31-3833 47A381-426F	Area 74, Room 737.0-A9	47W866-10 47W920-6	3 Hours
	0-ISD-31-3847 47A381-421	Area 16, Room 737.0-A5	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3848 47A381-440	Area 16, Room 737.0-A5	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3849 47A381-419F	Area 16, Room 737.0-A5	47W866-10 47W920-6	3 Hours
	2-ISD-31-3984 47A381-508F	Area 10, Room 729.0-A9	47W866-10 47W920-6	3 Hours
729.0-A8	1-ISD-31-3992 47A381-509F	Area 1, Room 692.0-A14	47W866-10 47W920-6	3 Hours
729.0-A9	2-ISD-31-3984 47A381-508F	Area 10, Room 729.0-A6	47W866-10 47W920-6	3 Hours

Detection: Smoke detection is provided in the Nitrogen Storage room (partial), the two Post Accident Sampling Rooms (except in the entrance corridors), and Stair No. 4 (partial). No detection in Room 728.0-A7.

Suppression: No automatic suppression is provided in Rooms 728.0-A7, 729.0-A6, or Stairwell No.4. Automatic sprinkler systems are provided for the two Post Accident Sampling Rooms (except in the entrance corridors). A standpipe and hose station is provided in the Nitrogen Storage Area.

Deviations: Justification for the HVAC ducts without fire dampers between rooms 729.0-A6, -A8 and -A9 and adjacent fire areas is documented in Part VII, Section 2.6.1. Compliance to III.G.1 with FHA for room 729.0-A6 (see Part VII, Section 2.9.4). No deviations are applicable for Rooms 728.0-A7 and Stair No.4.

Evaluations: The corridors associated with 729.0-A6 have been evaluated for conformance to the guidelines of Appendix A, Section D.1.j and for the lack of suppression and detection. Given the insignificant fire load in the corridors and the 2 and 3 hour ratings of the corridor walls, the design provides an adequate level of fire protection. The lack of total area suppression in room 729.0-A6 is documented in Part VII, Section 3.1.4. The relaxation of fire damper surveillance is documented in Part VII, Section 6.2.2.2 for Room 729.0-A6 and -A8.

3.15.2 Room 729.0-A5

Description: Cask Unloading Area

Fire Loading: The combustibles consist of plastic associated with storage tanks, electrical panels and boxes, and lights and temporary combustibles consisting of fuel oils and tires. The fire severity is classified as low.

Compartmentation: The area is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A5	North Wall	Area 11, Room 729.0-A3	II-38A	2 Hours
		Area 11, Room 729.0-A4	II-38A	2 Hours
	South Wall (partial)	Area 10, Room 741.5	II-38A	2 Hours
	West Wall	Area 13, Room 729.0-A14	II-38A	3 Hours
	East Wall	Area 62, CDWE Building Area 73, Room 729.0-A15	II-38A II-38A	3 Hours 3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
729.0-A5	A111	Area 11, Room 729.0-A4	II-38A	1.5 Hours

Dampers: None.

Detection: Thermal smoke detectors are provided for the area.

Suppression: An automatic preaction sprinkler system is provided for the area.

Deviations: None.

Evaluations: None.

3.15.3 Room 757.0-A13

Description: Refueling Room (Includes 741.5 – New Fuel Storage Vault)

Fire Loading: The combustibles consist of InstaCote, (a plastic type Fuel Transfer Canal coating), lube oil in the compressors and cranes, plastics associated with the electrical equipment, panels and boxes, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The Refueling Area is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A13	North Wall	Area 10, Stair No. 4	II-38A	2 Hours
		Area 11, Room 729.0-A3	II-38A	2 Hours
		Area 11, Room 729.0-A4	II-38A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
		Area 14, Stair No. 3	II-31A	2 Hours
		Area 26, Room 757.0-A11	II-31A	3 Hours
		Area 76 Room 757.0-A15	II-31A	3 Hours
	South Wall	Area 10, Stair No. 4	II-38A	2 Hours
		Area 14, Stair No. 3	II-31A	2 Hours
		Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 26, Room 757.0-A11	II-31A	3 Hours
		Area 31, Room 757.0-A24	II-31A	2 Hours
		Area 32, Room 772.0-A1	II-32A	2 Hours
		Area 46, Room 772.0-A16	II-32A	2 Hours
		Area 76 Room 757.0-A15	II-31A	3 Hours
	East Wall	Area 14, Stair No. 3	II-31A	2 Hours
		Area 31, Room 757.0-A17	II-31A	2 Hours
		Area 73, Room 729.0-A15	II-38A	3 Hours
		Area 75, Room 757.0-A16	II-31A	2 Hours
		Area 76, Room 757.0-A15	II-31A	3 Hours
		Area 75, Room 757.0-A14	II-31A	2 Hours
		Area 73, Room 763.5-A2	II-38A	3 Hours
		Area 75, Room 782.0-A3	II-32A	2 Hours
	West Wall	Area 75, Room 782.0-A4	II-32A	2 Hours
		Area 10, Stair No. 4	II-38A	2 Hours
		Area 13, Room 729.0-A14	II-38A	3 Hours
		Area 13, Room 786.5-A1	II-32A	3 Hours
		Area 14, Stair No. 3	II-31A	2 Hours
		Area 13, Room 763.5-A1	II-31A, II-38A	3 Hours
		Area 17, Room 757.0-A9	II-31A	2 Hours
		Area 25, Room 757.0-A10	II-31A	2 Hours
		Area 25, Room 757.0-A12	II-31A	2 Hours
		Area 26, Room 757.0-A11	II-31A	3 Hours
		Area 25, Room 782.0-A1	II-32A	2 Hours
		Area 39, Room 772.0-A8	II-32A	2 Hours
		Area 25, Room 782.0-A2	II-32A	2 Hours
		Area 13, Room 775.25-A1	II-32A	3 Hours
	Floor	Area 8, Room 713.0-A11	II-30A, II-31A	2 Hours
		Area 8, Room 713.0-A12	II-30A, II-31A	2 Hours
		Area 8, Room 713.0-A15	II-30A, II-31A	2 Hours
		Area 8, Room 713.0-A16	II-30A, II-31A	2 Hours
		Area 10, Room 729.0-A5	II-38A	2 Hours
		Area 10, Room 729.0-A6	II-38A	2 Hours
		Area 10, Stair No. 4*	II-38A	2 Hours
		Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 14, Room 737.0-A7	II-30A, II-31A	2 Hours
		Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 14, Room 737.0-A8	II-30A, II-31A	2 Hours
		Area 14, Stair No. 3*	II-31A	2 Hours
		Area 26, Room 757.0-A11*	II-31A	3 Hours
		Area 76, Room 757.0-A15*	II-31A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
(* Partial height rooms)				

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
741.5	East Wall	Area 73, U2 AEB	II-38A	3 Hours
	South Wall	Area 10, Spent Fuel Pit	II-38A	2 Hours
	West Wall	Area 10, Room 729.0-A6	II-38A	2 Hours
	North Wall	Area 10, Room 729.0-A5	II-38A	2 Hours
	Floor	Area 10, Room 729.0-A6	II-38A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A13	A152	Area 17, Room 757.0-A9	II-31A	1.5 Hours
	A154	Area 14, STAIR No. 3	II-31A	1.5 Hours
	A155	Area 25, Room 757.0-A10	II-31A	1.5 Hours
	A156	Area 25, Room 757.0-A12	II-31A	1.5 Hours
	A157	Area 75, Room 757.0-A14	II-31A	1.5 Hours
	A158	Area 75, Room 757.0-A16	II-31A	1.5 Hours
	A159	Area 31, Room 757.0-A17	II-31A	1.5 Hours
	A173	Area 10, Stair No. 4	II-38A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A13	1-ISD-31-2987 47A381-528F	Area 13, Room 763.5-A1	47W866-8 47W920-7	3 Hours
	2-ISD-31-2990 47A381-528F	Area 73, Room 763.5-A2	47W866-8 47W920-7	3 Hours
	1-ISD-31-3117 47A381-440F	Area 25, Room 782.0-A1	47W866-2 47W920-8	3 Hours
	1-ISD-31-3119 47A381-256F	Area 25, Room 782.0-A1	47W866-2 47W920-9	3 Hours
	0-ISD-31-3836 47A381-433F	Area 75, Room 757.0-A14	47W866-10 47W920-7	3 Hours
	0-ISD-31-3838 47A381-413F	Area 11, Room 729.0-A3	47W866-10 47W920-7	3 Hours
	0-ISD-31-3839 47A381-434F	Area 25, Room 757.0-A12	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3841 47A381-435F	Area 25, Room 757.0-A12	47W866-10 47W920-7	1.5 Hours
757.0-A13	2-ISD-31-3239 47A381-256F	Area 75, Room 782.0-A3	47W866-11 47W920-9	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	2-ISD-31-3240 47A381-253	Area 75, Room 782.0-A3	47W866-11 47W920-10	1.5 Hours
	1-ISD-31-3788 47A381-440F	Area 25, Room 757.0-A10	47W866-2 47W920-8	3 Hours
	2-ISD-31-3885 47A381-439F	Area 75, Room 757-A16	47W866-11 47W920-8	3 Hours
	2-ISD-31-3957 47A381-438	Area 31, Room 757.0-A17	47W866-11 47W920-8	1.5 Hours
	1-ISD-31-3966 47A381-441F	Area 17, Room 757.0-A9	47W866-2 47W920-8	3 Hours
	0-ISD-31-3837 47A381-621F	Area 11, Room 729.0-A4	47W866-10 47W920-6, 7	3 Hours

Detection: None.

Suppression: No automatic suppression is provided. Standpipes and hose stations are provided in adjacent Rooms 757.0-A10 and -A16.

Deviations: The justification for heavy sheet metal ducts and fire doors is documented in Part VII, Sections 2.6.3.2.b and 4.1. The justification for compliance with III.G.1 using a FHA is in Part VII, Section 2.9.10. The justification for lack of detection is documented in Part VII, Section 4.5. The 757.0 floor slab has equipment hatch and elevator door openings that are not provided with fire rated closures. The justification for those openings is documented in Part VII, Section 2.6.3.1.

Evaluations: None.

3.15.4 Room 772.0-A9

Description: HEPA Filter Plenum Room

Fire Loading: The combustibles consist of plastic associated with the lights and insulation on cables in the trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A9	North Wall	Area 75, Room 757.0-A16	II-31A, II-32A	2 Hours
		Area 75, Room 782-A3	II-32A	2 Hours
	South Wall	Area 46, Room 772.0-A16	II-32A	2 Hours

East Wall	Area 40, Room 772.0-A10	II-32A	2 Hours
Floor	Area 31, Room 757.0-A17	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A9	A212	Area 40, Room 772.0-A10	II-32A	1.5 Hours
	A213	Area 40, Room 772.0-A10	II-32A	1.5 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (772.0-A10).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.42, 63 & 64.

3.15.5 Rooms 776.0-A1, 786.0-A1, and 814.75-ACS

Room No.	Description:
776.0-A1	Elevator Machine Room
786.0-A1	Fan Room
814.75-ACS	Stair No. 2 & Penthouse

Fire Loading: The combustibles in the elevator machine room consist of oil and plastic associated with the hoisting machine and plastics associated with telephone and electrical equipment. The fire severity for this room is classified as severe. The combustibles in the fan room include plastic associated with the fans and other electrical equipment. The combustibles in the Stair No. 2 & Penthouse include plastics associated with lights and a telephone. The fire severity for these rooms is classified as insignificant.

Compartmentation: These rooms are of reinforced concrete or reinforced concrete block construction.

Barriers: None.

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided in adjoining spaces.

Deviations: None.

Evaluations: None.

3.15.6 Rooms 692.0-A14, A15 and A16

Room No.	Description:
692.0-A14	Cask Decontamination Collection Tank Room
692.0-A15	Spent Resin Tank Room
692.0-A16	Valve Gallery

Fire Loading: The combustibles consist of small amounts of plastics associated with electrical panels, a sampling station and lights, miscellaneous combustibles in a hot valve cage and anticipated amounts of radwaste trash and laundry. The fire severity is classified as insignificant.

Compartmentation: The only regulatory fire barriers are the east walls to the Unit 2 Pipe Chase and the walls separating 692.0-A14 from 692.0-A1C and the Spent Fuel Pit.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A14	West Wall	Area 10, Spent Fuel Pit	II-28A	2 Hours
	East Wall	Area 65, Room 692.0-A24	II-28A	2 Hours
		Area 10, Spent Fuel Pit	II-28A	2 Hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
		Area 10, Spent Fuel Pit	II-28A	2 Hours
692.0-A15	East Wall	Area 65, Room 692.0-A24	II-28A	2 Hours
692.0-A16	East Wall	Area 65, Room 692.0-A24	II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A14	A33	Area 1, Room 692.0-A1	II-28A	1.5 Hours
	A36	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A14	0-ISD-31-3823 47A381-510F	Area 10, Room 729.0-A6	47W866-10 47W920-6	3 Hours
	0-ISD-31-3824 47A381-418F	Area 10, Room 729.0-A6	47W866-10 47W920-6	3 Hours
	0-ISD-31-3827 47A381-494F	Area 10, Room 729.0-A6	47W866-10 47W920-6	3 Hours
	1-ISD-31-3992 47A381-509F	Area 10, Room 729.0-A8	47W866-10 47W920-6	3 Hours

Detection: Ionization smoke detectors are only provided in 692.0-A14 (except for a portion of the east corridor).

Suppression: Automatic sprinklers are provided in Room 692.0-A14 only. A standpipe and hose station is provided in room 692.0-A14. |

Deviations: None.

Evaluations: The justification for relaxation of penetration seal (692.0-A15) surveillance requirements is documented in Part VII, Section 6.4.2.1. No evaluations are applicable to Rooms 692.0-A14, -A16. |

3.15.7 Fire Area 10 Safe Shutdown Analysis by Analysis Volume**3.15.7.1 AV-032**

Room No.	Description:
Stair No. 4	Stair No. 4 & Penthouse
692.0-A14	Cask Decontamination Collection Tank Room
692.0-A15	Spent Resin Tank Room
692.0-A16	Valve Gallery
728.0-A7	Cask Decontamination Room
729.0-A5	Cask Unloading Area
729.0-A6	Nitrogen Storage Area
729.0-A8	Unit 1 Post Accident Sampling Room
757.0-A13	Refueling Room
772.0-A9	HEPA Filter Plenum Room
776.0-A1	Elevator Machine Room
786.0-A1	Fan Room
814.75-ACS	Stair No. 2 & Penthouse

A fire in Analysis Volume 32 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 MCR HVAC, and steam generator inventory control and the Unit 2 long term decay heat removal, reactor coolant inventory control, containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire protection for Unit 1 selected cables and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. Operator Manual Actions (OMA's) are not required to mitigate fire in room 729.0-A6 or 757.0-A13 per deviation documented in Part VII, section 2.9. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	757-A21	MUST OPERATE	2-BKR-67-9C-A	720
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-3-48	755-C12	CLOSE VALVE	2-FIC-3-48	0
2-FCV-3-48A	755-C12	CLOSE VALVE	2-LIC-3-48A	0
2-FCV-3-90	755-C12	CLOSE VALVE	2-FIC-3-90	0
2-FCV-3-90A	755-C12	CLOSE VALVE	2-LIC-3-90A	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM8766F	1-PI-1-12, 1-PT-1-12-F	#2SG PRESSURE INDICATION, PROTECT SET III - SG LOOP 2
1PM8767F	1-PT-1-23-F, 1-PI-1-23	PROTECT SET III - SG LOOP 3, #3SG PRESSURE INDICATION

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Room No.	Description:
729.0-A9	Unit 2 Post Accident Sampling Room

A fire in Analysis Volume 119 could potentially affect systems and components necessary to maintain the Unit 2 steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features for Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM1480E	2-PI-1-9B, 2-PT-1-27B-E, 2-PT-1-9B-E	#2SG PRESSURE INDICATION, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PM1607E	2-PI-1-20B, 2-PT-1-20B-E, 2-PT-1-2B-E	#3SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP

3.16 FIRE AREA 11**3.16.1 Rooms 729.0-A3 and A4**

Description: Waste Package Areas

Fire Loading: The combustibles in the rooms consist of oil and plastic associated with the crane and plastic associated with control and junction boxes and resin storage tanks. The fire severity for room 729.0-A3 is classified as low, and for room 729.0-A4 is classified as moderate.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A3	South Wall	Area 10, Room 729.0-A5	II-38A	2 Hours
		Area 10, Room 757.0-A13	II-38A	2 Hours
729.0-A4	South Wall	Area 10, Room 729.0-A5	II-38A	2 Hours
		Area 10, Room 757.0-A13	II-38A	2 Hours
	East Wall	Area 62, CDWE Building	II-38A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
729.0-A4	A111	Area 10, Room 729.0-A5	II-38A	1.5 Hours
	DE2	Area 62, CDWE Building	II-38A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
729.0-A3	0-ISD-31-3838 47A381-413F	Area 10, Room 757.0-A13	47W866-10 47W920-6, 7	3 Hours
729.0-A4	0-ISD-31-3837 47A381-621F	Area 10, Room 757.0-A13	47W866-10 47W920-6, 7	3 Hours
	0-ISD-31-2427 47A381-517	Area 62, CDWE Building	47W866-10 47W920-39	1.5 Hours
	0-ISD-31-2429 47A381-517	Area 62, CDWE Building	47W866-10 47W920-39	1.5 Hours

Detection: Ionization detectors are provided for both rooms.

Suppression: Automatic preaction sprinkler systems are provided for both rooms. A standpipe and hose station is provided from 729.0-A.5

Deviations: None.

Evaluations: None.

3.16.2 Fire Area 11 Safe Shutdown Analysis by Analysis Volume**3.16.2.1 AV-033**

Room No.	Description:
729.0-A3	Waste Package Area
729.0-A4	Waste Package Area

A fire in Analysis Volume 33 does not impact major equipment required to maintain safe shutdown functions for Unit 1 or Unit 2. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment available to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.17 FIRE AREA 12**3.17.1 Room 729.0-A1 and 737.0-A6**

Room No.	Description:
729.0-A1	Main Steam Valve Room (Unit 1 South)
737.0-A6	Air Lock

Fire Loading: The combustibles in 729.0-A1 consist of lube oil in the valves and plastic associated with electrical panels and boxes and lights. The fire severity is classified as insignificant. The combustibles in 737.0-A6 consist of plastic associated with light covers. The fire severity is classified as insignificant.

Compartmentation: The walls of these rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A1	North Wall	Area 61, Unit 1 Reactor Bldg	II-30A	3 Hours
	South Wall	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 15-1, Room 737.0-A3	II-30A	2 Hours
		Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 37, Room 772.0-A6	II-32A	2 Hours
	East Wall	Area 16, Room 737.0-A5	II-30A	2 Hours
		Area 25, Room 757.0-A10	II-31A	2 Hours
		Area 25, Room 782.0-A1	II-32A	2 Hours
	Floor	Area 9, Room 713.0-A6	II-29A, II-30A	2 Hours
737.0-A6	North	Area 61, Unit 1 Reactor Bldg	II-30A	3 Hours
	South	Area 15-1, Room 737.0-A3	II-30A	2 Hours
		Area 14, Room 737.0-A4	II-30A	2 Hours
	East	Area 16, Room 737.0-A5	II-30A	2 Hours
	Floor	Area 9, Room 713.0-A6	II-29A, II-30A	2 Hours
	Ceiling	Area 16, Room 737.0-A5	II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A6	A125	Area 16, Room 737.0-A5	II-30A	1.5 Hours

Dampers: None.

Detection: No detectors are provided in Room 729.0-A1. No detection is provided in room 737.0-A6.

Suppression: No automatic suppression is provided. Standpipe and hose station provided from adjacent Room 737.0-A1.

Deviations: Compliance to III.G.1 with FHA is documented in Part VII, Section 2.9.2.

Evaluations: The lack of total area suppression and detection in specific rooms is documented in Part VII, Sections 3.1.5 for both rooms.

3.17.2 Fire Area 12 Safe Shutdown Analysis by Analysis Volume**3.17.2.1 AV-034**

Room No.	Description:
729.0-A1	Main Steam Valve Room (Unit 1 South)
737.0-A6	Air Lock

The in situ combustible loading for AV-034 consists of small quantities of lubricants in several valves and miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes, and lighting. The total combustible loading results in a fire severity classification of Insignificant. The area is designated a Combustible Control Zone which in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open); therefore, the valve motors are not considered an ignition source. The area radiation monitors are not considered a significant ignition source because they contain insignificant quantities of combustible material and their power supply is adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there will be no credible fire in the analysis volume that would result in the loss of required fire safe shutdown (FSSD) components or other components that could result in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate a fire in room 729.0-A1 or 737.0-A6 per deviation documented in Part VII, section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.18 FIRE AREA 13

Fire Area 13 consists of several rooms within the Auxiliary Building associated with the Main Steam Valve Room (Unit 1 North).

3.18.1 Room 729.0-A2

Description: Main Steam Valve Room (Unit 1 North)

Fire Loading: The combustibles consist of lube oil in the valves and plastic associated with electrical panels and boxes and lights, and ERFBS Thermo-Lag. The fire severity is classified as insignificant.

Compartmentation: The valve room walls are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A2	South Wall	Area 61, Unit 1 Reactor Bldg	II-38A	3 Hours
	South and East Walls and Ceiling of 729.0-A12	Area 13, Room 729.0-A12	II-38A	3 Hours

Doors: None.

Dampers: None.

Detection: No detectors are provided in the room.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided from the Unit 1 Additional Equipment Building (729.0-A14).

Deviations: Compliance to III.G.1 with FHA is documented in Part VII, Section 2.9.3.

Evaluations: The lack of total area suppression and detection in room 729.0-A2 is documented in Part VII, Sections 3.1.6.

3.18.2 Room 729.5-A16

Description: Unit 1 Shield Building Vent Radiation Monitoring Room

Fire Loading: The combustibles consist of lube oil in pumps and plastic associated with electrical panels and boxes and lights. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.5-A16	South Wall	Area 61, Unit 1 Reactor Bldg	II-38A	3 Hours

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided from the adjacent room (729.0-A14).

Deviations: None.

Evaluations: None

3.18.3 Unit 1 Additional Equipment Building (U1-AEB)

Description: Unit 1 Additional Equipment Building (U1-AEB) (729.0-A14, 737.0-A13, 763.5-A1, 775.25-A1, 786.5-A1)

Fire Loading: The combustibles consist of lube oil and hydraulic fluid in valves, pumps and motors, plastics associated with electrical panels and boxes and lights and glycol in the chiller packages and barrels, and ERFBS Thermo-Lag. The fire severity is classified as low.

Compartmentation: The Unit 1 Additional Equipment Building is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A14	South Wall	Area 10, Room 729.0-A8	II-29A	3 Hours
		Area 25, Room 757.0-A12	II-31A	3 Hours
		Area 16, Room 737.0-A5	II-30A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-38A	3 Hours
		Area 16, Room 737.0-A13	II-30A	3 Hours
	East Wall	Area 10, Room 729.0-A5	II-38A	3 Hours
		Area 10, Room 729.0-A6	II-38A	3 Hours
		Area 10, Room 757.0-A13	II-38A	3 Hours
		Area 10, Stair No. 4	II-38A	3 Hours
737.0-A13	South Wall	Area 16, Room 737.0-A5	II-30A	3 Hours
	West Wall	Area 61, Unit 1 Reactor Bldg	II-30A	3 Hours
	East Wall	Area 16, Room 737.0-A5	II-30A	3 Hours
	North Wall	Area 16, Room 729.0-A14	II-30A, II-38A	3 Hours
	Ceiling	Area 16, Room 737.0-A5	II-30A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
763.5-A1	Floor	Area 10, Room 729.0-A8	II-29A, II-30A	3 Hours
	South Wall	Area 25, Room 757.0-A12	II-31A, II-38A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-38A	3 Hours
775.25-A1	East Wall	Area 10, Room 757.0-A13	II-31A, II-38A	3 Hours
	South Wall	Area 10, Stair No. 4	II-38A	3 Hours
		Area 25, Room 757.0-A12	II-31A	3 Hours
		Area 25, Room 782.0-A2	II-32A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-32A	3 Hours
	East Wall	Area 10, Room 757.0-A13	II-32A	3 Hours
786.5-A1	South Wall	Area 61, Unit 1 Reactor Bldg	II-32A	3 Hours
	East Wall	Area 10, Room 757.0-A13	II-38A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A13	A183	Area 16, Room 737.0-A5	II-30A	3 Hours
763.5-A1	A162	Area 25, Room 757.0-A12	II-31A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
763.5-A1	1-ISD-31-2987 47A381-528F	Area 10, Room 757.0-A13	47W866-8 47W920-7	3 Hours

Detection: Partial ionization smoke detector protection is provided in the AEB. No detection is provided in 737.0-A13 Air lock.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided for each elevation in the AEB except for the 737 elevation.

Deviations: None.

Evaluations: None.

3.18.4 Room 729.0-A12

Description: Unit 1 Steam Valve Instrument Room A

Fire Loading: The combustibles consist of Thermo-Lag and plastic associated with electrical boxes, panels and lights. The fire severity is classified as low.

Compartmentation: The instrument room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A12	North and West Walls and Ceiling	Area 13, Room 729.0-A2	II-38A	3 Hours
	South Wall	Area 61, Unit 1 Reactor Bldg	II-38A	3 Hours

Doors: None.

Dampers: None.

Detection: None.

Although the Unit 1 Steam Valve Instrument Room A contains remote safety related panels, it is not considered a "general area" as described in Section F.6 of Appendix A. It is a small isolated room containing only instrumentation and as such, Section F.6 of Appendix A is not considered applicable. Due to the lack of combustibles (i.e., low fire severity) and the availability of a standpipe hose station in the area, the fire protection available is considered adequate for the hazards involved.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided from the Unit 1 Additional Equipment Building (729.0-A14).

Deviations: Compliance to III.G.1 with FHA is documented in Part VII, Section 2.9.7.

Evaluations: The lack of total area suppression and detection and the limited fire damage in room 729.0-A12 is documented in Part VII, Sections 3.1.6.

3.18.5 Fire Area 13 Safe Shutdown Analysis by Analysis Volume**3.18.5.1 AV-035**

Room No.	Description:
729.0-A12	Unit 1 Steam Valve Instrument Room A
729.0-A14	Unit 1 Additional Equipment Building
729.5-A16	Unit 1 Shield Building Vent Radiation Monitoring Room
737.0-A13	Air Lock
763.5-A1	U1 Ice Bin Equipment Room
775.25-A1	U1 Ice Machine Equipment Room
786.5-A1	U1 Chiller Package Equipment Room

A fire in Analysis Volume 35 could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control secondary side isolation functions. The Appendix R required circuits that route through room 729.5-A16 are all routed in conduits that are embedded in the floor and are not affected by a postulated fire in the room; therefore, a fire in this room does not affect any required FSSD function. Operator Manual Actions (OMA's) are not required to mitigate fire in room 729.5-A16. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 2 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both Train A and B system components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. Operator Manual Actions (OMAs) are not required to mitigate fire in room 729.0-A12 per deviation documented in Part VII, section 2.9. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-110	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-111	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-112	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-113	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-114	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-275	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.18.5.2 AV-035A

Room No.	Description:
729.0-A2	Main Steam Valve Room (Unit 1 North)

The in situ combustible loading for AV-035A consists of small quantities of lubricants in several valves and miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes, and lighting. The total combustible loading results in a fire severity classification of Insignificant. The area is designated a Combustible Control Zone which in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open); therefore, the valve motors are not considered an ignition source. The area radiation monitors are not considered a significant ignition source because they contain insignificant quantities of combustible material and their power supply is adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)," ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there will be no credible fire in the analysis volume that would result in the loss of required fire safe shutdown (FSSD) components or other components that could result in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in room 729.0-A2 per deviation documented in Part VII, section 2.9.

AV-035A

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.19 FIRE AREA 14

Fire Area 14 consists of various rooms on Auxiliary Building Elevation 737.

3.19.1 Rooms 737.0-A1, A4, A11**Description:**

Room No.	Description:
737.0-A1	Auxiliary Building (Subdivided into 737.0-A1A, -A1AN, -A1BN, -A1CN, -A1B, and -A1C)
737.0-A4	Air Lock
737.0-A11	Air Lock

Fire Loading: The combustibles in 737.0-A1 consist of lube oil in the pumps, motors, and valves, plastic associated with electrical panels and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The majority of the combustibles are the insulation on the cables. The fire severity is classified as moderately severe. The fire severity in the airlocks is classified as insignificant.

Compartmentation: Room 737.0-A1 has been subdivided into 737.0-A1A (column lines A1-A8/Q-U), 737.0-A1B (A8-A15/Q-U), and 737.0-A1C (remaining area of 737.0-A1 north of column line U), each of which is identified in the tabular listing of regulatory barriers. The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A1A	North Wall	Area 1, Room 713.0-A28	II-29A, II-30A	2 Hours
		Area 10, Elevator Shaft	II-30A	2 Hours
		Area 15-1, Room 737.0-A3	II-30A	2 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours
	South Wall	Area 10, Elevator Shaft	II-30A	2 Hours
		Area 48, Room 729.0-C1	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C1	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C6	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C8	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C9	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C12	II-30A, II-34A	3 Hours
		Area 63, Turbine Building	II-30A, II-34A	3 Hours
	West Wall	Area 15-1, Room 737.0-A3	II-30A	2 Hours
	East Wall	Area 10, Elevator Shaft	II-30A	2 Hours
	Ceiling	Area 10, Room 757.0-A13	II-30A, II-31A	2 Hours
		Area 17, Room 757.0-A2	II-30A, II-31A	2 Hours
		Area 17, Room 757.0-A9	II-30A, II-31A	2 Hours
		Area 18, Room 757.0-A3	II-30A, II-31A	3 Hours
		Area 19, Room 757.0-A4	II-30A, II-31A	3 Hours
		Area 20, Room 757.0-A1	II-30A, II-31A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A1B		Area 21, Room 757.0-A25	II-30A, II-31A	2 Hours
		Area 22, Room 757.0-A26	II-30A, II-31A	2 Hours
		Area 27, Room 757.0-A5	II-30A, II-31A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A23	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A27	II-29A, II-30A	2 Hours
	North Wall	Area 10, Elevator Shaft	II-30A	2 Hours
		Area 15-2, Room 737.0-A12	II-30A	2 Hours
		Area 77, Room 737.0-A9	II-30A	2 Hours
		Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
	South Wall	Area 10, Elevator Shaft	II-30A	2 Hours
		Area 48, Room 729.0-C1	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C12	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C13	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C18	II-30A, II-34A	3 Hours
		Area 48, Room 755.0-C20	II-30A, II-34A	3 Hours
		Area 63, Turbine Building	II-30A, II-34A	3 Hours
	East Wall	Area 15-2, Room 737.0-A12	II-30A	2 Hours
	West Wall	Area 10, Elevator Shaft	II-30A	2 Hours
	Ceiling	Area 10, Room 757.0-A13	II-30A, II-31A	2 Hours
		Area 20, Room 757.0-A1	II-30A, II-31A	2 Hours
		Area 23, Room 757.0-A27	II-30A, II-31A	2 Hours
		Area 24, Room 757.0-A28	II-30A, II-31A	2 Hours
		Area 28, Room 757.0-A21	II-30A, II-31A	2 Hours
		Area 29, Room 757.0-A22	II-30A, II-31A	3 Hours
		Area 30, Room 757.0-A23	II-30A, II-31A	3 Hours
		Area 31, Room 757.0-A24	II-30A, II-31A	2 Hours
		Area 31, Room 757.0-A17	II-30A, II-31A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A23	II-29A, II-30A	2 Hours
737.0-A1C	North Wall	Area 10, Spent Fuel Pit	II-30A	2 Hours
		Area 8, Room 713.0-A11	II-30A	2 Hours
		Area 8, Room 713.0-A16	II-30A	2 Hours
	South Wall	Area 8, Room 713.0-A12	II-30A	2 Hours
		Area 8, Room 713.0-A15	II-30A	2 Hours
	East Wall	Area 8, Room 713.0-A15	II-30A	2 Hours
		Area 8, Room 713.0-A16	II-30A	2 Hours
		Area 74, Room 737.0-A9	II-30A	2 Hours
	West Wall	Area 8, Room 713.0-A11	II-30A	2 Hours
		Area 8, Room 713.0-A12	II-30A	2 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	Ceiling	Area 10, Room 757.0-A13	II-30A, II-31A	2 Hours
		Area 26, Room 757.0-A11	II-30A, II-31A	3 Hours
		Area 76, Room 757.0-A15	II-30A, II-31A	3 Hours
	Floor	Area 1, Room 713.0-A28	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A10	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A11	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A12	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A13	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A14	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A17	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A15	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A16	II-29A, II-30A	2 Hours
		Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
737.0-A4	North Wall	Area 12, Room 737.0-A6	II-30A	2 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours
	South and West Wall	Area 15-1, Room 737.0-A3	II-30A	2 Hours
	Ceiling	Area 15-1, Room 737.0-A3	II-30A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
737.0-A11	North Wall	Area 74, Room 737.0-A9	II-30A	2 Hours
		Area 72, Room 737.0-A10	II-30A	2 Hours
	South and East Wall	Area 15-2, Room 737.0-A12	II-30A	2 Hours
	Ceiling	Area 15-2, Room 737.0-A12	II-30A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A1A	A124	Area 16, Room 737.0-A5	II-30A	1.5 Hours
737.0-A1B	A131	Area 74, Room 737.0-A9	II-30A	1.5 Hours
737.0-A1C	A126	Area 16, Room 737.0-A5	II-30A	1.5 Hours
	A129	Area 74, Room 737.0-A9	II-30A	1.5 Hours
737.0-A11	A133	Area 15-2, Room 737.0-A12	II-30A	1.5 Hours
737.0-A4	A122	Area 15-1, Room 737.0-A3	II-30A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A1A	1-ISD-31-3806 47A381-404F	Area 15-1, Room 737.0-A3	47W866-2 47W920-5	3 Hours
	1-ISD-31-3807 47A381-410F	Area 15-1, Room 737.0-A3	47W866-2 47W920-5	3 Hours
	1-ISD-31-3808 47A381-405F	Area 16, Room 737.0-A5	47W866-2 47W920-5	3 Hours
	1-ISD-31-3809 47A381-405F	Area 16, Room 737.0-A5	47W866-2 47W920-5	3 Hours
	1-ISD-31-3813 47A381-406F	Area 16, Room 737.0-A5	47W866-2 47W920-5	3 Hours
	1-ISD-31-3819 47A381-398F	Area 1, Room 713.0-A28	47W866-2 47W920-5	1.5 Hrs
	0-ISD-31-3843 47A381-399F	Area 16, Room 737.0-A5	47W866-10 47W920-5, 23	3 Hours
	1-ISD-31-3996 47A381-652F	Area 8, Room 713.0-A1	47W866-2 47W920-5, 7	3 Hours
	1-ISD-31-5150 47A381-726	Area 8, Room 713.0-A1	47W866-11 47W920-5	3 Hours
737.0-A1B	2-ISD-31-3877 47A381-398F	Area 74, Room 713.0-A29	47W866-11 47W920-5	1.5 Hours
	2-ISD-31-3879 47A381-431F	Area 74, Room 737.0-A9	47W866-11 47W920-5	3 Hours
	2-ISD-31-3880 47A381-405F	Area 74, Room 737.0-A9	47W866-11 47W920-5	3 Hours
	2-ISD-31-3881 47A381-405F	Area 74, Room 737.0-A9	47W866-11 47W920-5	3 Hours
	2-ISD-31-3882 47A381-410F	Area 15-2, Room 737.0-A12	47W866-11 47W920-5	3 Hours
	2-ISD-31-3883 47A381-404F	AREA 14, Room 737.0-A1	47W866-11 47W920-5	3 Hours
	2-ISD-31-5452 47A381-775	AREA 14, Room 737.0-A12	47W866-11 47W920-5	3 Hours
	2-ISD-31-5447A 47A381-773	Area 8, Room 713.0-A1	47W866-11 47W920-4	3 Hours
	2-ISD-31-5447B 47A381-773	Area 8, Room 713.0-A1	47W866-11 47W920-4	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A1C	0-ISD-31-3834 47A381-425F	Area 74, Room 737.0-A9	47W866-10 47W920-6	3 Hours
	0-ISD-31-3845 47A381-424F	Area 16, Room 737.0-A5	47W866-10 47W920-6	3 Hours
	0-ISD-31-3846 47A381-423	Area 16, Room 737.0-A5	47W866-10 47W920-6,7	1.5 Hours

Detection: Ionization smoke detectors are provided in room 737.0-A1. No detection is provided in the airlocks.

Suppression: Automatic sprinklers are provided in room 737.0-A1 except for Stairwell No.3. No automatic suppression is provided in Rooms 737.0-A4 and -A11. Standpipe and hose stations are provided for these rooms from Room 737.0-A1.

Deviations: The presence of intervening combustibles (insulation on cables in trays) is justified and documented in Part VII, Section 2.4 for Room 737.0-A1. The 737.0 floor slab has stairwell and hatch openings that are not provided with fire rated closures. The justification for these openings is documented in Part VII, Section 2.6.3.1. There is a 12 inch round spiral welded HVAC duct that penetrates the floor of 737.0-A1B. The penetration is not provided with a fire damper. This duct is part of the Emergency Gas Treatment system. Spiral welded pipe is treated like a pipe and is provided with fire rated seals between the pipe and the sleeve. Justification is documented in Part VII, Section 2.6.3.2.a. The acceptability of fire door A154 is justified in Part VII, Section 4.1. No deviations are applicable for Rooms 737.0-A4 and 737.0-A11.

Evaluations: The lack of total area suppression and detection in the airlocks is documented in Part VII, Section 3.1.7 and large damper is documented in Part VII, Section 3.4 for Room 737.0-A1. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.8, 9, 10 and 11 for Room 737.0-A1.

3.19.2 Room 737.0-A2

Description: Hot Instrument Shop

Fire Loading: The combustibles consist of miscellaneous plastics, paper and furniture and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A2	North Wall	Area 15-1, Room 737.0-A3	II-30A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours

Doors: None.

Dampers: None.

Detection: Automatic ionization detection is provided in the room.

Suppression: No automatic suppression is provided.. A standpipe and hose station is provided from the adjacent room (737.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression is documented in Part VII, Section 3.1.7.

3.19.3 Room 737.0-A7

Description: Unit 1 Letdown Heat Exchanger

Fire Loading: The combustibles consist of plastic associated with the panel, junction box, and light covers and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A7	North Wall	Area 8, Room 713.0-A11	II-30A	2 Hours
	West Wall	Area 1, Room 713.0-A28	II-30A	2 Hours
	Floor	Area 1, Room 713.0-A28	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A11	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A10	II-29A, II-30A	2 Hours

Doors: None.

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A7	1-ISD-31-3814 47A381-407	Area 1, Room 713.0-A28	47W866-2 47W920-5	1.5 Hours

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (737.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.7.

3.19.4 Room 737.0-A8

Description: Unit 2 Letdown Heat Exchanger

Fire Loading: The combustibles in this room consist of plastic associated with light covers and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A8	North Wall	Area 8, Room 713.0-A16	II-30A	2 Hours
	East Wall	Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
	Floor	Area 8, Room 713.0-A17	II-29A, II-30A	2 Hours
		Area 8, Room 713.0-A16	II-29A, II-30A	2 Hours
		Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
	Ceiling	Area 10, Room 757.0-A13	II-30A, II-31A	2 Hours

Doors: None.

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A8	2-ISD-31-3872 47A381-407	Area 10, Room 713.0-A29	47W866-11 47W920-5	1.5 Hours

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the adjacent room (737.0-A1).

Deviations: None.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.7.

3.19.5 Fire Area 14 Safe Shutdown Analysis by Analysis Volume**3.19.5.1 AV-036**

Room No.	Description:
737.0-A1A	Auxiliary Building, Column Lines Q-U/A1-A6
737.0-A1AN	Auxiliary Building, Column Lines Q-U/A6-A8
737.0-A2	Hot Instrument Shop
737.0-A4	Air Lock

A fire in Analysis Volume 36 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, reactor coolant inventory control, reactor pressure control, MCR & containment HVAC, secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available for 1B Train with onsite power available for 2B Train. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and repair procedures. The following are exceptions to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The control cables for 1-PSV-1-13B-B and 1-PSV-1-13C-A are protected such that there is greater than 20 feet horizontal separation between the two PSVs to ensure that 1-PCV-1-12 (Steam Generator 2 Power Relief Valve) will close. The control cables for 1-PSV-1-31B-B and 1-PSV-1-31C-A are protected such that there is greater than 20 feet horizontal separation between the two PSVs to ensure that 1-PCV-1-30 (Steam Generator 4 Power Relief Valve) will close. The features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
2-MTR-62-104-B	MOTOR COOLER 2B-B CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-72-27-A	757-A2	MUST NOT START	1-XS-72-27-A, 1-HS-72-27C-A	10
1-MTR-74-10-A	757-A2	MUST NOT START	1-XS-74-10, 1-HS-74-10C-B	10
1-FCV-1-51-S	692-A1A1	MUST OPERATE	1-XS-46-57, 1-XS-46-57A	13
1-FCV-1-51-S	692-A6	OPERATE TURBINE	1-HS-46-56B	13
1-FCV-1-52	692-A1A1	TRANSFER DC POWER FOR TDAFWP VALVES	1-XSW-46-DC-S	13
1-FCV-1-52	692-A1A1	TRANSFER AC POWER FOR TDAFWP VALVES	1-XSW-46-AC-S	13
1-MTR-3-118-A-T	757-A2	MUST TRIP	1-HS-3-118C-A, 1-XS-3-118	13
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-38-A	757-A2	MUST NOT START	1-XS-30-38A-A, 1-BKR-30-38-A	20
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-XS-68-341A-A, 1-HS-68-341AC-A	25
1-HTR-68-341F/D1-D6	757-A2	DEENERGIZE HEATERS	1-XS-68-341F	25
2-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-XS-68-341A-A, 2-HS-68-341AC-A	25
2-HTR-68-341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
1-MTR-70-38-B	757-A5	MUST OPERATE	1-XS-70-38-B, 1-HS-70-38C-B	45
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332, 1-HS-68-332C	60

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-63-10-A	757-A2	MUST NOT START	1-XS-63-10, 1- HS-63-10C-A	60
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-MTR-63-10-A	757-A2	MUST NOT START	2-XS-63-10, 2- HS-63-10C	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-FCV-62-1228-A	757-A4	CLOSE	1-HS-62-1228-A	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1-HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-104-A	772-A1	MUST NOT CLOSE	1-BKR-67-104-A	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1-HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	772-A1	MUST NOT CLOSE	1-BKR-67-107-A	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1-HS-67-111C-B	120
1-FCV-67-112-A	772-A1	MUST NOT CLOSE	1-BKR-67-112-A	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1-HS-67-113C-B	120
1-FCV-67-99-A	772-A1	MUST NOT CLOSE	1-BKR-67-99-A	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
2-FCO-30-246A	772-A11	MUST OPEN	AIR SUPPLY VALVE	120
1-FCV-3-179A-B	772-A2	MUST OPEN	1-BKR-3-179A-B	125
1-FCV-3-179A-B	692-A6	OPEN	HANDWHEEL	125
1-FCV-3-179B-B	772-A2	MUST OPEN	1-BKR-3-179B-B	125
1-FCV-3-179B-B	692-A6	OPEN	HANDWHEEL	125

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	130
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	130
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	130
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240
1-NI-92-138P	729-A14	ENERGIZE	PORTABLE SOURCE RANGE MONITOR	480
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-MTR-67-10-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-10-B	757-A5	MUST OPERATE	1-BKR-67-10B/1- B	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-28	713-A11	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-ISV-70-705	692-A7	CLOSE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-28	713-A16	OPEN	VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-107	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-108	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-109	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-110	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-111	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-112	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-113	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-114	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-275	755-C12	MUST CLOSE	-103B 1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-3-103	755-C12	CLOSE VALVE	1-FIC-3-103	0
1-FCV-3-103A	755-C12	CLOSE VALVE	1-LIC-3-103A	0
1-FCV-3-35	755-C12	CLOSE VALVE	1-FIC-3-35	0
1-FCV-3-35A	755-C12	CLOSE VALVE	1-LIC-3-35A	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
1-LCV-62-133-B	755-C12	CLOSE VALVE	1-HS-62-133A-B	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
1-FSV-77-2561	755-C12	CLOSE	1-HS-77-2561A	13
1-LCV-3-173	755-C12	MUST OPERATE	1-LIC-3-173A	13
1-LCV-3-174	755-C12	MUST OPERATE	1-LIC-3-174A	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	35
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V5596B	1-PCV-68-334-B	PZR PORV
1V5610A	1-PCV-68-340A-A	PZR PORV
2PL4733B	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
2PL4734B	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
2PL4742B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PL4743B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B
2PP554A	2-BKR-62-108-A-OCT, 2-MTR-62-108-A, 2-MTR-62-108-A-P	CCP 2A-A BKR OCT, CENTRIFUGAL CHARGING PUMP 2A-A, CENTRIFUGAL CHARGING PUMP 2A-A
2PP578A	2-BKR-74-10-A-OCT, 2-MTR-74-10-A, 2-MTR-74-10-A-P	RHR PMP 2A-A BKR OCT, RHR PUMP 2A-A, RHR PUMP 2A-A
2PP603A	2-BKR-63-10-A-OCT, 2-MTR-63-10-A	SAFETY INJECTION PMP 2A-A OCT, SAFETY INJECTION PUMP 2A-A
2PP628A	2-MTR-72-27-A, 2-BKR-72-27-A-OCT	CONTAINMENT SPRAY PUMP 2A-A, CONTAINMENT SPRAY PMP 2A-A OCT
2PP653A	2-BKR-3-118-A-OCT, 2-MTR-3-118-A, 2-MTR-3-118-A-T	MOTOR DRIVEN AFW PMP 2A-A OCT, MDAFW PUMP 2A-A, MDAFW PUMP 2A-A TRIP
2PP831A	2-MTR-3-118-A, 2-FCV-3-355-A	MDAFW PUMP 2A-A, TRAIN A MDAFW PUMP RECIRCULATION VALVE
2PV18	2-FI-62-1A, 2-FI-62-40A, 2-FI-62-93A, 2-FIC-3-35, 2-LI-62-129A, 2-LIC-3-35A, 2-PIC-1-24A, 2-TCV-70-192, 2-TI-62-4, 2-TI-62-43, 2-TR-74-14P002, 2-TR-74-25P002	RCP-1 SEAL INJECTION FLOW INDICATOR, RCP-4 SEAL INJECTION FLOW INDICATOR, NORMAL CHARGING FLOW INDICATOR, SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER, VCT LEVEL INDICATION, STEAM GENERATOR 1 FW BYPASS VALVE CONTROLLER, SG 3 POWER RELIEF VALVE, NON REGEN LETDOWN HEAT EXCHANGER OUTLET VALVE, RCP 1 NO 1 SEAL OUT TEMPERATURE INDICATOR, RCP 4 NO 1 SEAL OUT TEMPERATURE INDICATOR, RHR HX-A TEMPERATURE RECORDER, RHR HX-B TEMPERATURE RECORDER
2PV580	2-FI-67-222, 2-PIC-1-31A, 2-TI-70-157	ERCW SUPPLY HEADER 2A FLOW INDICATOR, SG 4 POWER RELIEF VALVE, RHR HX-A OUTLET TEMP

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PV581	2-PIC-1-31A, 2-PIC-1-6A, 2-TI-70-154	(CCS) SG 4 POWER RELIEF VALVE, SG 1 POWER RELIEF VALVE, RHR HX-B OUTLET TEMP (CCS)
2PV833D	2-LI-63-50, 2-PDI-30-45-J, 2-PDT-30-45-D, 2-PI-1-20A, 2-PI-1-27A, 2-PI-1-2A, 2-PI-1-9A, 2-PT-1-20A-D, 2-PT-1-27A-D, 2-PT-1-2A-D, 2-PT-1-9A-D	RWST LEVEL INDICATOR, U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, #3SG PRESSURE INDICATION, #4SG PRESSURE INDICATION, SG 1 MAIN STEAM HEADER PRESSURE, #2SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PV834E	2-PDI-30-44-K, 2-PDT-30-44-E, 2-PI-1-20B, 2-PI-1-27B, 2-PI-1-2B, 2-PI-1-9B, 2-PT-1-20B-E, 2-PT-1-27B-E, 2-PT-1-2B-E, 2-PT-1-9B-E	U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, #3SG PRESSURE INDICATION, #4SG PRESSURE INDICATION, SG 1 MAIN STEAM HEADER PRESSURE, #2SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)

3.19.5.2**AV-037**

Room No.	Description:
737.0-A1AN	Auxiliary Building, Column Lines Q-U/A6-A8
737.0-A1BN	Auxiliary Building, Column Lines Q-U/A8-A10

A fire in Analysis Volume 37 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available for 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and Unit 2 repair procedures. The features are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-74-10-A	757-A2	MUST NOT START	1-XS-74-10, 1- HS-74-10C-B	10
2-LCV-3-156	757-A27	DEENERGIZE SOLENOID VALVE	2-XS-3-156	13
2-LCV-3-164	757-A27	DEENERGIZE SOLENOID VALVE	2-XS-3-164	13
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-30-38-A	757-A2	MUST NOT START	1-XS-30-38A-A, 1-BKR-30-38-A	20
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D- B,1-HS-68- 341DC-B	25
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H-B	25
2-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-XS-68-341D- B,2-HS-68- 341DC-B	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
2-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-MTR-30-38-A	757-A2	START/STOP	1-BKR-30-38-A, 1-XS-30-38A-A	100
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-97-A	772-A1	MUST NOT CLOSE	1-XS-67-97-A, 1- HS-67-97C-A	120
1-MTR-30-83-A	757-A2	MUST OPERATE	1-XS-30-83-A, 1- HS-30-83C-A	120
1-MTR-30-88-A	757-A2	MUST OPERATE	1-XS-30-88-A, 1- HS-30-88C-A	120
2-MTR-30-74-A	757-A21	MUST OPERATE	2-XS-30-74-A, 2- HS-30-74C-A	120
2-MTR-30-83-A	757-A21	MUST OPERATE	2-XS-30-83-A, 2- HS-30-83C-A	120
2-MTR-30-88-A	757-A21	MUST OPERATE	2-XS-30-88-A, 2- HS-30-88C-A	120
2-FCV-3-116B-A	772-A16	MUST OPEN	2-BKR-3-116B-A	125
2-FCV-3-116B-A	713-A1B	OPEN	HANDWHEEL	125
0-MTR-31-12-A	757-A2	MUST RUN	0-XS-31-12	240
1-NI-92-138P	729-A14	ENERGIZE	PORTABLE SOURCE RANGE MONITOR	480
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
0-ISV-70-524A	737-A1C	MUST CLOSE	HANDWHEEL	1140
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
1-FCV-67-146-A	772-A1	MUST OPERATE	1-BKR-67-146-A	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-MTR-74-10-A	757-A2	MUST OPERATE	1-XS-74-10, 1- HS-74-10C	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-103	755-C12	CLOSE VALVE	1-FIC-3-103	0
1-FCV-3-103A	755-C12	CLOSE VALVE	1-LIC-3-103A	0
1-FCV-3-35	755-C12	CLOSE VALVE	1-FIC-3-35	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-LCV-62-132-A	755-C12	CLOSE VALVE	1-HS-62-132A-A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
2-LCV-3-156	755-C12	MODULATE VALVE	2-LIC-3-156A	13
2-LCV-3-164	755-C12	MODULATE VALVE	2-LIC-3-164A	13
2-PCV-3-122-A	755-C12	MODULATE	2-PDIC-3-122A	13
1-FCV-62-70-A	755-C12	MUST CLOSE	1-HS-62-70A-A	14
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V5610A	1-PCV-68-340A-A	PZR PORV
2PL4725A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4726A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PV6756	2-FCV-62-89, 2-FIC-3-103, 2- FIC-3-35, 2-FIC-3-48, 2-FIC-3- 90, 2-LIC-3-103A, 2-LIC-3-35A, 2-LIC-3-48A, 2-LIC-3-90A, 2- PIC-1-13A, 2-PIC-1-24A, 2-PIC- 1-31A, 2-PIC-1-6A, 2-TCV-70- 192	CHARGING FLOW CONTROL VALVE, STEAM GENERATOR 4 FW CONTROL VALVE FLOW CONTROLLER, SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER, SG 2 FEEDWATER CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 3 FW CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 4 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 1 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 2 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 3 FW BYPASS VALVE CONTROLLER, SG 2 POWER RELIEF VALVE, SG 3 POWER RELIEF VALVE, SG 4 POWER RELIEF VALVE, SG 1 POWER RELIEF VALVE, NON REGEN LETDOWN HEAT EXCHANGER OUTLET VALVE
2PV834E	2-PDI-30-44-K, 2-PDT-30-44-E, 2-PI-1-20B, 2-PI-1-27B, 2-PI-1- 2B, 2-PI-1-9B, 2-PT-1-20B-E, 2- PT-1-27B-E, 2-PT-1-2B-E, 2- PT-1-9B-E	U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, #3SG PRESSURE INDICATION, #4SG PRESSURE INDICATION, SG 1 MAIN STEAM HEADER PRESSURE, #2SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
		INSTRUMENTATION LOOP, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2V2070A	2-LCV-62-135-A	RWST TO CHARGING PUMPS VALVE CONTROL
2V2247A	2-FCV-62-90-A	CHARGING FLOW ISOLATION VALVE
2V5610A	2-PCV-68-340A-A, 2-PCV-68- 340A-A-P	PRESSURIZER PORV, PRESSURIZER PORV

3.19.5.3 AV-037A

Room No.	Description:
737.0-A1C	Auxiliary Building, Column Lines V-RxCL/A5-A11
737.0-A1CN	Auxiliary Building, Column Lines U-V/A5-A11
737.0-A7	Unit 1 Letdown Heat Exchanger
737.0-A8	Unit 2 Letdown Heat Exchanger

A fire in Analysis Volume 37A could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-132-A	755-C12	CLOSE VALVE	1-HS-62-132A-A	0
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1NM1342D	1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR
1NM1343D	1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR
1NM1344D	1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR
1PV326D	1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR

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Room No.	Description:
737.0-A1AN	Auxiliary Building, Column Lines Q-U/A6-A8
737.0-A1BN	Auxiliary Building, Column Lines Q-U/A8-A10
737.0-A1CN	Auxiliary Building, Column Lines U-RxCL/A5-A11
737.0-A7	Unit 1 Letdown Heat Exchanger
737.0-A8	Unit 2 Letdown Heat Exchanger

This AV is analyzed to address the interface between 737.0-A1C and 737.0-A1AN and 737.0-A1BN (i.e., to obtain 20 feet of separation on either side of Column Line U).

A fire in Analysis Volume 37C could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and Unit 2 repair procedures. The following are exceptions to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis volume boundary as described in FPR Part III, Section 10.3.1. Greater than 20 feet horizontal separation is also credited to prevent possible CCP-2B overheating due to delayed letdown isolation concurrent with loss of letdown heat exchanger (HTX) cooling. The letdown isolation valve (2-FCV-62-70-A) cables are horizontally separated more than 20 feet from the HTX cooling water temperatures controls (2-TIS-62-79) such that a credible fire could not cause both failures. The features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-74-10-A	757-A2	MUST NOT START	1-XS-74-10, 1-HS-74-10C-B	10
2-LCV-3-156	757-A27	DEENERGIZE SOLENOID VALVE	2-XS-3-156	13
2-LCV-3-164	757-A27	DEENERGIZE SOLENOID VALVE	2-XS-3-164	13
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-30-38-A	757-A2	MUST NOT START	1-XS-30-38A-A, 1-BKR-30-38-A	20
1-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D-B, 1-HS-68-341DC-B	25
1-HTR-68-341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H-B	25
2-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-XS-68-341D-B, 2-HS-68-341DC-B	25
2-HTR-68-341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
2-HTR-68-341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-MTR-30-38-A	757-A2	START/STOP	1-BKR-30-38-A, 1-XS-30-38A-A	100
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
1-FCV-67-97-A	772-A1	MUST NOT CLOSE	1-XS-67-97-A, 1-HS-67-97C-A	120
1-MTR-30-83-A	757-A2	MUST OPERATE	1-XS-30-83-A, 1-HS-30-83C-A	120
1-MTR-30-88-A	757-A2	MUST OPERATE	1-XS-30-88-A, 1-HS-30-88C-A	120
2-MTR-30-74-A	757-A21	MUST OPERATE	2-XS-30-74-A, 2-	120

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-30-83-A	757-A21	MUST OPERATE	HS-30-74C-A 2-XS-30-83-A, 2- HS-30-83C-A	120
2-MTR-30-88-A	757-A21	MUST OPERATE	2-XS-30-88-A, 2- HS-30-88C-A	120
2-FCV-3-116B-A	772-A16	MUST OPEN	2-BKR-3-116B-A	125
2-FCV-3-116B-A	713-A1B	OPEN	HANDWHEEL	125
0-MTR-31-12-A	757-A2	MUST RUN	0-XS-31-12	240
1-NI-92-138P	729-A14	ENERGIZE	PORTABLE SOURCE RANGE MONITOR	480
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
0-ISV-70-524A	737-A1C	MUST CLOSE	HANDWHEEL	1140
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-67-146-A	772-A1	MUST OPERATE	1-BKR-67-146-A	1140
1-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-MTR-74-10-A	757-A2	MUST OPERATE	1-XS-74-10, 1- HS-74-10C	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-30-175-A	757-A21	MUST OPERATE	(INSTALL JUMPERS) REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-103	755-C12	CLOSE VALVE	1-FIC-3-103	0
1-FCV-3-103A	755-C12	CLOSE VALVE	1-LIC-3-103A	0
1-FCV-3-35	755-C12	CLOSE VALVE	1-FIC-3-35	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-LCV-62-132-A	755-C12	CLOSE VALVE	1-HS-62-132A-A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
2-LCV-3-156	755-C12	MODULATE VALVE	2-LIC-3-156A	13
2-LCV-3-164	755-C12	MODULATE VALVE	2-LIC-3-164A	13
2-PCV-3-122-A	755-C12	MODULATE	2-PDIC-3-122A	13
1-FCV-62-70-A	755-C12	MUST CLOSE	1-HS-62-70A-A	14
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM591D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM686D	1-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
1PM778D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1PM871D	1-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE
1PV326D	1-NI-92-131-D	SOURCE RANGE NEUTRON DETECTOR
1V5610A	1-PCV-68-340A-A	PZR PORV
2PL4725A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4726A	2-MTR-70-59-A	COMPONENT COOLING

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM4460A	2-FI-3-155C, 2-FI-3-155A	SYSTEM PUMP 2A-A SG 2 AFW INLET FLOW, SG 2 AFW INLET FLOW
2PM4463A 2PV6756	2-FI-3-155A 2-FCV-62-89, 2-FIC-3-103, 2- FIC-3-35, 2-FIC-3-48, 2-FIC-3- 90, 2-LIC-3-103A, 2-LIC-3-35A, 2-LIC-3-48A, 2-LIC-3-90A, 2- PIC-1-13A, 2-PIC-1-24A, 2-PIC- 1-31A, 2-PIC-1-6A, 2-TCV-70- 192	SG 2 AFW INLET FLOW CHARGING FLOW CONTROL VALVE, STEAM GENERATOR 4 FW CONTROL VALVE FLOW CONTROLLER, SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER, SG 2 FEEDWATER CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 3 FW CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 4 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 1 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 2 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 3 FW BYPASS VALVE CONTROLLER, SG 2 POWER RELIEF VALVE, SG 3 POWER RELIEF VALVE, SG 4 POWER RELIEF VALVE, SG 1 POWER RELIEF VALVE, NON REGEN LETDOWN HEAT EXCHANGER OUTLET VALVE
2PV834E	2-PDI-30-44-K, 2-PDT-30-44-E, 2-PI-1-20B, 2-PI-1-27B, 2-PI-1- 2B, 2-PI-1-9B, 2-PT-1-20B-E, 2- PT-1-27B-E, 2-PT-1-2B-E, 2- PT-1-9B-E	U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, #3SG PRESSURE INDICATION, #4SG PRESSURE INDICATION, SG 1 MAIN STEAM HEADER PRESSURE, #2SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2V2070A	2-LCV-62-135-A	LOOP, LOOP 1 MAIN STEAM PRESSURE INTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2V2247A	2-FCV-62-90-A	RWST TO CHARGING PUMPS VALVE CONTROL CHARGING FLOW ISOLATION VALVE
2V5610A	2-PCV-68-340A-A, 2-PCV-68- 340A-A-P	PRESSURIZER PORV, PRESSURIZER PORV

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Room No.	Description:
737.0-A1B	Auxiliary Building, Column Lines Q-U/A10-A15
737.0-A1BN	Auxiliary Building, Column Lines Q-U/A8-A10
737.0-A11	Air Lock

A fire in Analysis Volume 38 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available for 6.9kV Shutdown Board 1A-A and onsite power is available for 6.9kV Shutdown Board 2A-A. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and Unit 2 repair procedures. The following are exceptions to the general methodology of providing cable protection (ERFBS) from analysis volume boundary to analysis volume boundary as described in FPR Part III, Section 10.3.1. The control cables for 1-PSV-1-6B-A and 1-PSV-1-6C-B are protected such that there is greater than 20 feet horizontal separation between the two PSVs to ensure that 1-PCV-1-5 (Steam Generator 1 Power Relief Valve) will close. Greater than 20 feet horizontal separation is also credited to prevent possible CCP-2B overheating due to delayed letdown isolation concurrent with loss of letdown heat exchanger (HTX) cooling. The letdown isolation valve (2-FCV-62-70-A) cables are horizontally separated more than 20 feet from the HTX cooling water temperatures controls (2-TIS-62-79) such that a credible fire could not cause both failures. The features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-74-20-B	757-A24	MUST NOT START	1-XS-74-20, 1- HS-74-20C-B	10
1-FCV-1-17-A	772-A1	CLOSE VALVE	1-XS-1-17-A, 1- HS-1-17C-A	13
1-MTR-3-128-B-T	757-A24	MUST TRIP	1-HS-3-128C-B, 1-XS-3-128-B	13
2-LCV-3-173	757-A28	DEENERGIZED SOLENOID VALVE	2-XS-3-173	13
2-LCV-3-174	757-A28	DEENERGIZE SOLENOID VALVE	2-XS-3-174	13
2-MTR-3-128-B-T	757-A24	MUST TRIP	2-HS-3-128C-B, 2-XS-3-128	13
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
2-MTR-81-7	757-A24	MUST BE TRIPPED	2-BKR-81-007-B	15
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D- B,1-HS-68- 341DC-B	25
2-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-XS-68-341D- B,2-HS-68- 341DC-B	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
2-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
1-MTR-63-15-B	757-A24	MUST NOT START	1-BKR-63-15-B	60
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-MTR-63-15-B	757-A24	MUST NOT START	2-BKR-63-15-B, 2-XS-63-15	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-97-A	772-A1	MUST NOT CLOSE	1-XS-67-97-A, 1- HS-67-97C-A	120
2-MTR-30-74-A	757-A21	MUST OPERATE	2-XS-30-74-A, 2- HS-30-74C-A	120
2-MTR-30-77-A	757-A21	MUST OPERATE	2-XS-30-77-A, 2- HS-30-77C-A	120
2-MTR-30-83-A	757-A21	MUST OPERATE	2-XS-30-83-A, 2- HS-30-83C-A	120
2-MTR-30-88-A	757-A21	MUST OPERATE	2-XS-30-88-A, 2- HS-30-88C-A	120
2-FCV-3-136A-A	772-A16	MUST OPEN	2-BKR-3-136A-A	125
2-FCV-3-136A-A	692-A26	OPEN	HANDWHEEL	125
2-FCV-3-136B-A	772-A16	MUST OPEN	2-BKR-3-136B-A	125
2-FCV-3-136B-A	692-A26	OPEN	HANDWHEEL	125
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	757-A21	MUST OPERATE	2-BKR-67-9C-A	720
0-ISV-70-524A	737-A1C	MUST CLOSE	HANDWHEEL	1140
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-72-A	692-A7	MUST NOT OPEN	HANDWHEEL	1140
1-FCV-63-72-A	772-A1	MUST NOT OPEN	1-BKR-63-72-A	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
1-FCV-67-146-A	772-A1	MUST OPERATE	1-BKR-67-146-A	1140
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140
1-FCV-74-35-B	713-A11	OPEN/CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-93-A	772-A16	MUST NOT CLOSE	2-BKR-63-93-A	1140
2-FCV-63-93-A	713-A29	OPEN VALVE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-72-40-A	772-A16	MUST NOT OPEN	2-BKR-72-40-A	1140
2-FCV-72-40-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-74-1-A	772-A16	MUST OPEN	CLOSE BREAKER 2-XS- 74-1-A, 2-HS-74- 1C-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS)	1140
2-FCV-74-16	713-A15	OPEN	VALVE - VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	713-A15	OPEN	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-8-A	772-A16	MUST OPEN	CLOSE BREAKER 2-HS- 74-8-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140
2-ISV-70-705	692-A25	CLOSE	HANDWHEEL	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A12.	1140
2-MTR-30-175-A	757-A21	MUST OPERATE	REPAIR	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TI-74-27	713-A16	MONITOR TEMPERATURE	PROCEDURE (INSTALL JUMPERS) LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-3-103	755-C12	CLOSE VALVE	2-FIC-3-103	0
2-FCV-3-103A	755-C12	CLOSE VALVE	2-LIC-3-103A	0
2-FCV-3-35	755-C12	CLOSE VALVE	2-FIC-3-35	0
2-FCV-3-35A	755-C12	CLOSE VALVE	2-LIC-3-35A	0
2-FCV-3-48	755-C12	CLOSE VALVE	2-FIC-3-48	0
2-FCV-3-48A	755-C12	CLOSE VALVE	2-LIC-3-48A	0
2-FCV-3-90	755-C12	CLOSE VALVE	2-FIC-3-90	0
2-FCV-3-90A	755-C12	CLOSE VALVE	2-LIC-3-90A	0
2-LCV-62-132-A	755-C12	CLOSE VALVE	2-HS-62-132A-A	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FSV-77-2561	755-C12	CLOSE	2-HS-3-164A	13
2-LCV-3-173	755-C12	MODULATE VALVE	2-LIC-3-173A	13

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-3-174	755-C12	MODULATE VALVE	2-LIC-3-174A	13
2-MTR-30-39-B	755-C12	STOP CNTMNT AIR RETURN FAN	2-HS-30-39A-B	20
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
2-FCV-30-10-A	755-C12	DE-ENERGIZE	2-HS-30-10-A	60
2-FCV-30-14-A	755-C12	DE-ENERGIZE	2-HS-30-14-A	60
2-FCV-30-17-A	755-C12	DE-ENERGIZE	2-HS-30-17-A	60
2-FCV-30-20-A	755-C12	DE-ENERGIZE	2-HS-30-20-A	60
2-FCV-30-40-A	755-C12	DE-ENERGIZE	2-HS-30-40-A	60
2-FCV-30-51-A	755-C12	DE-ENERGIZE	2-HS-30-7-A	60
2-FCV-30-52-A	755-C12	DE-ENERGIZE	2-HS-30-10-A	60
2-FCV-30-56-A	755-C12	DE-ENERGIZE	2-HS-30-14-A	60
2-FCV-30-59-A	755-C12	DE-ENERGIZE	2-HS-30-20-A	60
2-FCV-30-7-A	755-C12	DE-ENERGIZE	2-HS-30-7-A	60
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
1V1801B	1-FCV-72-45-B	CNTMT SUMP TO SPRAY HDR 1B FCV
1V3141B	1-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP B-B
2NM2342D	2-NI-92-131-D	SOURCE RANGE DETECTOR AND INDICATION
2NM2343D	2-NI-92-131-D	SOURCE RANGE DETECTOR AND INDICATION
2NM2344D	2-NI-92-131-D	SOURCE RANGE

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2NM2444D	2-NI-92-131-D	DETECTOR AND INDICATION SOURCE RANGE DETECTOR AND INDICATION
2PL4725A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4726A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4975A	2-MCC-215-A1-A	DIESEL AUX BD 2A1-A
2PL4978A	2-MCC-215-A2-A	DIESEL AUX BD 2A2-A
2PL6510A	2-LOADSHED-A	UNIT 2 LOADSHED TRAIN A
2PL6512A	2-LOADSHED-A	UNIT 2 LOADSHED TRAIN A
2PM4460A	2-FI-3-155C, 2-FI-3-155A	SG 2 AFW INLET FLOW, SG 2 AFW INLET FLOW
2PM4463A	2-FI-3-155A	SG 2 AFW INLET FLOW
2PP590B	2-BKR-74-20-B-OCT, 2-MTR-74-20-B, 2-MTR-74-20-B-P	RHR PMP 2B-B OCT, RHR PUMP 2B-B, RHR PUMP 2B-B
2PP592B	2-MTR-74-20-B, 2-MTR-74-20-B-P	RHR PUMP 2B-B, RHR PUMP 2B-B
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
2PP842	2-HTR-68-341H/C1-C6, 2-BKR-68-341H-B-OCT	PRESSURIZER HEATER CONTROL GROUP 2C, PRESSURIZER HEATER BACKUP GROUP 2C OCT
2PV6756	2-FCV-62-89, 2-FIC-3-103, 2-FIC-3-35, 2-FIC-3-48, 2-FIC-3-90, 2-LIC-3-103A, 2-LIC-3-35A, 2-LIC-3-48A, 2-LIC-3-90A, 2-PIC-1-13A, 2-PIC-1-24A, 2-PIC-1-31A, 2-PIC-1-6A, 2-TCV-70-192	CHARGING FLOW CONTROL VALVE, STEAM GENERATOR 4 FW CONTROL VALVE FLOW CONTROLLER, SG 1 FEEDWATER CONTROL VALVE FLOW CONTROLLER, SG 2 FEEDWATER CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 3 FW CONTROL VALVE FLOW CONTROLLER, STEAM GENERATOR 4 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 1 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 2 FW BYPASS VALVE CONTROLLER, STEAM GENERATOR 3 FW

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PV835F	2-LI-3-107, 2-LI-3-111A, 2-LI-3-39, 2-LI-3-43A, 2-LI-3-52, 2-LI-3-94, 2-PDI-30-43-J, 2-PDT-30-43-F, 2-PI-1-12, 2-PI-1-23, 2-PT-1-12-F, 2-PT-1-23-F, 2-TI-74-25	BYPASS VALVE CONTROLLER, SG 2 POWER RELIEF VALVE, SG 3 POWER RELIEF VALVE, SG 4 POWER RELIEF VALVE, SG 1 POWER RELIEF VALVE, NON REGEN LETDOWN HEAT EXCHANGER OUTLET VALVE #4SG LEVEL INDICATOR (NR), #4SG LEVEL INDICATOR (WR), SG 1 NARROW RANGE LEVEL, SG 1 WIDE RANGE LEVEL, #2SG LEVEL INDICATOR (NR), #3SG LEVEL INDICATOR (NR), U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, #2SG PRESSURE INDICATION, #3SG PRESSURE INDICATION, LOOP 2 ATMOSPHERIC RELIEF INSTRUMENT LOOP, LOOP 3 ATMOSPHERIC RELIEF INSTRUMENT LOOP, RHR HX-B INLET TEMPERATURE
2PV836G	2-LI-3-56A, 2-LI-3-98A, 2-PDI-30-42-K, 2-PDT-30-42-G, 2-TI-74-14	#2SG LEVEL INDICATOR (WR), #3SG LEVEL INDICATOR (WR), U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, RHR HX-A INLET TEMPERATURE
2V4014A	2-PSV-1-13C-A	SG 2 POWER RELIEF SOLENOID VALVE
2V4015A	2-PSV-1-13C-A	SG 2 POWER RELIEF SOLENOID VALVE
2V4032A	2-PSV-1-31C-A	SG 4 POWER RELIEF SOLENOID VALVE
2V4033A	2-PSV-1-31C-A	SG 4 POWER RELIEF SOLENOID VALVE
2V5596B	2-PCV-68-334-B-P, 2-PCV-68-334-B	PRESSURIZER PORV, PRESSURIZER PORV
2V5610A	2-PCV-68-340A-A, 2-PCV-68-340A-A-P	PRESSURIZER PORV, PRESSURIZER PORV

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)

3.20 FIRE AREA 15-1**3.20.1 Room 737.0-A3**

Description: Unit 1 Heat and Vent Equipment Room

Fire Loading: The combustibles consist of lubricant for the fans, ERFBS Thermo-Lag, plastic associated with electrical panels and boxes and lights and insulation on cables in trays and lube oil for the FLEX pump. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A3	North Wall	Area 12, Room 729.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A4	II-30A	2 Hours
		Area 12, Room 737.0-A6	II-30A	2 Hours
		Area 16, Room 737.0-A5	II-30A	2 Hours
	East Wall	Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A4	II-30A	2 Hours
	South Wall	Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A2	II-30A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A4*	II-30A	2 Hours
	Ceiling	Area 17, Room 757.0-A2	II-30A, II-31A	2 Hours
		Area 27, Room 757.0-A5 (* Partial height room)	II-30A, II-31A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A3	A122	Area 14, Room 737.0-A4	II-30A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A3	1-ISD-31-3803 47A381-443F	Area 8, Room 713.0-A1	47W866-2 47W920-18	3 Hours
	1-ISD-31-3806 47A381-404F	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours
	1-ISD-31-3807 47A381-410F	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room except the area below grating. Standpipe and hose stations are provided from the adjacent room (737.0-A1).

Deviations: None.

Evaluations: The justification for large fire dampers is documented in Part VII, Section 3.4.

3.20.2 Fire Area 15-1 Safe Shutdown Analysis by Analysis Volume**3.20.2.1 AV-039**

Room No.	Description:
737.0-A3	Unit 1 Heat and Vent Equipment Room

A fire in Analysis Volume 39 could potentially affect systems and components necessary to maintain the Unit 1 and 2 MCR HVAC function and Unit 1 long term decay heat removal, steam generator inventory control, containment HVAC, reactor coolant inventory control and secondary side isolation functions and Unit 2 steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and Unit 1 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-83-A	757-A2	MUST OPERATE	1-XS-30-83-A, 1- HS-30-83C-A	120
1-MTR-30-88-A	757-A2	MUST OPERATE	1-XS-30-88-A, 1- HS-30-88C-A	120
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE. REPAIR POWER CABLE BY PULLING AND CONNECTING A CABLE FROM THE MCC TO THE MOTOR IN 676-A10.	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-110	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-111	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-112	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-113	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-114	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR	0
1-FCV-1-275	755-C12	MUST CLOSE	-103B 1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3011B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3013B	1-MTR-30-182-B	CCP 1B-B ROOM COOLER FAN
1PL3920B	1-MTR-67-10-B	ERCW STRAINER 1B-B
1PL3921B	1-MTR-67-10-B	ERCW STRAINER 1B-B
1PL4429B	0-MTR-31-96/2-B	WATER CHILLER B-B
1PL4430B	0-MTR-31-96/2-B	WATER CHILLER B-B
1PL4735S	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
1PL4736S	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
1PL4742B	1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B
1PL4743B	1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B
2PL4742B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B
2PL4743B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B

3.21 FIRE AREA 15-2**3.21.1 Room 737.0-A12**

Description: Unit 2 Heat and Vent Equipment Room

Fire Loading: The combustibles consist of lubricant for fans, plastic associated with electrical panels, boxes and lights, ERFBS Thermo-Lag, and lube oil for the FLEX pump. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A12	North Wall	Area 14, Room 737.0-A11	II-30A	2 Hours
		Area 72, Room 729.0-A11	II-30A	2 Hours
		Area 72, Room 737.0-A10	II-30A	2 Hours
		Area 74, Room 737.0-A9	II-30A	2 Hours
	South Wall	Area 14, Room 737.0-A1	II-30A	2 Hours
	West Wall	Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A11	II-30A	2 Hours
	Floor	Area 8, Room 713.0-A1	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A11*	II-30A	2 Hours
	Ceiling	Area 31, Room 757.0-A24	I-30A, II-31A	2 Hours
		Area 28, Room 757.0-A21	II-30A, II-31A	2 Hours
(*PARTIAL HEIGHT ROOM)				

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A12	A133	Area 14, Room 737.0-A11	II-30A	1.5 Hours

Dampers:				
Room	Damper/ Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A12	2-ISD-31-3869 47A381-443F	Area 8, Room 713.0-A1	47W866-11 47W920-18	3 Hours
	2-ISD-31-3882 47A381-410F	Area 14, Room 737.0-A1	47W866-11 47W920-5	3 Hours
	2-ISD-31-3883 47A381-404F	Area 14, Room 737.0-A1	47W866-11 47W920-5	3 Hours
	2-ISD-31-5452 47A381-775	Area 14, Room 737.0-A1	47W866-11 47W920-5	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room except the area below grating. Standpipe and hose stations are provided from the adjacent room (737.0-A1).

Deviations: None.

Evaluations: The justification for large fire dampers is documented in Part VII, Section 3.4. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.18 and 65.

3.21.2 Fire Area 15-2 Safe Shutdown Analysis by Analysis Volume**3.21.2.1 AV-040**

Room No.	Description:
737.0-A12	Unit 2 Heat and Vent Equipment Room

A fire in Analysis Volume 40 could potentially affect systems and components necessary to maintain the Unit 1 and 2 long term decay heat removal, MCR & containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire protection for selected Unit 2 cables and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-30-39-B	755-C12	STOP CNTMNT AIR RETURN FAN	2-HS-30-39A-B	20
2-PCV-1-5	755-C12	OPEN/CLOSE	2-PIC-1-6A	60

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PL3001A	2-MTR-30-183-A	CCP 2A-A ROOM COOLER FAN
2PL3003A	2-MTR-30-183-A	CCP 2A-A ROOM COOLER FAN
2PL4742B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B
2PL4743B	2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B

3.22 FIRE AREA 16**3.22.1 Rooms 737.0-A5 and A15**

Room No.	Description:
737.0-A5	Ventilation and Purge Air Room (Subdivided into 737.0-A5S, -A5M, -A5N)
737.0-A15	Gross Failed Fuel Detector Room

Fire Loading: The combustibles in the Ventilation and Purge Air Room consist of lube oil in valves and plastic associated with electrical panels and lights, ERFBS Thermo-Lag and charcoal in the ABGTS filter. The fire severity is classified as low. The fire severity in the Gross Failed Fuel Detector room is classified as insignificant.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A5	North Wall	Area 13, Room 729.0-A14	II-30, II-38A	3 Hours
		Area 13, Room 737.0-A13	II-30A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-30A	3 Hours
	South Wall	Area 1, Room 713.0-A28	II-29A, II-30A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 14, Room 737.0-A3	II-30A	2 Hours
		Area 14, Room 737.0-A4	II-30A	2 Hours
	East Wall	Area 1, Room 713.0-A28	II-30A	2 Hours
		Area 8, Room 713.0-A12	II-30A	2 Hours
		Area 10, Spent Fuel Pit	II-30A	2 Hours
		Area 10, Room 729.0-A6	II-30A, II-38A	2 Hours
		Area 14, Room 737.0-A1	II-30A	2 Hours
	West Wall	Area 12, Room 729.0-A1	II-30A	2 Hours
		Area 12, Room 737.0-A6	II-30A	2 Hours
		Area 13, Room 737.0-A13	II-30A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-30A	3 Hours
	Floor	Area 1, Room 713.0-A28	I-29A, II-30A	2 Hours
		Area 9, Room 713.0-A6	II-29A, II-30A	2 Hours
		Area 9, Room 713.0-A7	II-29A, II-30A	2 Hours
		Area 10, Room 729.0-A8	II-29A, II-30A	2 Hours
		Area 12, Room 737.0-A6*	II-30A	2 Hours
		Area 13, Room 737.0-A13*	II-30A	3 Hours
	(*Partial height room)			
	Ceiling	Area 25, Room 757.0-A10	II-30A, II-31A	2 Hours
		Area 25, Room 757.0-A12	II-30A, II-31A	2 Hours
		Area 26, Room 757.0-A11	II-30A, II-31A	3 Hours
737.0-A15	Floor	Area 1, Room 713.0-A28	II-29A, II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A5	A124	Area 14, Room 737.0-A1	II-30A	1.5 Hours
	A125	Area 12, Room 737.0-A6	II-30A	1.5 Hours
	A126	Area 14, Room 737.0-A1	II-30A	1.5 Hours
	A183	Area 13, Room 737.0-A13	II-30A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A5	1-ISD-31-3808 47A381-405F	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours
	1-ISD-31-3809 47A381-405F	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours
	1-ISD-31-3813 47A381-406F	Area 14, Room 737.0-A1	47W866-2 47W920-5	3 Hours
	1-ISD-31-3817 47A381-409F	Area 1, Room 713.0-A28	47W866-2 47W920-5	3 Hours
	1-ISD-31-3818 47A381-432	Area 1, Room 713.0-A28	47W866-2 47W920-23	1.5 Hours
	0-ISD-31-3840 47A381-399F	Area 25, Room 757.0-A12	47W866-10 47W920-7	3 Hours
	0-ISD-31-3842 47A381-399F	Area 25, Room 757.0-A12	47W866-10 47W920-7	3 Hours
	0-ISD-31-3843 47A381-399F	Area 14, Room 737.0-A1	47W866-10 47W920-5, 23	3 Hours
	0-ISD-31-3845 47A381-424F	Area 14, Room 737.0-A1	47W866-10 47W920-6	3 Hours
	0-ISD-31-3846 47A381-423	Area 10, Fuel Transfer Canal	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3847 47A381-421	Area 10, Room 729.0-A6	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3848 47A381-420	Area 10, Room 729.0-A6	47W866-10 47W920-6, 7	1.5 Hours
	0-ISD-31-3849 47A381-419F	Area 10, Room 729.0-A6	47W866-10 47W920-6	3 Hours

Detection: Ionization smoke detectors are provided in room 737.0-A5. (See note below)

Suppression: Automatic preaction sprinkler systems are provided in both rooms. (See note below) Standpipe and hose stations are provided from the adjacent room (737.0-A1).

Deviations: HVAC ducts penetrate two of the required fire barriers but are not provided with fire dampers. The justification is documented in Part VII, Section 2.6.1. Intervening combustibles are present in Room 737.0-A5. The justification for intervening combustibles, such as insulation on cables in trays and thermo-lag, is documented in Part VII, Section 2.4. No deviations are applicable for Room 737.0-A15.

Evaluations: The justification for the relaxation of fire damper surveillance requirements is documented in Part VII, Section 6.2.2.1. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.12, 13, 14, 63 and 64. No evaluations are applicable to Room 737.0-A15.

Note: Room 737.0-A15 is a partial height room and is contained within room 737.0-A5 (See FPR Figure II-30A). There are no detectors in room 737.0-A15. The walls and ceiling of the room are not rated. The suppression head in the room is considered an obstruction coverage head for the full area suppression of room 737.0-A5. Room 737.0-A15 contains no safe shutdown equipment or cables. Actuation of the preaction sprinkler system in room 737.0-A15 requires the actuation of the detection system in room 737.0-A5.

3.22.2 Fire Area 16 Safe Shutdown Analysis by Analysis Volume**3.22.2.1 AV-041**

Room No.	Description:
737.0-A5	Ventilation and Purge Air Room
737.0-A15	Gross Failed Fuel Detector Room

AV-041 contains redundant Steam Generator circuits/components and redundant source range circuits. Therefore, three separate analyses (AV-041M, AV-041N, and AV-041S) are performed to address the use of either path depending upon on the location of the fire within this volume.

3.22.2.2 AV-041M

Room No.	Description:
737.0-A5M	Middle portion of 737-A5 extending from 2' north of column line V to 2'-6" south of the RX Bldg centerline (includes 737-A15).

A fire in Analysis Volume 41M could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control functions, reactor coolant inventory control functions and Unit 2 long term decay heat removal. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

AV-041M

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
1-NI-92-138P	729-A14	ENERGIZE	PORTABLE SOURCE RANGE MONITOR	480

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-LCV-3-171	755-C12	MUST NOT CLOSE	1-LIC-3-171A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1241G	1-LI-3-98A	#3SG LEVEL INDICATOR (WR)

3.22.2.3 AV-041N

Room No.	Description:
737.0-A5N	North portion of 737-A5 extending from 2' north of 737-A15 to the north wall of 737-A5.

A fire in Analysis Volume 41N could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control functions, reactor coolant inventory control function and Unit 2 long term decay heat removal function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

AV-041N

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1241G	1-LI-3-98A	#3SG LEVEL INDICATOR (WR)

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Room No.	Description:
737.0-A5S	South portion of 737-A5 extending from column line U to column line W.

A fire in Analysis Volume 41S could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and reactor inventory control, Unit 1 secondary side isolation functions, and containment HVAC functions and Unit 2 long term decay heat removal function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-TCV-67-84-A	757-A4	MUST NOT CLOSE	FUSE	120
1-TCV-67-84-A	757-A4	MUST NOT CLOSE	BREAKER 48	120
1-TCV-67-92-A	757-A4	MUST NOT CLOSE	FUSE	120
1-TCV-67-92-A	757-A4	MUST NOT CLOSE	BREAKER 48	120
1-NI-92-138P	729-A14	ENERGIZE	PORTABLE SOURCE RANGE MONITOR	480

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-110	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-111	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-112	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-113	755-C12	MUST CLOSE	1-HS-1-103A OR	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-114	755-C12	MUST CLOSE	-103B 1-HS-1-103A OR -103B	0
1-FCV-1-275	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
1-FSV-77-2562	755-C12	CLOSE	1-HS-77-2562A	13
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-LCV-3-171	755-C12	MUST NOT CLOSE	1-LIC-3-171A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM8766F	1-PI-1-12, 1-PT-1-12-F	#2SG PRESSURE INDICATION, PROTECT SET III - SG LOOP 2
1PM8767F	1-PT-1-23-F, 1-PI-1-23	PROTECT SET III - SG LOOP 3, #3SG PRESSURE INDICATION

3.23 FIRE AREA 17**3.23.1 Rooms 757.0-A2 and A9**

Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

Fire Loading: The combustibles in the 6.9kV and 480V Shutdown Board Room A consist of plastics associated with electrical boards, panels, and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe. The combustibles in the Personnel and Equipment Access consist of plastics associated with the panel and junction boxes and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderate.

Compartmentation: The rooms are of reinforced concrete construction. The equipment hatch opening is normally closed with a steel hatch cover that is non-rated, and the opening is protected with a water curtain.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A2	North Wall	Area 10, Room 757.0-A13	II-31A	2 Hours
		Area 12, Room 729.0-A1	II-31A	2 Hours
		Area 25, Room 757.0-A10	II-31A	2 Hours
		Area 10, Elevator Shaft	II-31A	2 Hours
		Area 32, Room 772.0-A1	II-32A	2 Hours
	South Wall	Area 18, Room 757.0-A3	II-31A	3 Hours
		Area 19, Room 757.0-A4	II-31A	3 Hours
		Area 20, Room 757.0-A1	II-31A	2 Hours
		Area 22, Room 757.0-A26	II-31A	2 Hours
		Area 27, Room 757.0-A5	II-31A	2 Hours
		Area 33, Room 772.0-A2	II-32A	2 Hours
	East Wall	Area 31, Room 757.0-A24	II-31A	2 Hours
		Area 33, Room 772.0-A2	II-32A	2 Hours
	West Wall	Area 36, Room 772.0-A5	II-32A	2 Hours
		Area 27, Room 757.0-A5	II-31A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 15-1, Room 737.0-A3	II-30A, II-31A	2 Hours
	Ceiling	Area 32, Room 772.0-A1	II-31A, II-32A	2 Hours
		Area 33, Room 772.0-A2	II-31A, II-32A	2 Hours
		Area 37, Room 772.0-A6	II-31A, II-32A	2 Hours
		Area 38, Room 772.0-A7	II-31A, II-32A	2 Hours
757.0-A9	North Wall	Area 25, Room 757.0-A10	II-31A	2 Hours
	East Wall	Area 10, Room 757.0-A13	II-31A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 38, Room 772.0-A7	II-31A, II-32A	2 Hours
		Area 39, Room 772.0-A8	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A2	A140	Area 20, Room 757.0-A1	II-31A	1.5 Hours
	A141	Area 18, Room 757.0-A3	II-31A	3 Hours
	A142	Area 19, Room 757.0-A4	II-31A	3 Hours
	A143	Area 27, Room 757.0-A5	II-31A	1.5 Hours
	A145	Area 27, Room 757.0-A5	II-31A	1.5 Hours
	A171	Area 31, Room 757.0-A24	II-31A	1.5 Hours
	A184	Area 33, Room 772.0-A2	II-32A	1.5 Hours
757.0-A9	A152	Area 10, Room 757.0-A13	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A2	0-ISD-31-2713 47A381-192F	Area 18, Room 757.0-A3	47W866-3 47W920-8	3 Hours
	0-ISD-31-2715 47A381-115F	Area 18, Room 757.0-A3	47W866-3 47W920-8	3 Hours
	0-ISD-31-2720 47A381-130F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours
	0-ISD-31-2721 47A381-113F	Area 20, Room 757.0-A1	47W866-3 47W920-26	1.5 Hours
	0-ISD-31-2733 47A381-115G	Area 19, Room 757.0-A4	47W866-3 47W920-8	3 Hours
	0-ISD-31-4619 47A381-497F	Area 27, Room 757.0-A5	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4620 47A381-495F	Area 27, Room 757.0-A5	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4621 47A381-495F	Area 27, Room 757.0-A5	47W866-3 47W920-8	1.5 Hours
757.0-A9	1-ISD-31-2500 47A381-326F	Area 38, Room 772.0-A7	47W866-3 47W920-17	3 Hours
	1-ISD-31-3786 47A381-438	Area 25, Room 757.0-A10	47W866-2 47W920-8	1.5 Hours
	1-ISD-31-3966	Area 10, Room 757.0-A13	47W866-2	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	47A381-441F		47W920-8	

Detection: Ionization smoke detectors are provided in both rooms.

Suppression: Automatic preaction sprinkler systems are provided in both rooms. In addition, a water curtain is provided for the equipment hatch. A standpipe and hose station is provided in Room 757.0-A2.

Deviations: The 772.0 floor slab has an equipment hatch with a non-rated cover that is protected by a water curtain. The justification for this opening is documented in Part VII, Section 2.6.3.1. The justification for manual hose stations having hose lengths greater than 100 feet is documented in Part VII, Section 4.3. No deviations are applicable for Room 757.0-A9.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.20 and 24.

3.23.2 Fire Area 17 Safe Shutdown Analysis by Analysis Volume**3.23.2.1 AV-042**

Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

This AV contains cables and/or equipment associated with the 5th Vital Battery. The 5th Vital Battery is credited as an "installed spare" that can be used during normal plant operation if one of the existing batteries is down for maintenance. This AV has been analyzed to address the effects of a fire on the 125V DC system if the 5th Vital Battery is in service in replacement of any one of the other four normally credited batteries. There has been an additional four analyses performed (AV-042D through G) for this AV to address the various combinations where the 5th Vital Battery can be used.

A fire in Analysis Volume 42 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control and Unit 1 secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1B and 2B Trains. The required mitigating features include providing fire wrap to selected Unit 1 and 2 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332,1- HS-68-332C	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-MTR-67-51-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	118
0-MTR-67-59-B	757-A24	BYPASS	0-HS-67-288C-B -	118

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		INTERLOCK	THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	118
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	118
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1- HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1- HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1- HS-67-111C-B	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1- HS-67-113C-B	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-11-B	772-A2	MUST NOT OPEN	1-BKR-63-11-B	1140
1-FCV-63-11-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74-	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	2
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	2
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	2
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	2
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT	2-HS-32-112A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-22	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	CLOSE MUST NOT	2-HS-32-112A	11
2-FCV-62-35	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	CLOSE MUST NOT	2-HS-32-112A	11
2-FCV-62-48	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	CLOSE MUST NOT	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	CLOSE MUST NOT	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-MTR-30-75-B	755-C12	MUST OPERATE	2-HS-30-75A	120
2-MTR-30-78-B	755-C12	MUST OPERATE	2-HS-30-78A	120
2-MTR-30-80-B	755-C12	MUST OPERATE	2-HS-30-80A	120
2-MTR-30-92-B	755-C12	MUST OPERATE	2-HS-30-92A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V1206A	1-PCV-68-340A-A	PZR PORV
1V4010B	1-PSV-1-6C-B	SOLENOID VALVE
1V4011B	1-PSV-1-6C-B	SOLENOID VALVE
1V4012B	1-PSV-1-6C-B	SOLENOID VALVE
1V4028B	1-PSV-1-24C-B	SOLENOID VALVE
1V4029B	1-PSV-1-24C-B	SOLENOID VALVE
1V4030B	1-PSV-1-24C-B	SOLENOID VALVE
1V5641A	1-FSV-68-394-A, 1-FSV-68-397-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
B202S	0-BD-236-2-E, 0-BD-236-4-G	125V VITAL BATTERY BOARD II, 125V VITAL BATTERY BOARD IV
B210E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

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Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

A fire in Analysis Volume 42D could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control, and Unit 1 secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1B and 2B Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332,1- HS-68-332C	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-MTR-67-51-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	118
0-MTR-67-59-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS	118

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	118
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	118
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1- HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1- HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1- HS-67-111C-B	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1- HS-67-113C-B	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-11-B	772-A2	MUST NOT OPEN	1-BKR-63-11-B	1140
1-FCV-63-11-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	2
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	2
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	2
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	2
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-MTR-30-75-B	755-C12	MUST OPERATE	2-HS-30-75A	120
2-MTR-30-78-B	755-C12	MUST OPERATE	2-HS-30-78A	120
2-MTR-30-80-B	755-C12	MUST OPERATE	2-HS-30-80A	120
2-MTR-30-92-B	755-C12	MUST OPERATE	2-HS-30-92A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V1206A	1-PCV-68-340A-A	PZR PORV
1V4010B	1-PSV-1-6C-B	SOLENOID VALVE
1V4011B	1-PSV-1-6C-B	SOLENOID VALVE
1V4012B	1-PSV-1-6C-B	SOLENOID VALVE
1V4028B	1-PSV-1-24C-B	SOLENOID VALVE
1V4029B	1-PSV-1-24C-B	SOLENOID VALVE
1V4030B	1-PSV-1-24C-B	SOLENOID VALVE
1V5641A	1-FSV-68-394-A, 1-FSV-68-397-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
B202S	0-BD-236-2-E, 0-BD-236-4-G	125V VITAL BATTERY BOARD II, 125V VITAL BATTERY BOARD IV
B210E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

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Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

A fire in Analysis Volume 42E could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control, and Unit 1 secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1B and 2B Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332,1- HS-68-332C	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-MTR-67-51-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	118
0-MTR-67-59-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW	118

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	118
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	118
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1- HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1- HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1- HS-67-111C-B	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1- HS-67-113C-B	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-11-B	772-A2	MUST NOT OPEN	1-BKR-63-11-B	1140
1-FCV-63-11-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-33-A	713-A15	CLOSE	REPAIR PROCEDURE (INSTALL JUMPERS).. HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	2
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	2
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	2
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	2
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-MTR-30-75-B	755-C12	MUST OPERATE	2-HS-30-75A	120
2-MTR-30-78-B	755-C12	MUST OPERATE	2-HS-30-78A	120
2-MTR-30-80-B	755-C12	MUST OPERATE	2-HS-30-80A	120
2-MTR-30-92-B	755-C12	MUST OPERATE	2-HS-30-92A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V1206A	1-PCV-68-340A-A	PZR PORV
1V4010B	1-PSV-1-6C-B	SOLENOID VALVE
1V4011B	1-PSV-1-6C-B	SOLENOID VALVE
1V4012B	1-PSV-1-6C-B	SOLENOID VALVE
1V4028B	1-PSV-1-24C-B	SOLENOID VALVE
1V4029B	1-PSV-1-24C-B	SOLENOID VALVE
1V4030B	1-PSV-1-24C-B	SOLENOID VALVE
1V5641A	1-FSV-68-394-A, 1-FSV-68-397-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
B202S	0-BD-236-2-E, 0-BD-236-4-G	125V VITAL BATTERY BOARD II, 125V VITAL BATTERY BOARD IV
B210E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

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Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

A fire in Analysis Volume 42F could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control and Unit 1 secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1B and 2B Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332,1- HS-68-332C	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-MTR-67-51-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	118
0-MTR-67-59-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS	118

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	118
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	118
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1- HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1- HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1- HS-67-111C-B	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1- HS-67-113C-B	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-11-B	772-A2	MUST NOT OPEN	1-BKR-63-11-B	1140
1-FCV-63-11-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	2
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	2
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	2
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	2
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-MTR-30-75-B	755-C12	MUST OPERATE	2-HS-30-75A	120
2-MTR-30-78-B	755-C12	MUST OPERATE	2-HS-30-78A	120
2-MTR-30-80-B	755-C12	MUST OPERATE	2-HS-30-80A	120
2-MTR-30-92-B	755-C12	MUST OPERATE	2-HS-30-92A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V1206A	1-PCV-68-340A-A	PZR PORV
1V4010B	1-PSV-1-6C-B	SOLENOID VALVE
1V4011B	1-PSV-1-6C-B	SOLENOID VALVE
1V4012B	1-PSV-1-6C-B	SOLENOID VALVE
1V4028B	1-PSV-1-24C-B	SOLENOID VALVE
1V4029B	1-PSV-1-24C-B	SOLENOID VALVE
1V4030B	1-PSV-1-24C-B	SOLENOID VALVE
1V5641A	1-FSV-68-394-A, 1-FSV-68-397-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
B202S	0-BD-236-2-E, 0-BD-236-4-G	125V VITAL BATTERY BOARD II, 125V VITAL BATTERY BOARD IV
B210E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

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Room No.	Description:
757.0-A2	6.9kV and 480V Shutdown Board Room A
757.0-A9	Unit 1 Personnel and Equipment Access

A fire in Analysis Volume 42G could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, reactor pressure control and Unit 1 secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1B and 2B Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

AV-042G**Power Systems Affected:**

POWER SYSTEM AFFECTED	DESCRIPTION
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-MTR-30-39-B	757-A5	MUST NOT START	1-XS-30-39A-B, 1-BKR-30-39-B	20
1-FCV-68-332-B	772-A2	MUST OPEN	1-XS-68-332,1- HS-68-332C	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
1-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-MTR-30-39-B	757-A5	START/STOP	1-BKR-30-39-B, 1-XS-30-39A-B	100
0-MTR-67-51-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	118
0-MTR-67-59-B	757-A24	BYPASS INTERLOCK	0-HS-67-288C-B - THREE ERCW	118

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			PUMPS MAY BE REQD. START THE NON- RUNNING B- TRAIN ERCW PUMP ON THIS BOARD AS REQUIRED. OVERLOADING THE DG WILL BE AVOIDED BY MANUALLY TRIPPING 2- HTR-68-341D, 2- MTR-30-278, AND 0-MTR-30- 139 IF CONNECTED.	
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	118
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	118
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-103-B	772-A2	MUST NOT CLOSE	1-XS-67-103-B, 1- HS-67-103C-B	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-105-B	772-A2	MUST NOT CLOSE	1-XS-67-105-B, 1- HS-67-105C-B	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-111-B	772-A2	MUST NOT CLOSE	1-XS-67-111-B, 1- HS-67-111C-B	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-113-B	772-A2	MUST NOT CLOSE	1-XS-67-113-B, 1- HS-67-113C-B	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MTR-30-75-B	757-A5	MUST RUN	1-XS-30-75-B, 1- HS-30-75C-B	120
1-MTR-30-78-B	757-A5	MUST RUN	1-XS-30-78-B, 1- HS-30-78C-B	120
1-MTR-30-80-B	757-A5	MUST OPERATE	1-XS-30-80-B, 1- HS-30-80C-B	120
1-MTR-30-92-B	757-A5	MUST OPERATE	1-XS-30-92-B, 1- HS-30-92C-B	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125
0-MTR-31-11-B	757-A5	MUST RUN	0-XS-31-11	240

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
0-FCV-67-144-B	737-A1B	CLOSE	HANDWHEEL	1140
0-FCV-67-144-B	772-A2	MUST CLOSE	0-BKR-67-144-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-11-B	772-A2	MUST NOT OPEN	1-BKR-63-11-B	1140
1-FCV-63-11-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140
1-FCV-74-21-B	757-A5	MUST NOT CLOSE	1-BKR-74-21-B	1140
1-FCV-74-21-B	676-A10	OPEN	HANDWHEEL	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-9-B	772-A2	MUST OPEN	CLOSE BREAKER 1-HS- 74-9-B OR USE REPAIR PROCEDURE.	1140
1-MTR-30-176-B	757-A5	MUST OPERATE	REPAIR PROCEDURE (INSTALL JUMPERS)	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-33-A	713-A15	CLOSE	REPAIR PROCEDURE (INSTALL JUMPERS).. HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	2
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	2
0-MTR-78-9-B	755-C12	STOP	0-XS-78-9	2
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	2
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	2
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	2
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	2
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	2
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	2
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	2
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	2
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	2
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	2
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
1-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-A-A	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
0-FCV-67-152-B	755-C12	MUST OPEN	0-HS-67-152A-B	119
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-MTR-30-75-B	755-C12	MUST OPERATE	2-HS-30-75A	120
2-MTR-30-78-B	755-C12	MUST OPERATE	2-HS-30-78A	120
2-MTR-30-80-B	755-C12	MUST OPERATE	2-HS-30-80A	120
2-MTR-30-92-B	755-C12	MUST OPERATE	2-HS-30-92A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL5397B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PL5399B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5403B	1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1PL5405B	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1PP762B	1-OXF-212-B1-B	480V SHUTDOWN BOARD XMFR 1B1-B
1PP765B	1-OXF-212-B2-B	480V SHUTDOWN BOARD XMFR 1B2-B
1V1206A	1-PCV-68-340A-A	PZR PORV
1V4010B	1-PSV-1-6C-B	SOLENOID VALVE
1V4011B	1-PSV-1-6C-B	SOLENOID VALVE
1V4012B	1-PSV-1-6C-B	SOLENOID VALVE
1V4028B	1-PSV-1-24C-B	SOLENOID VALVE
1V4029B	1-PSV-1-24C-B	SOLENOID VALVE
1V4030B	1-PSV-1-24C-B	SOLENOID VALVE
1V5641A	1-FSV-68-394-A, 1-FSV-68-397-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
B202S	0-BD-236-2-E, 0-BD-236-4-G	125V VITAL BATTERY BOARD II, 125V VITAL BATTERY BOARD IV
B210E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

3.24 FIRE AREA 18**3.24.1 Room 757.0-A3**

Description: 125V Vital Battery Board Room II

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and insulation on cables in trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A3	North Wall	Area 17, Room 757.0-A2	II-31A	3 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 21, Room 757.0-A25	II-31A	3 Hours
		Area 22, Room 757.0-A26	II-31A	3 Hours
	West Wall	Area 19, Room 757.0-A4	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
	Ceiling	Area 34, Room 772.0-A3	II-31A, II-32A	3 Hours
		Area 35, Room 772.0-A4	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A3	A141	Area 17, Room 757.0-A2	II-31A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A3	0-ISD-31-2713 47A381-192F	Area 17, Room 757.0-A2	47W866-3 47W920-8	3 Hours
	0-ISD-31-2715 47A381-115F	Area 17, Room 757.0-A2	47W866-3 47W920-8	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: A manually actuated sprinkler system is provided in the room. A standpipe and hose station is provided from room 757.0-A2.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.21 and 65.

3.24.2 Fire Area 18 Safe Shutdown Analysis by Analysis Volume**3.24.2.1 AV-043**

Room No.	Description:
757.0-A3	125-V Vital Battery Board Room II

A fire in Analysis Volume 43 could potentially affect systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions for both units. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available for 1A and 2A Trains. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation Unit 1 and Unit 2 of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 1B-B	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
	PUMP 1B-B	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2B-B MOTOR	
2-MTR-30-75-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2B-B	
2-MTR-30-78-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2D-B	
2-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2D-B	
2-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2B-B	
2-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 2B-B	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN	KEY 12 P 2 KEY 16 P 2
	COMPONENTS	
2-SG-COOLDN-4	SG-4 COOLDOWN	KEY 12 P 2 KEY 16 P 2
	COMPONENTS	
CCS-HX-C	COMPONENT COOLING	KEY 1 PATH 2
	SYSTEM HX C	
ERCW-HDR-1B	ESSENTIAL RAW COOLING	KEY 1 PATH 2
	WTR SUPPLY HDR 1B	
ERCW-HDR-2B	ESSENTIAL RAW COOLING	KEY 1 PATH 2
	WTR SUPPLY HDR 2B	
SG-COOLDN-3	SG-3 COOLDOWN	KEY 12 P 2 KEY 16 P 2
	COMPONENTS	
SG-COOLDN-4	SG-4 COOLDOWN	KEY 12 P 2 KEY 16 P 2
	COMPONENTS	
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-128-B-T	757-A24	MUST TRIP	1-HS-3-128C-B, 1-XS-3-128-B	13
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-HS-68-341DC- B,1-XS-68-341D- B	25
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V5607A	1-PCV-68-340A-A	PZR PORV

3.25 FIRE AREA 19**3.25.1 Room 757.0-A4**

Description: 125V Vital Battery Board Room I

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and insulation on cables in trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A4	North Wall	Area 17, Room 757.0-A2	II-31A	3 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C3	II-31A, II-34A	3 Hours
	East Wall	Area 18, Room 757.0-A3	II-31A	3 Hours
	West Wall	Area 27, Room 757.0-A5	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
	Ceiling	Area 33, Room 772.0-A2	II-31A, II-32A	3 Hours
		Area 35, Room 772.0-A4	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A4	A142	Area 17, Room 757.0-A2	II-31A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A4	0-ISD-31-4618 47A381-513G	Area 27, Room 757.0-A5	47W866-3 47W920-8	3 Hours
	0-ISD-31-2733 47A381-115G	Area 17, Room 757.0-A2	47W866-3 47W920-8	3 Hours

Detection: Ionization detectors are provided in the room.

Suppression: A manually actuated sprinkler system is provided in the room. A standpipe and hose station is provided from room 757.0-A2.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.22, 63 and 64.

3.25.2 Fire Area 19 Safe Shutdown Analysis by Analysis Volume**3.25.2.1 AV-044**

Room No.	Description:
757.0-A4	125V Vital Battery Board Room I

A fire in Analysis Volume 44 could potentially affect systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1B and 2B Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-88-A	MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-108-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-70-46-A	MOTOR COOLER 1C-A	KEY 1 PATH 1
1-MTR-74-10-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-PCV-68-340A-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 48 (PORV)
2-MTR-30-184-A	PZR PORV	KEY 11 PATH 1
2-MTR-30-74-A	MDAFW PUMP 2A-A	KEY 37O
2-MTR-30-77-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37J
2-MTR-30-83-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-88-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-62-108-A	CONTROL ROD DRIVE	KEY 37J
2-MTR-70-59-A	MOTOR COOLER 2A-A	KEY 37J
2-MTR-74-10-A	CONTROL ROD DRIVE	KEY 37J
2-SG-COOLDN-1	MOTOR COOLER 2C-A	KEY 1 PATH 1
2-SG-COOLDN-2	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
ERCW-HDR-1A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 31 PATH 1
ERCW-HDR-2A	RHR PUMP 2A-A	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
TDAFW_PUMP_2A-S	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
	TURBINE-DRIVEN AFW PUMP	KEY 14
	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-118-A-T	757-A2	MUST TRIP	1-HS-3-118C-A, 1-XS-3-118	13
1-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-HS-68-341AC- A, 1-XS-68-341A- A	25
1-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	1-XS-68-341F	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.26 FIRE AREA 20**3.26.1 Room 757.0-A1**

Description: Auxiliary Control Room

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderate.

Compartmentation: The room is reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A1	North Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 31, Room 757.0-A24	II-31A	2 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 23, Room 757.0-A27	II-31A	2 Hours
		Area 24, Room 757.0-A28	II-31A	2 Hours
	West Wall	Area 21, Room 757.0-A25	II-31A	2 Hours
		Area 22, Room 757.0-A26	II-31A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 33, Room 772.0-A2	II-31A, II-32A	2 Hours
		Area 45, Room 772.0-A15	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A1	A138	Area 21, Room 757.0-A25	II-31A	1.5 Hours
	A139	Area 17, Room 757.0-A26	II-31A	1.5 Hours
	A140	Area 22, Room 757.0-A2	II-31A	1.5 Hours
	A172	Area 24, Room 757.0-A24	II-31A	1.5 Hours
	A174	Area 23, Room 757.0-A27	II-31A	1.5 Hours
	A175	Area 31, Room 757.0-A28	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A1	0-isd-31-2720 47A381-130F	Area 17, Room 757.0-A2	47W866-3 47W920-26	3 Hours
	0-isd-31-2721 47A381-113F	Area 17, Room 757.0-A2	47W866-3 47W920-26	1.5 Hours
	0-isd-31-2723 47A381-258F	Area 21, Room 757.0-A25	47W866-3 47W920-26	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	0-ISD-31-2725 47A381-257F	Area 21, Room 757.0-A25	47W866-3 47W920-26	3 Hours
	0-ISD-31-2726 47A381-257F	Area 22, Room 757.0-A26	47W866-3 47W920-26	3 Hours
	0-ISD-31-2728 47A381-259F	Area 22, Room 757.0-A26	47W866-3 47W920-26	3 Hours
	0-ISD-31-2771 47A381-130F	Area 31, Room 757.0-A24	47W866-3 47W920-8, 26	3 Hours
	0-ISD-31-2772 47A381-113F	Area 31, Room 757.0-A24	47W866-3 47W920-8, 26	1.5 Hours
	0-ISD-31-2774 47A381-258F	Area 23, Room 757.0-A27	47W866-3 47W920-8	3 Hours
	0-ISD-31-2775 47A381-257F	Area 23, Room 757.0-A27	47W866-3 47W920-26	3 Hours
	0-ISD-31-2777 47A381-257F	Area 24, Room 757.0-A28	47W866-3 47W920-26	3 Hours
	0-ISD-31-2779 47A381-259F	Area 24, Room 757.0-A28	47W866-3 47W920-26	3 Hours

Detection: Ionization detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from rooms 757.0-A2 and A24.

Deviations: The following instrumentation has not been provided in the Auxiliary Control Room:

- Wide range steam generator level
- Tank level for the condensate storage tank (CST) and refueling water storage tank (RWST).
- RCS cold leg temperature (T_c).

The justifications are documented in Part VII, Section 2.1.

Evaluations: The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.19.

3.26.2 Fire Area 20 Safe Shutdown Analysis by Analysis Volume**3.26.2.1 AV-045**

Room No.	Description:
757.0-A1	Auxiliary Control Room

A fire in Analysis Volume 45 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
1-MTR-62-104-B	MOTOR COOLER 1B-B CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-XS-68-341A-A, 1-HS-68-341AC-A	25
1-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D-B, 1-HS-68-341DC-B	25
2-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-XS-68-341A-A, 2-HS-68-341AC-A	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-68DC1&2-S&-68AC2-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-79DC1&2-S&-79AC2-S	120
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-74-1-A	772-A16	MUST OPEN	CLOSE BREAKER 2-XS-74-1-A, 2-HS-74-1C-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS)	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	9

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	9
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	9
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	9
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-LCV-3-156	755-C12	MUST NOT CLOSE	1-LIC-3-156A	13
1-LCV-3-164	755-C12	MUST NOT CLOSE	1-LIC-3-164A	13
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
2-LCV-3-156	755-C12	MODULATE VALVE	2-LIC-3-156A	13
2-LCV-3-164	755-C12	MODULATE VALVE	2-LIC-3-164A	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-TCO-30-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCO-30-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCO-30-90-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCO-30-90-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PV244F	1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2PV592A	2-FCV-1-51-S, 2-PI-1-19C, 2-PI-1-1C, 2-PIC-1-24C, 2-PIC-1-6C, TDAFW_PUMP_2A-S	AFW PUMP TURBINE TRIP & THROTTLE VALVE, SG 3 STEAM HEADER PRESSURE, SG 1 STEAM HEADER PRESSURE, SG 3 POWER RELIEF VALVE, SG 1 POWER RELIEF VALVE, TURBINE-DRIVEN AFW PUMP
B38F	0-INV-235-3-F, 1-INV-235-3-F	SPARE CHANNEL III VITAL INVERTER, CHANNEL III VITAL INVERTER
B39F	1-INV-235-3-F	CHANNEL III VITAL INVERTER
PV240F	0-INV-235-3-F, 1-BD-235-3-F, 2-BD-235-3-F	SPARE CHANNEL III VITAL INVERTER, 120V AC VITAL POWER BOARD 1-III, 120V AC VITAL POWER BOARD 2-III

3.27 FIRE AREA 21**3.27.1 Room 757.0-A25**

Description: Auxiliary Control Instrument Room 1A

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights, Thermo-Lag, and insulation on cables in trays. The fire severity is classified as severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A25	North Wall	Area 22, Room 757.0-A26	II-31A	2 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 20, Room 757.0-A1	II-31A	2 Hours
	West Wall	Area 18, Room 757.0-A3	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 33, Room 772.0-A2 Area 34, Room 772.0-A3	II-31A, II-32A II-31A, II-32A	2 Hours 3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A25	A138	Area 20, Room 757.0-A1	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A25	0-ISD-31-2723 47A381-258F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours
	0-ISD-31-2725 47A381-257F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours

Detection: Ionization detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from rooms 757.0-A2 and A24.

Deviations: None.

Evaluations: None.

3.27.2 Fire Area 21 Safe Shutdown Analysis by Analysis Volume**3.27.2.1 AV-046**

Room No.	Description:
757.0-A25	Auxiliary Control Instrument Room 1A

A fire in Analysis Volume 46 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, and Unit 1 reactor coolant inventory control and long term decay heat removal functions, containment HVAC, and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-XS-68-341A-A, 1-HS-68-341AC-A	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-68DC1&2-S&- 68AC2-S	120
1-FCV-74-16	713-A12	OPEN	VENT AIR	1140
1-FCV-74-32	713-A12	OPEN	VENT AIR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	9
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	9
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4917S	0-CHGR-236-2-E, 1-INV-235-2-E	125V VITAL BATTERY CHARGER 2-E, CHANNEL II VITAL INVERTER
1PV135E	1-LI-3-106, 1-LI-3-38, 1-LI-3-51, 1-LI-3-93, 1-LI-68-335A-E, 1-PT-68-334-E, 1-TI-68-43, 1-TI-68-60, 1-TI-68-65, 1-TI-68-83	#4SG LEVEL INDICATOR (NR), #1SG LEVEL INDICATOR (NR), #2SG LEVEL INDICATOR (NR), #3SG LEVEL INDICATOR (NR), PZR LEVEL INDICATOR, PRESSURIZER PRESSURE, RCS LOOP 3 HOT LEG TEMPERATURE, RCS LOOP 3 COLD LEG TEMPERATURE, RCS LOOP 4 HOT LEG TEMPERATURE, RCS LOOP 4 COLD LEG TEMPERATURE
B11E	0-BD-236-2-E	125V VITAL BATTERY BOARD II
B16E	0-BD-236-2-E	125V VITAL BATTERY BOARD II
B34E	0-INV-235-2-E, 1-INV-235-2-E	SPARE CHANNEL II VITAL INVERTER, CHANNEL II VITAL INVERTER
B35E	1-INV-235-2-E	CHANNEL II VITAL INVERTER
B60E	0-BD-236-2-E	125V VITAL BATTERY BOARD II
B62E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

3.28 FIRE AREA 22**3.28.1 Room 757.0-A26**

Description: Auxiliary Control Instrument Room 1B.

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights, Thermo-Lag, and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A26	North Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
	South Wall	Area 21, Room 757.0-A25	II-31A	2 Hours
	East Wall	Area 20, Room 757.0-A1	II-31A	2 Hours
	West Wall	Area 18, Room 757.0-A3	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 33, Room 772.0-A2	II-31A, II-32A	2 Hours
		Area 34, Room 772.0-A3	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A26	A139	Area 20, Room 757.0-A1	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A26	0-ISD-31-2726 47A381-257F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours
	0-ISD-31-2728 47A381-259F		47W866-3 47W920-26	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from rooms 757.0-A2 and A24.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.32 and 65.

3.28.2 Fire Area 22 Safe Shutdown Analysis by Analysis Volume**3.28.2.1 AV-047**

Room No.	Description:
757.0 A26	Auxiliary Control Instrument Room 1B

A fire in Analysis Volume 47 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, MCR HVAC, long term decay heat removal and Unit 1 reactor coolant inventory control functions, reactor pressure control and containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D-B, 1-HS-68-341DC-B	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-332-B	755-C12	MUST CLOSE	1-HS-68-332A	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B25E	1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1B30E	1-BD-212-B2-B, 0-MTR-78-9-B	480V SHUTDOWN BOARD 1B2-B, SFP PUMP B-B
1V4015A	1-PSV-1-13C-A	SOLENOID VALVE
1V4016A	1-PSV-1-13C-A	SOLENOID VALVE
1V4033A	1-PSV-1-31C-A	SOLENOID VALVE
1V4034A	1-PSV-1-31C-A	SOLENOID VALVE
B61E	0-BD-236-2-E	125V VITAL BATTERY BOARD II
B62E	0-BD-236-2-E	125V VITAL BATTERY BOARD II

3.29 FIRE AREA 23**3.29.1 Room 757.0-A27**

Description: Auxiliary Control Instrument Room 2A

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A27	North Wall	Area 24, Room 757.0-A28	II-31A	2 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 30, Room 757.0-A23	II-31A	3 Hours
	West Wall	Area 20, Room 757.0-A1	II-31A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	AREA 44, ROOM 772.0-A14	II-31A, II-32A	3 Hours
		AREA 45, ROOM 772.0-A15	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A27	A174	Area 20, Room 757.0-A1	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A27	0-ISD-31-2774 47A381-258F	Area 20, Room 757.0-A1	47W866-3 47W920-8	3 Hours
	0-ISD-31-2775 47A381-257F		47W866-3 47W920-26	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from rooms 757.0-A2 and A24.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.33, 63, and 64.

3.29.2 Fire Area 23 Safe Shutdown Analysis by Analysis Volume**3.29.2.1 AV-048**

Room No.	Description:
757.0-A27	Auxiliary Control Instrument Room 2A

A fire in Analysis Volume 48 could potentially affect systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions for both units. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1B and 2B Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
1-MTR-30-74-A	COOLER 1A-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-118-A-T	757-A2	MUST TRIP	2-HS-3-118C-A, 2-XS-3-118	13
2-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-HS-68-341AC- A,2-XS-68-341A- A	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-28	713-A16	OPEN	VENT AIR	1140
2-FCV-74-32	713-A15	OPEN	VENT AIR	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-68-333-A	755-C12	MUST CLOSE	2-HS-68-333A-A	0
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-FCV-70-134-B	755-C12	CLOSE VALVE	2-HS-70-134A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.30 FIRE AREA 24**3.30.1 Room 757.0-A28**

Description: Auxiliary Control Instrument Room 2B

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A28	North Wall	Area 31, Room 757.0-A24	II-31A	2 Hour
	South Wall	Area 23, Room 757.0-A27	II-31A	2 Hours
	East Wall	Area 30, Room 757.0-A23	II-31A	3 Hours
	West Wall	Area 20, Room 757.0-A1	II-31A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 44, Room 772.0-A14 Area 45, Room 772.0-A15	II-31A, II-32A II-31A, II-32A	3 Hours 2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A28	A175	Area 20, Room 757.0-A1	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A28	0-ISD-31-2777 47A381-257F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours
	0-ISD-31-2779 47A381-259F	Area 20, Room 757.0-A1	47W866-3 47W920-26	3 Hours

Detection: Ionization detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided for the room. Standpipe and hose stations are provided from rooms 757.0-A2 and A24.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.34, 62 and 65.

3.30.2 Fire Area 24 Safe Shutdown Analysis by Analysis Volume**3.30.2.1 AV-049**

Room No.	Description:
757.0-A28	Auxiliary Control Instrument Room 2B

A fire in Analysis Volume 49 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, containment HVAC, reactor coolant inventory control, steam generator inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-XS-68-341D-B, 1-HS-68-341DC-B	25
2-HTR-68-341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-XS-68-341D-B, 2-HS-68-341DC-B	25
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-FCV-74-28	713-A11	OPEN	VENT AIR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-68-332-B	755-C12	MUST CLOSE	2-HS-68-332A-B	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PV828F	2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
B66F	0-BD-236-3-F	125V VITAL BATTERY BOARD III
B67F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

3.31 FIRE AREA 25**3.31.1 Rooms 782.0-A1 and A2, 757.0-A10**

Room No.	Description:
782.0-A1	Unit 1 Control Rod Drive Equipment Room
782.0-A2	Pressurizer Heater Transformer Room 1
757.0-A10	Miscellaneous Equipment Room

Fire Loading: The combustibles consist of plastics associated with the electrical panels, transformers, and lights, oil in the transformers, and the insulation on the cables in the trays, and ERFBS Thermo-Lag. The fire severity of Rooms 782.0-A1 and –A2 are classified as moderate. The fire severity of Room 757.0-A10 is classified as moderately severe.

Compartmentation: The rooms are of reinforced concrete construction. The floor slab in Room 782.0-A1 to 757.0-A10 has an equipment hatch that is covered with a nonfire rated steel cover, two HVAC ducts without fire dampers, and a stairway enclosed by 2 hour non-regulatory fire barriers. The floor slab in Room 782.0-A2 to Room 757.0-A12 has a stairway enclosed by 2 hour non-regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
782.0-A1	North Wall	Area 61, Unit 1 Reactor Bldg	II-32A	3 Hours
	South Wall	Area 37, Room 772.0-A6	II-32A	2 Hours
		Area 38, Room 772.0-A7	II-32A	2 Hours
		Area 39, Room 772.0-A8	II-32A	2 Hours
	East Wall	Area 10, Room 757.0-A13	II-32A	2 Hours
	West Wall	Area 12, Room 729.0-A1	II-32A	2 Hours
		Area 61, Unit 1 Reactor Bldg	II-32A	3 Hours
782.0-A2	Floor	Area 25, Room 757.0-A10	II-31A, II-32A	2 Hours
		Area 26, Room 757.0-A11	II-31A, II-32A	3 Hours
	North Wall	Area 13, Room 775.25-A1	II-32A	3 Hours
		Area 13, Room 786.5-A1	II-32A	3 Hours
	East Wall	Area 10, Room 757.0-A13	II-32A	2 Hours
	West Wall	Area 61, Unit 1 Reactor Bldg	II-32A	3 Hours
	Floor	Area 25, Room 757.0-A12	II-31A, II-32A	2 Hours
		Area 26, Room 757.0-A11	II-31A, II-32A	3 Hours
757.0-A10	North Wall	Area 26, Room 757.0-A11	II-31A	3 Hours
		Area 61, Unit 1 Reactor Bldg	II-31A	3 Hours
	South Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 17, Room 757.0-A9	II-31A	2 Hours
		Area 37, Room 772.0-A6	II-31A, II-32A	2 Hours
		Area 38, Room 772.0-A7	II-31A, II-32A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
		Area 39, Room 772.0-A8	II-31A, II-32A	2 Hours
	East Wall	Area 10, Room 757.0-A13	II-31A	2 Hours
	West Wall	Area 12, Room 729.0-A1	II-31A	2 Hours
	Floor	Area 1, Room 713.0-A28	II-30A, II-31A	2 Hours
		Area 16, Room 737.0-A5	II-30A, II-31A	2 Hours
	Ceiling	Area 25, Room 782.0-A1	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A10	A155	Area 10, Room 757.0-A13	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
782.0-A1	1-ISD-31-3119 47A381-256F	Area 10, Room 757.0-A13	47W866-2 47W920-9	3 Hours
	1-ISD-31-3117 47A381-253	Area 10, Room 757.0-A13	47W866-2 47W920-10	3 Hours
757.0-A10	1-ISD-31-3786 47A381-438	Area 17, Room 757.0-A9	47W866-2 47W920-8	1.5 Hours
	1-ISD-31-3788 47A381-440F	Area 10, Room 757.0-A13	47W866-2 47W920-8	3 Hours

Detection: Ionization smoke detectors are provided in the rooms.

Suppression: Automatic preaction sprinkler systems are provided in the rooms. A standpipe and hose station is provided in Rooms 782.0-A1 and 757.0-A10.

Deviations: The justification for the heavy sheet metal ducts is documented in Part VII, Section 2.6.3.2.b. No deviations are applicable to Rooms 782.0-A1 and -A2.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.25, 51, 52, 62 and 65.

3.31.2 Room 757.0-A12

Description: Reactor Building Access Room (Unit 1)

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights, insulation on cables in trays, and anticipated amounts of radwaste trash and laundry. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction. A stairway provides access to Room 757.0-A12 from Room 782.0-A2.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A12	North Wall	Area 13, Room 763.5-A1	II-31A, II-38A	3 Hours
		Area 13, Room 775.25-A1	II-31A, II-32A	3 Hours
		Area 13, Room 729.0-A14	II-31A, II-38A	3 Hours
	South Wall	Area 26, Room 757.0-A11	II-31A	3 Hours
	East Wall	Area 10, Room 757.0-A13	II-31A	2 Hours
	West Wall	Area 61, Unit 1 Reactor Bldg	II-31A	3 Hours
	Floor	Area 16, Room 737.0-A5	II-30A, II-31A	2 Hours
	Ceiling	Area 25, Room 782.0-A2	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A12	A156	Area 10, Room 757.0-A13	II-31A	1.5 Hours
	A162	Area 13, Room 763.5-A1	II-31A	3 Hours
	A164	Area 61, Unit 1 Reactor Bldg	II-31A	3 Hours
	A165	Area 61, Unit 1 Reactor Bldg	II-31A	3 Hours

Dampers:				
Room	Damper/ Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A12	0-ISD-31-3839 47A381-434F	Area 10, Room 757.0-A13	47W866-10 47W920-7	1.5 Hours
	0-ISD-31-3840 47A381-623F	Area 16, Room 737.0-A5	47W866-10 47W920-7	3 Hours
	0-ISD-31-3841 47A381-435F	Area 10, Room 757.0-A13	47W866-10 47W920-7	1.5 Hours
	0-ISD-31-3842 47A381-626F	Area 16, Room 737.0-A5	47W866-10 47W920-7	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room. Standpipe and hose stations are provided.

Deviations: None.

Evaluations: None.

3.31.3 Fire Area 25 Safe Shutdown Analysis By Analysis Volume**3.31.3.1 AV-050**

Room No.	Description:
757.0-A10	Miscellaneous Equipment Room
782.0-A1	Unit 1 Control Rod Drive Equipment Room
782.0-A2	Pressurizer Heater Transformer Room 1

A fire in Analysis Volume 50 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and reactor pressure control functions and Unit 1 containment HVAC, reactor coolant inventory control, and secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire, manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 1 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-85-1A	TB	MUST BE TRIPPED	1-BKR-85-A	15
1-MTR-85-1B	TB	MUST BE TRIPPED	1-BKR-85-B	15
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-FCV-67-104-A	772-A1	MUST NOT CLOSE	1-BKR-67-104-A	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	772-A1	MUST NOT CLOSE	1-BKR-67-107-A	120
1-FCV-67-112-A	772-A1	MUST NOT CLOSE	1-BKR-67-112-A	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-99-A	772-A1	MUST NOT CLOSE	1-BKR-67-99-A	120
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-110	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-111	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-112	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-113	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-114	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-275	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-HTR-68-341A/A1-A7	755-C12	DE-ENERGIZE PRESSURIZER HEATERS	2-HS-68-341A	25
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4764B	1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR
1PL4789B	1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR
1PL4839B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4853B	1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B
1PL4856B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B
1PL4873B	1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM595E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM691E	1-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
1PM784E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
1PM876E	1-TI-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
1PM988E	1-PT-68-334-E	PRESSURIZER PRESSURE
1V1208B	1-PCV-68-334-B	PZR PORV
1V1215B	1-FCV-74-2-B	RHR SYSTEM ISOLATION VALVE
1V1219B	1-FCV-74-9-B	RHR SYSTEM ISOLATION BY-PASS VALVE
1V2150B	1-FCV-74-9-B	RHR SYSTEM ISOLATION BY-PASS VALVE
1V2840B	1-FCV-74-2-B	RHR SYSTEM ISOLATION VALVE
1V5661B	1-FSV-68-395-B, 1-FSV-68- 396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE

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Room No.	Description:
757.0-A12	Reactor Building Access Room (Unit 1)

A fire in Analysis Volume 51 could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control and secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-110	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-111	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-112	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-113	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-114	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-275	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.32 FIRE AREA 26**3.32.1 Room 757.0-A11**

Description: Unit 1 Reactor Bldg Equipment Hatch (During power operations this room is considered as part of Unit 1 Reactor Building.)

Fire Loading: The combustibles consist of plastics associated with the lights and insulation on cables in trays and Thermo-Lag on conduits. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction. The concrete plugs that close the opening provide an equivalent 3-hour fire barrier.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A11	North Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
		Area 25, Room 757.0-A12	II-31A	3 Hours
	South Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
		Area 25, Room 757.0-A10	II-31A	3 Hours
	East Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
		Area 16, Room 737.0-A5	II-30A, II-31A	3 Hours
	Ceiling	Area 25, Room 782.0-A1	II-31A, II-32A	3 Hours
		Area 10, Room 757.0-A13	II-31A, II-32A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room except area near blast door. Standpipe and hose stations are provided from the adjacent room (757.0-A13) when the equipment hatch concrete plugs are removed, e.g., during outages. This room is not accessible during power operations.

Deviations: None.

Evaluations: The justification for the surveillance frequency for sprinklers, detectors, penetration seals and Thermo-lag in the room is documented in Part VII, Section 6.1.1 of the FPR.

3.32.2 Fire Area 26 Safe Shutdown Analyses By Analysis Volume**3.32.2.1 AV-052**

Room No.	Description:
757.0-A11	Unit 1 Reactor Bldg Equipment Hatch (During power, part of U1 Rx Bldg)

A fire in Analysis Volume 52 could potentially affect Unit 1 systems and components necessary to maintain the steam generator inventory control, containment HVAC, reactor pressure control and secondary side isolation functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-103	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-104	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-105	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-106	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-107	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-108	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-109	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-110	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-111	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-112	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-113	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-114	755-C12	MUST CLOSE	1-HS-1-103A OR -103B	0
1-FCV-1-275	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-277	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-279	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-284	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-291	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-298	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-36	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-37	755-C12	MUST CLOSE	1-HS-46-9A	0
1-FCV-1-43	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-44	755-C12	MUST CLOSE	1-HS-46-36A	0
1-FCV-1-61	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-62	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-64	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-65	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-67	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-68	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-70	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-71	755-C12	MUST CLOSE	1-HS-47-24	0
1-FCV-1-75	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-77	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-79	755-C12	MUST CLOSE	1-XX-47-3000	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-84	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-91	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-1-98	755-C12	MUST CLOSE	1-XX-47-3000	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM595E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM691E	1-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
1PM784E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
1PM876E	1-TI-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
1PM988E	1-PT-68-334-E	PRESSURIZER PRESSURE

3.33 FIRE AREA 27**3.33.1 Room 757.0-A5**

Description: 480V Shutdown Board Room 1B

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays, ERFBS Thermo-Lag, and miscellaneous items in a Fire Emergency Response Equipment Cage. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A5	North Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
	South Wall	Area 48, Room 755.0-C1	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C6	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C8	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C9	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C3	II-31A, II-34A	3 Hours
	East Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 19, Room 757.0-A4	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 15-1, Room 737.0-A3	II-30A, II-31A	2 Hours
	Ceiling	Area 33, Room 772.0-A2	II-31A, II-32A	2 Hours
		Area 36, Room 772.0-A5	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A5	A143	Area 17, Room 757.0-A2	II-31A	1.5 Hours
	A145	Area 17, Room 757.0-A2	II-31A	1.5 Hours
	C49	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A5	0-ISD-31-4618 47A381-513G	Area 19, Room 757.0-A4	47W866-3 47W920-8	3 Hours
	0-ISD-31-4619 47A381-497F	Area 17, Room 757.0-A2	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4620 47A381-495F	Area 17, Room 757.0-A2	47W866-3 47W920-8	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	0-ISD-31-4621 47A381-495F	Area 17, Room 757.0-A2	47W866-3 47W920-8	1.5 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room. Standpipe and hose stations are provided from the adjacent room (757.0-A2).

Deviations: The justification for fire doors is documented in Part VII, Section 4.1.

Evaluations: The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.23.

3.33.2 Fire Area 27 Safe Shutdown Analysis By Analysis Volume**3.33.2.1 AV-053**

Room No.	Description:
757.0-A5	480V Shutdown Board Room 1B

A fire in Analysis Volume 53 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and Unit 2 reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-212-B1-B	757-A24	MUST DE-ENERGIZE	1-BKR-212-B1-B	15
1-BD-212-B2-B	757-A24	MSUT DE-ENERGIZE	1-BKR-212-B2-B, 1-BKR-212-B-B	20
2-HTR-68-341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-XS-68-341A- A,2-HS-68-341AC-A	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
2-FCV-62-1228-A	757-A23	CLOSE VALVE	2-HS-62-1228-A	70
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236- 68DC1&2-S&- 68AC2-S	120
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
1-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-89-A	772-A1	MUST NOT CLOSE	1-XS-67-89-A, 1- HS-67-89C-A	120
1-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-97-A	772-A1	MUST NOT CLOSE	1-XS-67-97-A, 1- HS-67-97C-A	120
1-FCV-3-116A-A	772-A1	MUST OPEN	1-BKR-3-116A-A	125
1-FCV-3-116A-A	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-116B-A	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-116B-A	772-A1	MUST OPEN	1-BKR-3-116B-A	125
0-MTR-31-12-A	757-A2	MUST RUN	0-XS-31-12	240
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A	1140
1-FCV-74-3-A	757-A2	MUST NOT CLOSE	1-BKR-74-3-A	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-3-A	676-A11	OPEN	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-TI-74-15	713-A15	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-A-A	755-C12	SWITCH LTC TO MANUAL	CSST C LTC-Y REMOTE CONTROL HS	0
1-FCV-3-48	755-C12	CLOSE VALVE	1-FIC-3-48	0
1-FCV-3-48A	755-C12	CLOSE VALVE	1-LIC-3-48A	0
1-FCV-3-90	755-C12	CLOSE VALVE	1-FIC-3-90	0
1-FCV-3-90A	755-C12	CLOSE VALVE	1-LIC-3-90A	0
2-BD-211-A-A	755-C12	SWITCH LTC TO MANUAL	CSST C LTC-X REMOTE CONTROL HS	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B11D	1-BD-212-A1-A, 0-MTR-78-35-S	480V SHUTDOWN BOARD 1A1-A, SFP PUMP C-S
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B16D	1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PL3825A	0-MTR-31-80/1-A	CW CIRC PUMP A-A
1PL4020A	0-MTR-31-12-A	MCR AHU A-A MOTOR
1PP550A	1-BKR-62-108-A-OCT, 1-MTR-62-108-A	CC PMP 1A-A BREAKER OCT, CENTRIFUGAL CHARGING PUMP 1A-A
1PP575A	1-MTR-74-10-A, 1-BKR-74-10-A-OCT	RESIDUAL HEAT REMOVAL PUMP 1A-A, RESIDUAL HEAT REMOVAL PMP 1A-A BKR OCT
1PP650A	1-MTR-3-118-A, 1-BKR-3-118-A-OCT	MDAFW PUMP 1A-A, MOTOR DRIVEN AFW PMP 1A-A OCT
1PV10D	1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1V5596B	1-PCV-68-334-B	PZR PORV
B30D	0-INV-235-1-D, 1-INV-235-1-D	SPARE CHANNEL I VITAL INVERTER, CHANNEL I VITAL INVERTER
B31D	1-INV-235-1-D	CHANNEL I VITAL INVERTER
PV1D	0-INV-235-1-D, 1-BD-235-1-D, 2-BD-235-1-D	SPARE CHANNEL I VITAL INVERTER, 120V AC VITAL POWER BOARD 1-I, 120V AC VITAL POWER BOARD 2-I

3.34 FIRE AREA 28**3.34.1 Room 757.0-A21**

Description: 480V Shutdown Board Room 2A

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A21	North Wall	Area 31, Room 757.0-A24	II-31A	2 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C13	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C18	II-31A, II-34A	3 Hours
		Area 48, Room 755.0-C20	II-31A, II-34A	3 Hours
	West Wall	Area 29, Room 757.0-A22	II-31A	3 Hours
		Area 31, Room 757.0-A24	II-31A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 15-2, Room 737.0-A12	II-30A, II-31A	2 Hours
	Ceiling	Area 42, Room 772.0-A12	II-31A, II-32A	2 Hours
		Area 45, Room 772.0-A15	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A21	A163	Area 31, Room 757.0-A24	II-31a	1.5 Hours
	A168	Area 31, Room 757.0-A24	II-31a	1.5 Hours
	C50	Area 48, Room 755.0-C12	II-31a, II-34a	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A21	0-ISD-31-4622 47A381-513G	Area 29, Room 757.0-A22	47W866-3 47W920-8	3 Hours
	0-ISD-31-4623 47A381-497F	Area 31, Room 757.0-A24	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4624 47A381-495F	Area 31, Room 757.0-A24	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4625 47A381-495F	Area 31, Room 757.0-A24	47W866-3 47W920-8	1.5 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room. Standpipe and hose stations are provided from the adjacent room (757.0-A24).

Deviations: The justification for fire doors is documented in Part VII, Section 4.1. |

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.28 and 64. |

3.34.2 Fire Area 28 Safe Shutdown Analysis By Analysis Volume**3.34.2.1 AV-054**

Room No.	Description:
757.0-A21	480V Shutdown Board Room 2A

A fire in Analysis Volume 54 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and long term decay heat removal functions and Unit 2 containment HVAC, secondary side isolation and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire, manual operation of equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-PCV-3-132-B	757-A28	TRANSFER CONTROL	2-XS-3-132	13
2-BD-212-A1-A	757-A2	MUST DE- ENERGIZE	2-BKR-212-A1-A, 2-BKR-212-A-A	20
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H-B	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-FCV-62-1228-A	757-A23	CLOSE VALVE	2-HS-62-1228-A	70
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
0-BD-236-4-G	772-A15	MUST OPERATE	0-XSW-236- 79DC1&2- S&79AC1&2-S	120
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-73-B	772-A2	MUST NOT OPEN	1-BKR-63-73-B	1140
1-FCV-63-73-B	692-A7	MUST NOT OPEN	HANDWHEEL	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-9-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-HS- 74-9-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-3-48A	755-C12	CLOSE VALVE	2-LIC-3-48A	0
2-FCV-3-90	755-C12	CLOSE VALVE	2-FIC-3-90	0
1-FCV-72-21-B	755-C12	CLOSE	1-HS-72-21A-B	7
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
2-MTR-74-10-A-P	755-C12	STOP RHR PUMP	2-HS-74-10A-A	10

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2B25G	2-BD-212-B1-B, 0-MTR-78-35-S	480V SHUTDOWN BOARD 2B1-B, SFP PUMP C-S
2B26E	2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2B30G	2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2B31E	2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2B32E	2-LOADSHED-B	UNIT 2 LOADSHED TRAIN B
2PL4733B	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
2PL4734B	0-MTR-70-51-S, 0-MTR-70-51-S-RHR	CCS PUMP C-S MOTOR, CCS PUMP C-S MOTOR
2PM1847E	2-PDI-30-44-K, 2-PDT-30-44-E	U2 CONTAINMENT PRESSURE INDICATION, U2 CONTAINMENT PRESSURE INSTRUMENTATION

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PV830G	2-BD-235-4-G	LOOP 120V AC VITAL POWER BOARD 2-IV
2V2667A	2-FCV-70-156-A, 2-FCV-70- 156-A-P	RHR HX A-A OUTLET VLV, RHR HEAT EXCHANGER A-A OUTLET VALVE

3.35 FIRE AREA 29**3.35.1 Room 757.0-A22**

Description: 125V Vital Battery Board Room IV

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and insulation on cables in trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A22	North Wall	Area 31, Room 757.0-A24	II-31A	3 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 28, Room 757.0-A21	II-31A	3 Hours
	West Wall	Area 30, Room 757.0-A23	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
	Ceiling	Area 43, Room 772.0-A13	II-31A, II-32A	3 Hours
		Area 45, Room 772.0-A15	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A22	A169	Area 31, Room 757.0-A24	II-31A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A22	0-ISD-31-2785 47A381-115G	Area 31, Room 757.0-A24	47W866-3 47W920-8	3 Hours
	0-ISD-31-4622 47A381-513G	Area 28, Room 757.0-A21	47W866-3 47W920-8	3 Hours

Detection: Ionization detection is provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (757.0-A24).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.29, 62 and 65.

3.35.2 Fire Area 29 Safe Shutdown Analysis By Analysis Volume**3.35.2.1 AV-055**

Room No.	Description:
757.0-A22	125V Vital Battery Board Room IV

A fire in Analysis Volume 55 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, steam generator inventory control, and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1A and 2A Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-128-B-T	757-A24	MUST TRIP	2-HS-3-128C-B, 2-XS-3-128	13
2-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-HS-68-341DC- B,2-XS-68-341D- B	25
2-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
2-BD-212-A1-A	757-A21	TRANSFER CONTROL PWR	TRANSFER SWITCH	120
2-BD-212-A2-A	757-A21	TRANSFER CONTROL PWR	TRANSFER SWITCH	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.36 FIRE AREA 30**3.36.1 Room 757.0-A23**

Description: 125V Vital Battery Board Room III

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and insulation on cables in trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A23	North Wall	Area 31, Room 757.0-A24	II-31A	3 Hours
	South Wall	Area 48, Room 755.0-C12	II-31A, II-34A	3 Hours
	East Wall	Area 29, Room 757.0-A22	II-31A	3 Hours
	West Wall	Area 23, Room 757.0-A27	II-31A	3 Hours
		Area 24, Room 757.0-A28	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
	Ceiling	Area 43, Room 772.0-A13	II-31A, II-32A	3 Hours
		Area 44, Room 772.0-A14	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A23	A170	Area 31, Room 757.0-A24	II-31A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A23	0-ISD-31-2780 47A381-192F	Area 31, Room 757.0-A24	47W866-3 47W920-8	3 Hours
	0-ISD-31-2782 47A381-115G	Area 31, Room 757.0-A24	47W866-3 47W920-8	3 Hours

Detection: Ionization detectors are provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (757.0-A24).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.30, 63 and 64.

3.36.2 Fire Area 30 Safe Shutdown Analysis By Analysis Volume**3.36.2.1 AV-056**

Room No.	Description:
757.0-A23	125V Vital Battery Board Room III

A fire in Analysis Volume 56 could potentially affect systems and components necessary to maintain the long term decay heat removal, MCR & containment HVAC, steam generator inventory control, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1B and 2B Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
1-MTR-30-74-A	COOLER 1A-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-118-A-T	757-A2	MUST TRIP	2-HS-3-118C-A, 2-XS-3-118	13
2-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-HS-68-341AC- A, 2-XS-68-341A- A	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-2-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-XS- 74-2-B, 2-HS-74- 2C-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS)..	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.37 FIRE AREA 31**3.37.1 Rooms 757.0-A17 and A24**

Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access Room
757.0-A24	6.9kV and 480V Shutdown Board Room B

Fire Loading: The combustibles in the Personnel and Equipment Access room consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays. The fire severity is classified as low. The combustibles in the 6.9kV and 480V Shutdown Board Room B consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction. The equipment hatch is normally closed with a steel cover that is non-rated and the opening is protected with a water curtain.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A24	North Wall	Area 10, Elevator Shaft	II-31A	2 Hours
		Area 10, Room 757.0-A13	II-31A	2 Hours
		Area 46, Room 772.0-A16	II-32A	2 Hours
		Area 72, room 729.0-A11	II-31A	2 Hours
		Area 75, Room 757.0-A16	II-31A	2 Hours
	South Wall	Area 20, Room 757.0-A1	II-31A	2 Hours
		Area 24, Room 757.0-A28	II-31A	2 Hours
		Area 28, Room 757.0-A21	II-31A	3 Hours
		Area 29, Room 757.0-A22	II-31A	3 Hours
		Area 30, Room 757.0-A23	II-31A	2 Hours
	East Wall	Area 28, Room 757.0-A21	II-31A	2 Hours
		Area 42, Room 772.0-A12	II-32A	2 Hours
	West Wall	Area 17, Room 757.0-A2	II-31A	2 Hours
		Area 45, Room 772.0-A15	II-32A	2 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
		Area 15-2, Room 737.0-A12	II-30A, II-31A	2 Hours
	Ceiling	Area 40, Room 772.0-A10	II-31A, II-32A	2 Hours
		Area 41, Room 772.0-A11	II-31A, II-32A	2 Hours
		Area 45, Room 772.0-A15	II-31A, II-32A	2 Hours
		Area 46, Room 772.0-A16	II-31A, II-32A	2 Hours
757.0-A17	North Wall	Area 75, Room 757.0-A16	II-31A	2 Hours
	West Wall	Area 10, Room 757.0-A13	II-31A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	2 Hours
	Ceiling	Area 10, Room 772.0-A9	II-31A, II-32A	2 Hours
		Area 40, Room 772.0-A10	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A24	A163	Area 28, Room 757.0-A21	II-31A	1.5 Hours
	A168	Area 28, Room 757.0-A21	II-31A	1.5 Hours
	A169	Area 29, Room 757.0-A22	II-31A	3 Hours
	A170	Area 30, Room 757.0-A23	II-31A	3 Hours
	A171	Area 17, Room 757.0-A2	II-31A	1.5 Hours
	A175	Area 20, Room 757.0-A1	II-31A	1.5 Hours
	A191	Area 45, Room 772.0-A15	II-32A	1.5 Hours
757.0-A17	A159	Area 10, Room 757.0-A13	II-31A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A24	0-ISD-31-2771 47A381-130F	Area 20, Room 757.0-A1	47W866-3 47W920-8, 26	3 Hours
	0-ISD-31-2772 47A381-113F	Area 20, Room 757.0-A1	47W866-3 47W920-8, 26	1.5 Hours
	0-ISD-31-2780 47A381-192F	Area 30, Room 757.0-A23	47W866-3 47W920-8	3 Hours
	0-ISD-31-2782 47A381-115G	Area 30, Room 757.0-A23	47W866-3 47W920-8	3 Hours
	0-ISD-31-2785 47A381-115G	Area 29, Room 757.0-A22	47W866-3 47W920-8	3 Hours
	0-ISD-31-4623 47A381-497F	Area 28, Room 757.0-A21	47W866-3 47W920-8	1.5 Hours
757.0-A17	0-ISD-31-4624 47A381-495F	Area 28, Room 757.0-A21	47W866-3 47W920-8	1.5 Hours
	0-ISD-31-4625 47A381-495F	Area 28, Room 757.0-A21	47W866-3 47W920-8	1.5 Hours
	2-ISD-31-2500 47A381-326F	Area 40, Room 772.0-A10	47W866-3 47W920-28	3 Hours
	2-ISD-31-3884 47A381-438F	Area 75, Room 757.0-A16	47W866-11 47W920-8	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	2-ISD-31-3957 47A381-438	Area 10, Room 757.0-A13	47W866-11 47W920-8	1.5 Hours

Detection: Ionization smoke detectors are provided in the rooms.

Suppression: Automatic sprinklers are provided in the rooms. In addition a water curtain is provided for the equipment hatch. A standpipe and hose station is provided in Room 757.0-A24. |

Deviations: The 772.0 floor slab has an equipment hatch with a non-rated cover that is protected by a water curtain. The justification is documented in Part VII, Section 2.6.3.1. The justification for hose stations having more than 100 feet of hose is documented in Part VII, Section 4.3. |

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.27, 31, 62 and 65. |

3.37.2 Fire Area 31 Safe Shutdown Analysis By Analysis Volume**3.37.2.1 AV-057**

Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access
757.0-A24	6.9kV and 480V Shutdown Room B

This AV contains cables and/or equipment associated with the 5th Vital Battery. The 5th Vital Battery is credited as an "installed spare" that can be used during normal plant operation if one of the existing batteries is down for maintenance. This AV is analyzed to address the effects of a fire on the 125V DC system if the 5th Vital Battery is in service in replacement of any one of the other four normally credited batteries. An additional four analyses are performed (AV-057D through G) for this AV to address the various combinations where the 5th Vital Battery can be used.

A fire in Analysis Volume 57 could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features include providing fire wrap to selected Unit 1 and Unit 2 cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-B-B	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL5392A	2-BD-212-A1-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A1-A, UNIT 2 LOADSHED TRAIN A
2PL5394A	2-BD-212-A2-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A2-A, UNIT 2 LOADSHED TRAIN A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
B215F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

3.37.2.2 AV-057D

Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access Room
757.0-A24	6.9kV and 480V Shutdown Room B

A fire in Analysis Volume 57D could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-B-B	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-B-B	755-C12	MUST	TRIP SOURCE	10

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		DEENERGIZE	BREAKERS	
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL5392A	2-BD-212-A1-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A1-A, UNIT 2 LOADSHED TRAIN A
2PL5394A	2-BD-212-A2-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A2-A, UNIT 2 LOADSHED TRAIN A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
B215F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

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Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access Room
757.0-A24	6.9kV and 480V Shutdown Room B

A fire in Analysis Volume 57E could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-B-B	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL5392A	2-BD-212-A1-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A1-A, UNIT 2 LOADSHED TRAIN A
2PL5394A	2-BD-212-A2-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A2-A, UNIT 2 LOADSHED TRAIN A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
B215F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

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Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access Room
757.0-A24	6.9kV and 480V Shutdown Room B

A fire in Analysis Volume 57F could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-B-B	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-B-B	755-C12	MUST	TRIP SOURCE	10

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		DEENERGIZE	BREAKERS	
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL5392A	2-BD-212-A1-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A1-A, UNIT 2 LOADSHED TRAIN A
2PL5394A	2-BD-212-A2-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A2-A, UNIT 2 LOADSHED TRAIN A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
B215F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

3.37.2.5 AV-057G

Room No.	Description:
757.0-A17	Unit 2 Personnel and Equipment Access Room
757.0-A24	6.9kV and 480V Shutdown Room B

A fire in Analysis Volume 57G could potentially affect systems and components necessary to maintain the steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power may not be available. Onsite power is available to 1A and 2A Trains. The required mitigating features for Unit 1 and Unit 2 include providing fire wrap to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	BREAKER 26	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BD-211-B-B	755-C12	MUST DEENERGIZE	EXTERNAL SOURCE BREAKERS	10
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1B13F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1B18F	1-LOADSHED-A	UNIT 1 LOADSHED TRAIN A
1PP675A	0-MTR-67-28-A, 0-BKR-67-28-A-OCT	ERCW PUMP MOTOR A-A, ERCW PUMP A-A OCT
1PP687A	0-BKR-67-36-A-OCT, 0-MTR-67-36-A	ERCW PUMP C-A OCT, ERCW PUMP MOTOR C-A
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL5392A	2-BD-212-A1-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A1-A, UNIT 2 LOADSHED TRAIN A
2PL5394A	2-BD-212-A2-A, 2-LOADSHED-A	480V SHUTDOWN BOARD 2A2-A, UNIT 2 LOADSHED TRAIN A
2PP675A	0-BKR-67-32-A-OCT, 0-MTR-67-32-A	ERCW PUMP B-A OCT, ERCW PUMP MOTOR B-A
2PP687A	0-MTR-67-40-A, 0-BKR-67-40-A-OCT	ERCW PUMP MOTOR D-A, ERCW PUMP D-A OCT
B215F	0-BD-236-3-F	125V VITAL BATTERY BOARD III

3.38 FIRE AREA 32**3.38.1 Room 772.0-A1**

Description: 480V Board Room 1-A

Fire Loading: The combustibles in the 480V Board room consist of plastics associated with the electrical panels and boards and lights, oil in a hoist, and insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The rooms are of reinforced concrete construction. The equipment hatch in the floor of the 480V Board room is provided with a non-fire rated steel cover, and the opening is protected with a water curtain.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A1	NORTH WALL	AREA 10, ELEVATOR SHAFT	II-32A	2 Hours
		AREA 10, ROOM 757.0-A13	II-32A	2 Hours
		AREA 38, ROOM 772.0-A7	II-32A	2 Hours
		AREA 39, ROOM 772.0-A8	II-32A	2 Hours
	SOUTH WALL	AREA 33, ROOM 772.0-A2	II-32A	2 Hours
		AREA 17, ROOM 757.0-A2	II-31A, II-32A	2 Hours
	EAST WALL	AREA 46, ROOM 772.0-A16	II-32A	2 Hours
	WEST WALL	AREA 36, ROOM 772.0-A5	II-32A	2 Hours
		AREA 37, ROOM 772.0-A6	II-32A	2 Hours
	FLOOR	AREA 17, ROOM 757.0-A2	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A1	A180	Area 33, Room 772.0-A2	II-32A	1.5 Hours
	A186	Area 37, Room 772.0-A6	II-32A	1.5 Hours
	A187	Area 38, Room 772.0-A7	II-32A	1.5 Hours
	A197	Area 46, Room 772.0-A16	II-32A	1.5 Hours
	A210	Area 39, Room 772.0-A8	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A1	1-ISD-31-2504 47A381-301F	Area 38, Room 772.0-A7	47W886-3 47W920-9	3 Hours
	1-ISD-31-2515 47A381-644G	Area 38, Room 772.0-A7	47W866-3 47W920-9	1.5 Hours
	1-ISD-31-2516 47A381-301F	Area 38, Room 772.0-A7	47W866-3 47W920-9	3 Hours
	1-ISD-31-2526	Area 33, Room	47W866-3	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	47A381-311F	772.0-A2	47W920-9	
	1-ISD-31-2554 47A381-739	Area 33, Room 772.0-A2	47W866-3 47W920-9	3 Hours
	0-ISD-31-5455 47A381-776	Area 39, Room 772.0-A8	47W866-3 47W920-16	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic preaction sprinkler systems are provided in the room. A standpipe and hose station is provided from adjacent room (772.0-A7).

Deviations: The floor has an equipment hatch with a non-rated cover that is protected by a water curtain. The justification is documented in Part VII, 2.6.3.1.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.35, 63, and 64.

3.38.2 Fire Area 32 Safe Shutdown Analyses By Analysis Volume**3.38.2.1 AV-058**

Room No.	Description:
772.0-A1	480V Board Room 1-A

A fire in Analysis Volume 58 could potentially affect systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, MCR & containment HVAC, reactor pressure control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below;

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-39-A	757-A2	CLOSE VALVE	1-BKR-63-39-A, 1-HS-63-39C	15
1-FCV-63-40-B	757-A5	CLOSE VALVE	1-BKR-63-40-B, 1-HS-63-40C	15
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MCC-213-A1-A	757-A2	MUST DE- ENERGIZE	1-BKR-212- A1/8B-A	120
1-MCC-213-A2-A	757-A2	MUST DE- ENERGIZE	1-BKR-212- A2/8B-A	120
1-FCV-67-125-A	737-A1A	MUST NOT OPEN	HANDWHEEL	122
1-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	150
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112A	3
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	3
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-MTR-78-12-A	755-C12	STOP	0-XS-78-12	9
0-MTR-78-35-S	755-C12	STOP	0-XS-78-35-S	9
1-FCV-70-134-B	755-C12	CLOSE VALVE	1-HS-70-134A-B	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-74-10-A-P	755-C12	STOP RHR PUMP	2-HS-74-10A-A	10
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	15
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL3835B	0-MTR-31-96/1-B	CW CIRC PUMP B-B

3.39 FIRE AREA 33**3.39.1 Room 772.0-A2**

Description: 480V Board Room 1-B (Subdivided into 772.0-A2A1, -A2A2, -A2A3, -A2A4)

Fire Loading: The combustibles consist of plastics associated with electrical boards, panels, and boxes, HVAC duct insulation, insulation on cables in trays, and ERFBS Thermo-Lag. The fire severity is classified as severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A2	North Wall	Area 17, Room 757.0-A2	II-31A, II-32A	2 Hours
		Area 32, Room 772.0-A1	II-32A	2 Hours
	South Wall	Area 34, Room 772.0-A3	II-32A	3 Hours
		Area 35, Room 772.0-A4	II-32A	3 Hours
		Area 48, Room 755.0-C12	II-32A, II-34A	3 Hours
		Area 48, Room 755.0-C9	II-32A, II-34A	3 Hours
	East Wall	Area 35, Room 772.0-A4	II-32A	3 Hours
		Area 45, Room 772.0-A15	II-32A	2 Hours
	West Wall	Area 17, Room 757.0-A2	II-31A, II-32A	2 Hours
		Area 34, Room 772.0-A3	II-32A	3 Hours
		Area 36, Room 772.0-A5	II-32A	2 Hours
	Floor	Area 17, Room 757.0-A2	II-31A, II-32A	2 Hours
		Area 19, Room 757.0-A4	II-31A, II-32A	2 Hours
		Area 20, Room 757.0-A1	II-31A, II-32A	2 Hours
		Area 21, Room 757.0-A25	II-31A, II-32A	2 Hours
		Area 22, Room 757.0-A26	II-31A, II-32A	2 Hours
		Area 27, Room 757.0-A5	II-31A, II-32A	2 Hours
	Ceiling (partial)	Area 47, Room 786.0-A4	II-32A	2 Hours
		Area 47, Room 786.0-A5	II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A2	A180	Area 32, Room 772.0-A1	II-32A	1.5 Hours
	A181	Area 34, Room 772.0-A3	II-32A	3 Hours
	A182	Area 35, Room 772.0-A4	II-32A	3 Hours
	A184	Area 17, Room 757.0-A2	II-31A, II-32A	1.5 Hours
	A196	Area 45, Room 772.0-A15	II-32	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A2	1-ISD-31-2517	Area 47, Room 786.0-A4	47W866-3	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	47A381-308F		47W920-29	
	1-ISD-31-2518 47A381-313F	Area 47, Room 786.0-A4	47W866-3 47W920-29	3 Hours
	1-ISD-31-2519 47A381-307F	Area 47, Room 786.0-A4	47W866-3 47W920-29	3 Hours
	1-ISD-31-2523 47A381-312F	Area 34, Room 772.0-A3	47W866-3 47W920-9	3 Hours
	1-ISD-31-2525 47A381-311F	Area 35, Room 772.0-A4	47W866-3 47W920-9	3 Hours
	1-ISD-31-2526 47A381-311F	Area 32, Room 772.0-A1	47W866-3 47W920-9	3 Hours
	1-ISD-31-2554 47A381-739	Area 32, Room 772.0-A1	47W866-3 47W920-9	3 Hours
	1-ISD-31-2555 47A381-738	Area 34, Room 772.0-A3	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided for the room, except between column lines A6-A8/Q-R. A standpipe and hose station is provided from room 772.0-A7.

Deviations: The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced suppression system to compensate for the intervening combustibles is documented in Part VII, Section 2.4.

Evaluations: The lack of suppression between column lines A6-A8/Q-R is documented in Part VII, Section 3.1.8. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.36, 37, 62, 63, 64, and 65.

3.39.2 Fire Area 33 Safe Shutdown Analysis By Analysis Volume**3.39.2.1 AV-059**

Room No.	Description:
772.0-A2A1	480V Board Room 1-B, Column Lines A8-A6
772.0-A2A2	480V Board Room 1-B, Column Lines A6-A5
772.0-A2A3	480V Board Room 1-B, Column Lines A5-A4

A fire in Analysis Volume 59 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available for Trains 1A and 2A. The Unit 1 Train B 480VAC C&A Vent Boards are initially available, but may be lost after 3 hours due to transformer vent fan failures. Train 1B C&A Vent Board power is only needed to close one MOV (seven minutes) to prevent RWST drawdown. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-39-A	757-A2	CLOSE VALVE	1-BKR-63-39-A, 1-HS-63-39C	15
1-FCV-63-40-B	757-A5	CLOSE VALVE	1-BKR-63-40-B, 1-HS-63-40C	15
1-MCC-214-B2-B	757-A5	MUST ENERGIZE	1-BKR-212- B2/10B-B	15
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-HS-68-341DC- B, 1-XS-68-341D- B	25
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
1-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MCC-213-B1-B	757-A5	MUST DE- ENERGIZE	1-BKR-212- B1/8B-B	120
1-MCC-213-B1-B	757-A5	OPEN BREAKER	1-BKR-212- B1/8B-B	120
1-MCC-213-B2-B	757-A5	MUST DE- ENERGIZE	1-BKR-212- B2/8B-B	120
1-MCC-214-B2-B	757-A5	MUST DE- ENERGIZE	1-BKR-212- B2/10B-B	120
0-FCV-70-197-A	772-A1	MUST CLOSE	0-HS-70-197C, 0- XS-70-197	1140
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-172-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	OPERABLE	1-HS-67-143C-A	1140
1-FCV-67-146-A	772-A1	OPERABLE	1-HS-67-146C-A	1140
1-FCV-70-156-A	772-A1	OPEN	1-HS-70-156C, 1- XS-70-156	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	15

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V1208B	1-PCV-68-334-B	PZR PORV
1V5596B	1-PCV-68-334-B	PZR PORV

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Room No.	Description:
772.0-A2A3	480V Board Room 1-B, Column Lines A5-A4
772.0-A2A4	480V Board Room 1-B, Column Lines A4-A3

A fire in Analysis Volume 60 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-92-B	MOTOR COOLER 1D-B CONTROL ROD DRIVE	KEY 37J
1-MTR-62-104-B	MOTOR COOLER 1B-B CENTRIFUGAL CHARGING	KEY 1 PATH 2
1-MTR-70-38-B	PUMP 1B-B COMPONENT COOLING	KEY 1 PATH 1
1-MTR-74-20-B	SYSTEM PUMP 1B-B RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
1-PCV-68-334-B	PUMP 1B-B PZR PORV	KEY 48 (PORV)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER	KEY 37J
2-MTR-30-77-A	FAN 2A-A REACTOR LOWER COMPARTMENT COOLER	KEY 37J
2-MTR-30-83-A	FAN 2C-A CONTROL ROD DRIVE	KEY 37J
2-MTR-30-88-A	MOTOR COOLER 2A-A CONTROL ROD DRIVE	KEY 37J
2-MTR-74-20-B	MOTOR COOLER 2C-A RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-ISV-3-827	737-A1A	CLOSE/THROTTLE	HANDWHEEL	13
1-ISV-3-828	737-A1A	CLOSE/THROTTLE	HANDWHEEL	13
1-LCV-3-156	737-A1A	OPEN	CLOSE 1-ISV- 32-3761, CONTROL AIR ISOLATION VALVE TO 1- LCV-3-156 AND OPEN PETCOCK TO VENT AIR FROM VALVE OPERATOR FOR 1-LCV-3- 156.	13
1-LCV-3-164	737-A1A	OPEN	CLOSE 1-ISV- 32-3765, CONTROL AIR ISOLATION VALVE TO 1- LCV-3-164 AND OPEN PETCOCK TO VENT AIR FROM VALVE OPERATOR FOR 1-LCV-3- 164.	13
1-PCV-3-122-A	713-A1A	OPEN	HANDWHEEL	13
1-FCV-63-39-A	757-A2	CLOSE VALVE	1-BKR-63-39-A, 1-HS-63-39C	15
1-FCV-63-40-B	757-A5	CLOSE VALVE	1-BKR-63-40-B, 1-HS-63-40C	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
1-TI-68-1	757-A4	TRANSFER POWER	1-SW-99-1, 1- XS-99-1-D	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236- 68DC1&2-S&- 68AC2-S	120
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
1-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-MCC-213-B1-B	757-A5	MUST DE- ENERGIZE	1-BKR-212- B1/8B-B	120
1-MCC-213-B1-B	757-A5	OPEN BREAKER	1-BKR-212- B1/8B-B	120

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MCC-213-B2-B	757-A5	MUST DE- ENERGIZE	1-BKR-212- B2/8B-B	120
1-FCV-67-9A-A	IPS-A	OPEN/CLOSE	1-HS-67-9A-A	720
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-172-B	713-A28	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-TI-74-15	713-A15	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	4
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	15
1-LCV-62-132-A	755-C12	CLOSE	1-HS-62-132A-A	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V1208B	1-PCV-68-334-B	PZR PORV
1V5596B	1-PCV-68-334-B	PZR PORV

3.40 FIRE AREA 34**3.40.1 Room 772.0-A3**

Description: 125V Vital Battery Room II

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and the battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A3	North Wall	Area 33, Room 772.0-A2	II-32A	3 hours
	South Wall	Area 48, Room 755.0-C12	II-32A, II-34A	3 hours
	East Wall	Area 33, Room 772.0-A2	II-32A	3 hours
	West Wall	Area 35, Room 772.0-A4	II-32A	3 hours
	Floor	Area 18, Room 757.0-A3	II-31A, II-32A	3 hours
		Area 21, Room 757.0-A25	II-31A, II-32A	3 hours
		Area 22, Room 757.0-A26	II-31A, II-32A	3 hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A3	A181	Area 33, Room 772.0-A2	II-32A	3 hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A3	1-ISD-31-2523 47A381-312F	Area 33, Room 772.0-A2	47W866-3 47W920-9	3 hours
	1-ISD-31-2555 47A381-738	Area 33, Room 772.0-A2	47W866-3 47W920-9	3 hours
	1-ISD-31-2556 47A381-737	Area 35, Room 772.0-A4	47W866-3 47W920-9	3 hours

Detection: Ionization smoke detection is provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A7.

Deviations: None.

Evaluations: None.

3.40.2 Fire Area 34 Safe Shutdown Analysis By Analysis Volume**3.40.2.1 AV-061**

Room No.	Description:
772.0-A3	125V Vital Battery Room II

A fire in Analysis Volume 61 could potentially affect systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1A and 2A Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-128-B-T	757-A24	MUST TRIP	1-HS-3-128C-B, 1-XS-3-128-B	13
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-HS-68-341DC- B,1-XS-68-341D- B	25
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.41 FIRE AREA 35**3.41.1 Room 772.0-A4**

Description: 125V Vital Battery Room I

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and the battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A4	NORTH WALL	AREA 33, ROOM 772.0-A2	II-32A	3 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C12	II-32A	3 Hours
	EAST WALL	AREA 34, ROOM 772.0-A3	II-32A	3 Hours
	WEST WALL	AREA 33, ROOM 772.0-A2	II-32A	3 Hours
	FLOOR	AREA 18, ROOM 757.0-A3	II-31A, II-32A	3 Hours
		AREA 19, ROOM 757.0-A4	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A4	A182	AREA 33, ROOM 772.0-A2	II-32A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A4	1-ISD-31-2525 47A381-311F	AREA 33, ROOM 772.0-A2	47W866-3 47W920-9	3 Hours
	1-ISD-31-2556 47A381-737	AREA 34, ROOM 772.0-A3	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from room 772.0-A7.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.38, 63, and 64.

3.41.2 Fire Area 35 Safe Shutdown Analysis By Analysis Volume**3.41.2.1 AV-062**

Room No.	Description:
772.0-A4	125V VITAL BATTERY ROOM I

A fire in Analysis Volume 62 could potentially affect systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to 1B and 2B Trains. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-88-A	MOTOR COOLER 1A-A CONTROL ROD DRIVE	KEY 37J
1-MTR-62-108-A	MOTOR COOLER 1C-A CENTRIFUGAL CHARGING	KEY 1 PATH 1
1-MTR-70-46-A	PUMP 1A-A COMPONENT COOLING	KEY 1 PATH 1
1-MTR-74-10-A	SYSTEM PUMP 1A-A RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
1-PCV-68-340A-A	PUMP 1A-A PZR PORV	KEY 48 (PORV)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER	KEY 37J
2-MTR-30-77-A	FAN 2A-A REACTOR LOWER	KEY 37J
2-MTR-30-83-A	COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-62-108-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-70-59-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-SG-COOLDN-1	RHR PUMP 2A-A STEAM GENERATOR 1 COOL	KEY 31 PATH 1
2-SG-COOLDN-2	DOWN STEAM GENERATOR 2 COOL	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	DOWN ESSENTIAL RAW COOLING	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-2A	WTR SUPPLY HDR 1A ESSENTIAL RAW COOLING	KEY 1 PATH 1
SG-COOLDN-1	WTR SUPPLY HDR 2A SG-1 COOLDOWN	KEY 1 PATH 1
SG-COOLDN-2	COMPONENTS SG-2 COOLDOWN	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	COMPONENTS TURBINE-DRIVEN AFW PUMP	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-118-A-T	757-A2	MUST TRIP	1-HS-3-118C-A, 1-XS-3-118	13
1-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-HS-68-341AC- A, 1-XS-68-341A- A	25
1-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	1-XS-68-341F	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.42 FIRE AREA 36**3.42.1 Room 772.0-A5**

Description: 480V Transformer Room 1-B

Fire Loading: The combustibles consist of plastics associated with electrical panels, oil in the transformers, insulation on the cables in the trays, and ERFBS Thermo-Lag. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A5	NORTH WALL	AREA 37, ROOM 772.0-A6	II-32A	2 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C1	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C6	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C8	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C9	II-32A, II-34A	3 Hours
	EAST WALL	AREA 17, ROOM 757.0-A2	II-31A, II-32A	2 Hours
		AREA 32, ROOM 772.0-A1	II-32A	2 Hours
		AREA 33, ROOM 772.0-A2	II-32A	2 Hours
	FLOOR	AREA 27, ROOM 757.0-A5	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A5	A185	AREA 37, ROOM 772.0-A6	II-32A	1.5 Hours

Dampers: None.

Detection: Ionization detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A7.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.39 and 62.

3.42.2 Fire Area 36 Safe Shutdown Analysis By Analysis Volume**3.42.2.1 AV-063**

Room No.	Description:
772.0-A5	480V Transformer Room 1-B

A fire in Analysis Volume 63 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, MCR HVAC, steam generator inventory control functions and Unit 1 reactor coolant inventory control and containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
1-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-83-B	772-A2	MUST NOT CLOSE	1-BKR-67-83-B	120
1-FCV-67-88-B	772-A2	MUST NOT CLOSE	1-BKR-67-88-B	120
1-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-91-B	772-A2	MUST NOT CLOSE	1-BKR-67-91-B	120
1-FCV-67-96-B	772-A2	MUST NOT CLOSE	1-BKR-67-96-B	120
1-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	12
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	12
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	12
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	12
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	12
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	12
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	12
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	12

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V1208B	1-PCV-68-334-B	PZR PORV
1V5490B	1-FSV-68-396-B, 1-FSV-68-	REACTOR VESSEL HEAD

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1V5596B 1V5661B	395-B	VENT THROTTLE VALVE, REACTOR VESSEL HEAD VENT ISOLATION VALVE
	1-PCV-68-334-B	PZR PORV
	1-FSV-68-395-B, 1-FSV-68-396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE

3.43 FIRE AREA 37**3.43.1 Room 772.0-A6**

Description: 480V Transformer Room 1-A

Fire Loading: The combustibles consist of plastics associated with electrical panels, oil in the transformers, insulation on the cables in the trays, and ERFBS Thermo-Lag.. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A6	NORTH WALL	AREA 12, ROOM 729.0-A1	II-32A	2 Hours
		AREA 25, ROOM 757.0-A10	II-31A, II-32A	2 Hours
		AREA 25, ROOM 782.0-A1	II-32A	2 Hours
	SOUTH WALL	AREA 36, ROOM 772.0-A5	II-32A	2 Hours
	EAST WALL	AREA 32, ROOM 772.0-A1	II-32A	2 Hours
		AREA 38, ROOM 772.0-A7	II-32A	2 Hours
	FLOOR	AREA 17, ROOM 757.0-A2	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A6	A185	AREA 36, ROOM 772.0-A5	II-32A	1.5 Hours
	A186	AREA 32, ROOM 772.0-A1	II-32A	1.5 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (772.0-A7).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.40 and 64.

3.43.2 Fire Area 37 Safe Shutdown Analysis By Analysis Volume**3.43.2.1 AV-064**

Room No.	Description:
772.0-A6	480V Transformer Room 1-A

A fire in Analysis Volume 64 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and MCR & containment HVAC functions and Unit 1 long term decay heat removal, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 1 cables to preclude damage in the event of a fire, manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 1 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-74-2-B	757-A10	MUST OPEN	REPAIR PROCEDURE. REPAIR PWR AND LS CABLES BY PULLING AND CONNECTING TWO CABLES FROM MCC TO THE JBS IN 757- A10.	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-9-B	757-A10	MUST OPEN	REPAIR PROCEDURE. REPAIR PWR AND LS CABLES BY PULLING AND CONNECTING TWO CABLES FROM MCC TO THE JBS IN 757- A10.	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PL4764B	1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR
1PL4789B	1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR
1PL4885B	1-MTR-30-39-B	CONTAINMENT AIR RETURN FAN 1B-B

3.44 FIRE AREA 38**3.44.1 Room 772.0-A7**

Description: Unit 1 Mechanical Equipment Room

Fire Loading: The combustibles consist of lube oil in motors and compressors, plastics associated with the electrical panels and boxes and lights, and insulation on piping and cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A7	North Wall	Area 25, Room 757.0-A10	II-31A, II-32A	2 Hours
		Area 25, Room 782.0-A1	II-32A	2 Hours
	South Wall	Area 32, Room 772.0-A1	II-32A	2 Hours
	East Wall	Area 39, Room 772.0-A8	II-32A	2 Hours
	West Wall	Area 37, Room 772.0-A6	II-32A	2 Hours
	Floor	Area 17, Room 757.0-A2	II-31A, II-32A	2 Hours
		Area 17, Room 757.0-A9	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A7	A187	AREA 32, ROOM 772.0-A1	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A7	1-ISD-31-2500 47A381-326F	AREA 17, ROOM 757.0-A9	47W866-3 47W920-17	3 Hours
	1-ISD-31-2504 47A381-301F	AREA 32, ROOM 772.0-A1	47W866-3 47W920-9	3 Hours
	1-ISD-31-2515 47A381-644G	AREA 32, ROOM 772.0-A1	47W866-3 47W920-9	1.5 Hours
	1-ISD-31-2516 47A381-301F	AREA 32, ROOM 772.0-A1	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided in the room.

Deviations: The justification for hose stations having more than 100 feet of hose is documented in Part VII, Section 4.3. |

Evaluations: None. |

3.44.2 Fire Area 38 Safe Shutdown Analysis By Analysis Volume**3.44.2.1 AV-065**

Room No.	Description:
772.0-A7	Unit 1 Mechanical Equipment Room

A fire in Analysis Volume 65 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 reactor pressure control and MCR & containment HVAC functions and Unit 1 long term decay heat removal, reactor coolant inventory control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
1-FCV-67-104-A	772-A1	MUST NOT CLOSE	1-BKR-67-104-A	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	772-A1	MUST NOT CLOSE	1-BKR-67-107-A	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-112-A	772-A1	MUST NOT CLOSE	1-BKR-67-112-A	120
1-FCV-67-99-A	772-A1	MUST NOT CLOSE	1-BKR-67-99-A	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-70-156-A	772-A1	MUST OPEN	1-BKR-70-156-A	1140
1-FCV-70-156-A	713-A1A	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	35
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.45 FIRE AREA 39**3.45.1 Room 772.0-A8**

Description: Fifth Vital Battery and Board Room

Fire Loading: The combustibles consist of lube oil in the fan motors and plastics associated with electrical panels, boxes and battery cases. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A8	NORTH WALL	AREA 25, ROOM 757.0-A10	II-31A, II-32A	2 Hours
		AREA 25, ROOM 782.0-A1	II-32A	2 Hours
	SOUTH WALL	AREA 32, ROOM 772.0-A1	II-32A	2 Hours
	EAST WALL	AREA 10, ROOM 757.0-A13	II-32A	2 Hours
	WEST WALL	AREA 38, ROOM 772.0-A7	II-32A	2 Hours
	FLOOR	AREA 17, ROOM 757.0-A9	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A8	A210	AREA 32, ROOM 772.0-A1	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A8	0-ISD-31-5455	AREA 32, ROOM	47W866-3	3 Hours
	47A381-776	772.0-A1	47W920-16	

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (772.0-A7).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.41, 62, 63, 64, and 65.

3.45.2 Fire Area 39 Safe Shutdown Analysis By Analysis Volume**3.45.2.1 AV-066**

Room No.	Description:
772.0-A8	Fifth Vital Battery and Board Room

This AV contains cables and/or equipment associated with the 5th Vital Battery. The 5th Vital Battery is credited as an "installed spare" that can be used during normal plant operation if one of the existing batteries is down for maintenance. This AV is analyzed to address the effects of a fire on the 125V DC system if the 5th Vital Battery is in service in replacement of any one of the other four normally credited batteries. An additional four analyses are performed (AV-066D through G) for this AV to address the various combinations where the 5th Vital Battery can be used.

A fire in Analysis Volume 66 could potentially affect only the 5th vital battery. A fire in Analysis Volume 66 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment available to achieve shutdown are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.45.2.2 AV-066D

Room No.	Description:
772.0-A8	Fifth Vital Battery and Board Room

A fire in Analysis Volume 66D could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Train B. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-88-A	MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-108-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-70-46-A	MOTOR COOLER 1C-A	KEY 1 PATH 1
1-MTR-74-10-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-PCV-68-340A-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 48 (PORV)
2-MTR-30-184-A	PZR PORV	KEY 11 PATH 1
2-MTR-30-74-A	MDAFW PUMP 2A-A	KEY 37O
2-MTR-30-77-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37J
2-MTR-30-83-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-88-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-62-108-A	CONTROL ROD DRIVE	KEY 37J
2-MTR-70-59-A	MOTOR COOLER 2A-A	KEY 37J
2-MTR-74-10-A	CONTROL ROD DRIVE	KEY 37J
2-SG-COOLDN-1	MOTOR COOLER 2C-A	KEY 1 PATH 1
2-SG-COOLDN-2	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
ERCW-HDR-1A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 31 PATH 1
ERCW-HDR-2A	RHR PUMP 2A-A	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
TDAFW_PUMP_2A-S	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
	TURBINE-DRIVEN AFW PUMP	KEY 14
	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-118-A-T	757-A2	MUST TRIP	1-HS-3-118C-A, 1-XS-3-118	13
1-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	1-HS-68-341AC- A,1-XS-68-341A- A	25
1-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	1-XS-68-341F	25
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
1-TI-74-27	713-A11	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-TI-74-27	713-A16	MONITOR TEMPERATURE	LOCAL INDICATOR	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.45.2.3 AV-066E

Room No.	Description:
772.0-A8	Fifth Vital Battery and Board Room

A fire in Analysis Volume 66E could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Train A. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-3-128-B-T	757-A24	MUST TRIP	1-HS-3-128C-B, 1-XS-3-128-B	13
1-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	1-HS-68-341DC- B,1-XS-68-341D- B	25
1-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	1-XS-68-341H	25
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
0-BD-236-4-G	772-A15	MUST OPERATE	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.45.2.4 AV-066F

Room No.	Description:
772.0-A8	Fifth Vital Battery and Board Room

A fire in Analysis Volume 66F could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, MCR & containment HVAC, steam generator inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Train B. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
1-MTR-30-74-A	COOLER 1A-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1A-A	
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1C-A	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-118-A-T	757-A2	MUST TRIP	2-HS-3-118C-A, 2-XS-3-118	13
2-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-HS-68-341AC- A,2-XS-68-341A- A	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.45.2.5 AV-066G

Room No.	Description:
772.0-A8	Fifth Vital Battery and Board Room

A fire in Analysis Volume 66G could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control, steam generator inventory control, MCR & containment HVAC, and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Train A. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-128-B-T	757-A24	MUST TRIP	2-HS-3-128C-B, 2-XS-3-128	13
2-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-HS-68-341DC- B,2-XS-68-341D- B	25
2-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	MUST OPERATE	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.46 FIRE AREA 40**3.46.1 Room 772.0-A10**

Description: Unit 2 Mechanical Equipment Room

Fire Loading: The combustibles consist of lube oil in the air cooler equipment, plastic associated with lights, and insulation on pipes and cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A10	NORTH WALL	AREA 75, ROOM 757.0-A16	II-31A, II-32A	2 Hours
		AREA 75, ROOM 782.0-A3	II-32A	2 Hours
	SOUTH WALL	AREA 46, ROOM 772.0-A16	II-32A	2 Hours
	EAST WALL	AREA 41, ROOM 772.0-A11	II-32A	2 Hours
	WEST WALL	AREA 10, ROOM 772.0-A9	II-32A	2 Hours
	FLOOR	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
		AREA 31, ROOM 757.0-A17	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A10	A188	AREA 46, ROOM 772.0-A16	II-32A	1.5 Hours
	A212	AREA 10, ROOM 772.0-A9	II-32A	1.5 Hours
	A213	AREA 10, ROOM 772.0-A9	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A10	2-ISD-31-2500 47A381-326F	AREA 31, ROOM 757.0-A17	47W866-3 47W920-28	3 Hours
	2-ISD-31-2504 47A381-301F	AREA 46, ROOM 772.0-A16	47W866-3 47W920-9	3 Hours
	2-ISD-31-2515 47A381-644G	AREA 46, ROOM 772.0-A16	47W866-3 47W920-9	1.5 Hours
	2-ISD-31-2516 47A381-301F	AREA 46, ROOM 772.0-A16	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided in the room.

Deviations: The justification for fire doors is documented in Part VII, Section 4.1. The justification for hose stations with more than 100 foot hose is documented in Part VII, Section 4.3.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.43, 63, and 64.

3.46.2 FIRE AREA 40 SAFE SHUTDOWN ANALYSIS BY ANALYSIS VOLUME**3.46.2.1 AV-067**

Room No.	Description:
772.0-A10	Unit 2 Mechanical Equipment Room

A fire in Analysis Volume 67 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and containment HVAC functions and Unit 2 long term decay heat removal, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-MTR-67-9-A	757-A21	MUST OPERATE	2-BKR-67-9C-A	720
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	35
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.47 FIRE AREA 41**3.47.1 Room 772.0-A11**

Description: 480V Transformer Room 2-B

Fire Loading: The combustibles consist of the oil in the transformers, plastic associated with hand switches, insulation on the cables in the trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A11	NORTH WALL	AREA 75, ROOM 782.0-A3	II-32A	2 Hours
		AREA 72, ROOM 729.0-A11	II-32A	2 Hours
		AREA 75, ROOM 757.0-A16	II-31A, II-32A	2 Hours
	SOUTH WALL	AREA 42, ROOM 772.0-A12	II-32A	2 Hours
	WEST WALL	AREA 40, ROOM 772.0-A10	II-32A	2 Hours
		AREA 46, ROOM 772.0-A16	II-32A	2 Hours
	FLOOR	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A11	A189	AREA 46, ROOM 772.0-A16	II-32A	1.5 Hours
	A190	AREA 42, ROOM 772.0-A12	II-32A	1.5 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room (772.0-A10).

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.44 and 65.

3.47.2 Fire Area 41 Safe Shutdown Analysis By Analysis Volume**3.47.2.1 AV-068**

Room No.	Description:
772.0-A11	480V Transformer Room 2-B

A fire in Analysis Volume 68 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control functions, and Unit 2 reactor coolant pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 2 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PL3002A	2-MTR-30-183-A	CCP 2A-A ROOM COOLER FAN
2PL4729A	2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A
2PL4750A	2-MTR-30-74-A	REACTOR LOWER

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PL4775A	2-MTR-30-77-A	COMPARTMENT COOLER FAN 2A-A REACTOR LOWER COMPARTMENT
2PL4800A	2-MTR-30-83-A	COOLER FAN 2C-A CONTROL ROD DRIVE MOTOR COOLER 2A-A
2PL4820A	2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A
2PL4875A	2-MTR-30-38-A	CONTAINMENT AIR RETURN FAN 2A-A
2PP580A	2-MTR-74-10-A, 2-MTR-74-10-A-P	RHR PUMP 2A-A, RHR PUMP 2A-A
2PP756A	2-OXF-212-A1-A	480V SHUTDOWN BOARD XMFR 2A1-A
2PP759A	2-OXF-212-A2-A	480V SHUTDOWN BOARD XMFR 2A2-A
2PS161A	2-BKR-99-L116/1B-A	REACTOR TRIP SWGR A
2PS163A	2-BKR-99-L116/1B-A	REACTOR TRIP SWGR A
2V2123A	2-FCV-63-1-A	RWST TO RHR PUMP
2V7601A	2-FCV-1-14-A	SG 2 BLOWDOWN CONTROL VALVE
2V7611A	2-FCV-1-32-A	SG 4 BLOWDOWN CONTROL VAVLE LOOP
		4

3.48 FIRE AREA 42**3.48.1 Room 772.0-A12**

Description: 480V Transformer Room 2-A

Fire Loading: The combustibles consist of oil in the transformers, insulation on the cables in the trays, and ERFBS Thermo-Lag. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A12	NORTH WALL	AREA 41, ROOM 772.0-A11	II-32A	2 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C13	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C18	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C14	II-32A, II-34A	3 Hours
	WEST WALL	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
		AREA 45, ROOM 772.0-A15	II-32A	2 Hours
		AREA 46, ROOM 772.0-A16	II-32A	2 Hours
	FLOOR	AREA 28, ROOM 757.0-A21	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A12	A190	AREA 41, ROOM 772.0-A11	II-32A	1.5 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A10.

Deviations: None.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.45 and 64.

3.48.2 Fire Area 42 Safe Shutdown Analysis By Analysis Volume**3.48.2.1 AV-069**

Room No.	Description:
772.0-A12	480V Transformer Room 2-A

A fire in Analysis Volume 69 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, MCR & containment HVAC functions and Unit 2 long term decay heat removal and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236- 79DC1&2-S&- 79AC1&2-S	120
2-FCV-74-2-B	772-A15	MUST OPEN	2-BKR-74-2-B	120
2-FCV-74-2-B	2RA4	MUST OPEN	HANDWHEEL	120
2-ISV-62-537	692-A25	CLOSE	HANDWHEEL	120
1-FCV-3-126A-B	772-A2	MUST OPEN	1-BKR-3-126A-B	125
1-FCV-3-126A-B	713-A1A	OPEN	HANDWHEEL	125
1-FCV-3-126B-B	772-A2	MUST OPEN	1-BKR-3-126B-B	125
1-FCV-3-126B-B	713-A1A	OPEN	HANDWHEEL	125
2-FCV-3-126A-B	713-A1B	OPEN	HANDWHEEL	125
2-FCV-3-126A-B	772-A15	MUST OPEN	2-BKR-3-126A-B	125
2-FCV-3-126B-B	772-A15	MUST OPEN	2-BKR-3-126B-B	125
2-FCV-3-126B-B	713-A1B	OPEN	HANDWHEEL	125
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-MTR-67-9-A	757-A21	MUST OPERATE	2-BKR-67-9C-A	720
2-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
0-FCV-67-152-B	737-A1B	MUST OPERATE	HANDWHEEL	1140
0-FCV-67-152-B	772-A15	MUST OPERATE	0-BKR-67-152-B	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-73-B	692-A7	MUST NOT OPEN	HANDWHEEL	1140
1-FCV-63-73-B	772-A2	MUST NOT OPEN	1-BKR-63-73-B	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-74-24-B	772-A2	MUST OPERATE	1-BKR-74-24-B	1140
1-FCV-74-24-B	676-A16	THROTTLE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-11-B	772-A15	MUST NOT	2-BKR-63-11-B	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		OPEN		
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-94-B	772-A15	MUST NOT CLOSE	2-BKR-63-94-B	1140
2-FCV-63-94-B	713-A29	OPEN	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-70-153-B	713-A1BN	OPERATE	HANDWHEEL	1140
2-FCV-70-153-B	772-A15	MUST OPERATE	2-BKR-70-153-B	1140
2-FCV-72-41-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-72-41-B	772-A15	MUST NOT OPEN	2-BKR-72-41-B	1140
2-FCV-74-24-B	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-24-B	772-A15	MUST OPERATE	2-BKR-74-24-B	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	OPEN	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140
2-FCV-74-9-B	772-A15	MUST OPEN	CLOSE BREAKER, 2-HS- 74-9-B OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-72-21-B	755-C12	CLOSE	1-HS-72-21A-B	7
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
2-MTR-74-10-A-P	755-C12	STOP RHR PUMP	2-HS-74-10A-A	10
2-FCV-62-89	755-C12	CLOSE	2-HIC-62-89A	35

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.49 FIRE AREA 43**3.49.1 Room 772.0-A13**

Description: 125V Vital Battery Room IV

Fire Loading: The combustibles consist of plastics associated with electrical panels, boxes and battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A13	NORTH AND EAST WALLS	AREA 45, ROOM 772.0-A15	II-32A	3 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C12	II-32A, II-34A	3 Hours
	WEST WALL	AREA 44, ROOM 772.0-A14	II-32A	3 Hours
	FLOOR	AREA 29, ROOM 757.0-A22	II-31A, II-32A	3 Hours
		AREA 30, ROOM 757.0-A23	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A13	A194	AREA 45, ROOM 772.0-A15	II-32A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A13	2-ISD-31-2525 47A381-311F	AREA 45, ROOM 772.0-A15	47W866-3 47W920-9	3 Hours
	2-ISD-31-2558 47A381-690	AREA 44, ROOM 772.0-A14	47W866-3 47W920-9	3 Hours
	2-ISD-31-2564 47A381-736	AREA 44, ROOM 772.0-A14	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A10.

Deviations: None.

Evaluations: The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.46, 62 and 65.

3.49.2 Fire Area 43 Safe Shutdown Analysis By Analysis Volume**3.49.2.1 AV-070**

Room No.	Description:
772.0-A13	125V Vital Battery Room IV

A fire in Analysis Volume 70 could potentially affect Unit 1 and 2 systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Trains 1A and 2A. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-128-B-T	757-A24	MUST TRIP	2-HS-3-128C-B, 2-XS-3-128	13
2-HTR-68- 341D/B1-B7	757-A24	DEENERGIZE HEATERS	2-HS-68-341DC- B,2-XS-68-341D- B	25
2-HTR-68- 341H/C1-C6	757-A24	DEENERGIZE HEATERS	2-XS-68-341H	25
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	MUST OPERATE	0-XSW-236-4-S	120
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	713-A11	CLOSE	HANDWHEEL	1140
1-FCV-74-35-B	772-A2	OPEN/CLOSE	1-BKR-74-35-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-35-B	772-A15	MUST CLOSE	2-BKR-74-35-B	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.50 FIRE AREA 44**3.50.1 Room 772.0-A14**

Description: 125V Vital Battery Room III

Fire Loading: The combustibles consist of plastics associated with electrical panels, boxes and battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A14	NORTH AND WEST WALLS	AREA 45, ROOM 772.0-A15	II-32A	3 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C12	II-32A, II-34A	3 Hours
	EAST WALL	AREA 43, ROOM 772.0-A13	II-32A	3 Hours
	FLOOR	AREA 23, ROOM 757.0-A27	II-31A, II-32A	3 Hours
		AREA 24, ROOM 757.0-A28	II-31A, II-32A	3 Hours
		AREA 30, ROOM 757.0-A23	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A14	A195	AREA 45, ROOM 772.0-A15	II-32A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A14	2-ISD-31-2523 47A381-312F	AREA 45, ROOM 772.0-A15	47W866-3 47W920-9	3 Hours
	2-ISD-31-2557 47A381-734	AREA 45, ROOM 772.0-A15	47W866-3 47W920-9	3 Hours
	2-ISD-31-2558 47A381-690	AREA 43, ROOM 772.0-A13	47W866-3 47W920-9	3 Hours
	2-ISD-31-2559 47A381-691	AREA 45, ROOM 772.0-A15	47W866-3 47W920-9	3 Hours
	2-ISD-31-2564 47A381-736	AREA 43, ROOM 772.0-A13	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: A manually actuated preaction sprinkler system is provided in the room. A standpipe and hose station is provided from room 772.0-A10.

Deviations: None.

Evaluations: The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.47, 63 and 64.

3.50.2 Fire Area 44 Safe Shutdown Analysis By Analysis Volume**3.50.2.1 AV-071**

Room No.	Description:
772.0-A14	125V Vital Battery Room III

A fire in Analysis Volume 71 could potentially affect Unit 1 and 2 systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, MCR & containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available to Trains 1B and 2B. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-3-118-A-T	757-A2	MUST TRIP	2-HS-3-118C-A, 2-XS-3-118	13
2-HTR-68- 341A/A1-A7	757-A2	DEENERGIZE HEATERS	2-HS-68-341AC- A, 2-XS-68-341A- A	25
2-HTR-68- 341F/D1-D6	757-A2	DEENERGIZE HEATERS	2-XS-68-341F	25
0-BD-236-3-F	772-A15	MUST OPERATE	0-XSW-236-3-S	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-1-D	772-A2	OPERATE (TRANSFER)	0-XSW-236-1-S	120
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	713-A12	CLOSE	HANDWHEEL	1140
1-FCV-74-33-A	772-A1	OPEN/CLOSE	1-BKR-74-33-A	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
1-FCV-1-18-B	755-C12	CLOSE VALVE	1-HS-1-18A-B	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.51 FIRE AREA 45**3.51.1 Room 772.0-A15**

Description: 480V Board Room 2-B (Subdivided into 772.0-A15A1, -A15A2, -A15A3, -A15A4)

Fire Loading: The combustibles consist of plastics associated with the electrical boards, panels, boxes and lights and insulation on the HVAC ducts and on the cables in the trays, and ERFBS Thermo-Lag. The fire severity is classified as severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A15	NORTH WALL	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
		AREA 46, ROOM 772.0-A16	II-32A	2 Hours
	SOUTH WALL	AREA 48, ROOM 755.0-C12	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C13	II-32A, II-34A	3 Hours
		AREA 48, ROOM 755.0-C20	II-32A, II-34A	3 Hours
		AREA 43, ROOM 772.0-A13	II-32A	3 Hours
		AREA 44, ROOM 772.0-A14	II-32A	3 Hours
	EAST WALL	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
		AREA 42, ROOM 772.0-A12	II-32A	2 Hours
		AREA 44, ROOM 772.0-A14	II-32A	3 Hours
	WEST WALL	AREA 33, ROOM 772.0-A2	II-32A	2 Hours
		AREA 43, ROOM 772.0-A13	II-32A	3 Hours
	FLOOR	AREA 20, ROOM 757.0-A1	II-31A, II-32A	2 Hours
		AREA 23, ROOM 757.0-A27	II-31A, II-32A	2 Hours
		AREA 24, ROOM 757.0-A28	II-31A, II-32A	2 Hours
		AREA 28, ROOM 757.0-A21	II-31A, II-32A	2 Hours
		AREA 29, ROOM 757.0-A22	II-31A, II-32A	3 Hours
		AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
	CEILING (PARTIAL)	AREA 47, ROOM 786.0-A3	II-32A	2 Hours
		AREA 47, ROOM 786.0-A6	II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A15	A191	AREA 31, ROOM 757.0-A24	II-32A	1.5 Hours
	A193	AREA 46, ROOM 772.0-A16	II-32A	1.5 Hours
	A194	AREA 43, ROOM 772.0-A13	II-32A	3 Hours
	A195	AREA 44, ROOM 772.0-A14	II-32A	3 Hours
	A196	AREA 33, ROOM 772.0-A2	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A15	2-ISD-31-2517 47A381-308F	AREA 47, ROOM 786.0-A3	47W866-3 47W920-29	3 Hours
	2-ISD-31-2518 47A381-313F	AREA 47, ROOM 786.0-A3	47W866-3 47W920-29	3 Hours
	2-ISD-31-2519 47A381-307F	AREA 47, ROOM 786.0-A3	47W866-3 47W920-29	3 Hours
	2-ISD-31-2523 47A381-312F	AREA 44, ROOM 772.0-A14	47W866-3 47W920-9	3 Hours
	2-ISD-31-2525 47A381-311F	AREA 43, ROOM 772.0-A13	47W866-3 47W920-9	3 Hours
	2-ISD-31-2526 47A381-311F	AREA 46, ROOM 772.0-A16	47W866-3 47W920-9	3 Hours
	2-ISD-31-2554 47A381-693	AREA 46, ROOM 772.0-A16	47W866-3 47W920-9	3 Hours
	2-ISD-31-2557 47A381-734	AREA 44, ROOM 772.0-A14	47W866-3 47W920-9	3 Hours
	2-ISD-31-2559 47A381-691	AREA 44, ROOM 772.0-A14	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided for the room, except for the area between column lines A8-A10/Q-R. A standpipe and hose station is provided from room 772.0-A10.

Deviations: The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Part VII, Section 2.4.

Evaluations: The lack of suppression between column lines A8-A10/Q-R is documented in Part VII, Section 3.1.8. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.48, 49, 62, and 65.

3.51.2 Fire Area 45 Safe Shutdown Analysis By Analysis Volume**3.51.2.1 AV-072**

Room No.	Description:
772.0-A15A1	480V Board Room 2-B, Column Lines A13-A12
772.0-A15A2	480V Board Room 2-B, Column Lines A12-A11

A fire in Analysis Volume 72 could potentially affect Unit 1 and 2 systems and components necessary to maintain the long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 2 cables to preclude damage in the event of a fire, manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
1-MTR-62-104-B	MOTOR COOLER 1B-B CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-39-A	757-A21	CLOSE VALVE	2-BKR-63-39-A, 2-HS-63-39C	15
2-FCV-63-40-B	757-A24	CLOSE VALVE	2-BKR-63-40-B, 2-HS-63-40C	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
1-BD-211-B-B	757-A24	TRANSFER CONTROL PWR	TRANSFER SWITCH	120
2-BD-211-B-B	757-A24	TRANSFER CONTROL PWR	TRANSFER SWITCH	120
2-BD-212-B1-B	757-A24	TRANSFER CONTROL PWR	TRANSFER SWITCH	120
2-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-MCC-213-B1-B	757-A24	MUST DE- ENERGIZE	2-BKR-212- B1/8B-B	120
2-MCC-213-B2-B	757-A24	MUST DE- ENERGIZE	2-BKR-212- B2/8B-B	120
2-TCV-67-84-A	757-A23	MUST NOT CLOSE	FUSE	120
2-TCV-67-85-A	757-A23	MUST NOT CLOSE	FUSE	120
2-TCV-67-92-A	757-A23	MUST NOT CLOSE	FUSE	120
2-TCV-67-93-A	757-A23	MUST NOT CLOSE	FUSE	120
2-FCV-67-123-B	737-A1B	MUST CLOSE	HANDWHEEL	122
2-FCV-67-124-B	713-A19	MUST CLOSE	HANDWHEEL	122
2-FCV-3-116A-A	713-A1B	OPEN	HANDWHEEL	125
2-FCV-3-116A-A	772-A16	MUST OPEN	2-BKR-3-116A-A	125
2-FCV-3-116B-A	772-A16	MUST OPEN	2-BKR-3-116B-A	125
2-FCV-3-116B-A	713-A1B	OPEN	HANDWHEEL	125
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
0-FCV-70-197-A	772-A1	MUST CLOSE	0-HS-70-197C, 0- XS-70-197	1140
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-63-72-A	692-A7	MUST NOT OPEN	HANDWHEEL	1140
1-FCV-63-72-A	772-A1	MUST NOT OPEN	1-BKR-63-72-A	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
1-FCV-67-146-A	772-A1	MUST OPERATE	1-BKR-67-146-A	1140
1-FCV-70-156-A	772-A1	OPEN	1-HS-70-156C, 1- XS-70-156	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-93-A	713-A29	OPEN VALVE	HANDWHEEL	1140
2-FCV-63-93-A	772-A16	MUST NOT CLOSE	2-BKR-63-93-A	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-143-A	772-A16	MUST OPERATE	2-BKR-67-143-A	1140
2-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
2-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
2-FCV-67-146-A	772-A16	MUST OPERATE	2-BKR-67-146-A	1140
2-FCV-70-156-A	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	1140
2-FCV-72-40-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-72-40-A	772-A16	MUST NOT OPEN	2-BKR-72-40-A	1140
2-FCV-74-1-A	772-A16	MUST OPEN	CLOSE BREAKER 2-XS- 74-1-A, 2-HS-74- 1C-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS)	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-33-A	713-A15	OPEN	HANDWHEEL	1140
2-FCV-74-33-A	772-A16	MUST CLOSE	2-BKR-74-33-A	1140
2-FCV-74-35-B	713-A16	CLOSE	HANDWHEEL	1140
2-FCV-74-8-A	772-A16	MUST OPEN	CLOSE BREAKER 2-HS- 74-8-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
2-FCV-72-21-B	755-C12	CLOSE	2-HS-72-21A-B	7
2-FCV-74-21-B	755-C12	CLOSE	2-HS-74-21A-B	7
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	15

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PL4935A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4936A	2-MCC-213-A1-A	REACTOR MOV BD 2A1-A
2PL4938A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A
2PL4939A	2-MCC-213-A2-A	REACTOR MOV BD 2A2-A

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Room No.	Description:
772.0-A15A2	480V Board Room 2-B, Column Lines A12-A11
772.0-A15A3	480V Board Room 2-B, Column Lines A11-A10
772.0-A15A4	480V Board Room 2-B, Column Lines A10-A8

A fire in Analysis Volume 73 could potentially affect systems Unit 1 and 2 and components necessary to maintain the long term decay heat removal, MCR & containment HVAC, reactor coolant inventory control, and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Onsite 1A and 2A power and offsite 1B and 2B power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown and Unit 2 repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-3-F	125V VITAL BATTERY BOARD III
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-ISV-3-827	737-A1B	CLOSE/THROTTLE	HANDWHEEL	13
2-ISV-3-828	737-A1B	CLOSE/THROTTLE	HANDWHEEL	13
2-LCV-3-156	737-A1B	OPEN	CLOSE 2-ISV- 32-3751, CONTROL AIR ISOLATION VALVE TO 2- LCV-3-156 AND OPEN PETCOCK TO VENT AIR FROM VALVE OPERATOR FOR 2-LCV-3- 156.	13
2-LCV-3-164	737-A1B	OPEN	CLOSE 2-ISV- 32-3753, CONTROL AIR ISOLATION VALVE TO 2- LCV-3-164 AND OPEN PETCOCK TO VENT AIR FROM VALVE OPERATOR FOR 2-LCV-3- 164.	13
2-PCV-3-122-A	757-A27	TRANSFER CONTROL	2-XS-3-122	13
2-FCV-63-39-A	757-A21	CLOSE VALVE	2-BKR-63-39-A, 2-HS-63-39C	15
2-FCV-63-40-B	757-A24	CLOSE VALVE	2-BKR-63-40-B, 2-HS-63-40C	15
2-MCC-214-A2-A	757-A21	MUST OPERATE	2-BKR-212- A2/9C-A	15
1-BD-211-A-A	757-A2	TRANSFER CONTROL PWR	TRANSFER SWITCH	45
2-BD-211-A-A	757-A2	TRANSFER CONTROL PWR	TRANSFER SWITCH	45

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-BD-212-A1-A	757-A21	TRANSFER CONTROL PWR	TRANSFER SWITCH	45
2-BD-212-A2-A	757-A21	TRANSFER CONTROL PWR	TRANSFER SWITCH	45
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
2-PCV-68-340A-A	757-A23	OPEN BREAKERS	AFTER TRANSFER OF CONTROL POWER ON 1,2- BD-211-A-A, 2- BD-212-A1-A AND 2-BD-212- A2-A OPEN BREAKERS 201 THROUGH 227, 301 THROUGH 309, AND 311 THROUGH 327. ENSURE BREAKER 310 REMAINS CLOSED.	60
0-BD-236-2-E	772-A2	OPERATE (TRANSFER)	0-XSW-236-2-S	120
0-BD-236-4-G	772-A15	OPERATE (TRANSFER)	0-XSW-236-4-S	120
2-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-MCC-213-B1-B	757-A24	MUST DE- ENERGIZE	2-BKR-212- B1/8B-B	120
2-MCC-213-B2-B	757-A24	MUST DE- ENERGIZE	2-BKR-212- B2/8B-B	120
2-FCV-67-123-B	737-A1B	MUST CLOSE	HANDWHEEL	122
2-FCV-67-124-B	713-A19	MUST CLOSE	HANDWHEEL	122
0-ISV-70-524B	737-A1C	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-67-143-A	772-A1	MUST OPERATE	1-BKR-67-143-A	1140
1-FCV-67-143-A	737-A1B	MUST CLOSE	HANDWHEEL	1140
1-FCV-67-146-A	772-A1	MUST OPERATE	1-BKR-67-146-A	1140
1-FCV-67-146-A	737-A1B	MUST OPEN	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-1-A	772-A16	MUST OPEN	CLOSE BREAKER 2-XS- 74-1-A, 2-HS-74-	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-74-35-B	713-A16	CLOSE	1C-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS) HANDWHEEL	1140
2-FCV-74-8-A	772-A16	MUST OPEN	CLOSE BREAKER 2-HS- 74-8-A OR USE REPAIR PROCEDURE (INSTALL JUMPERS).	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-21-B	755-C12	CLOSE	1-HS-74-21A-B	7
2-FCV-72-21-B	755-C12	CLOSE	2-HS-72-21A-B	7
2-FCV-74-21-B	755-C12	CLOSE	2-HS-74-21A-B	7
1-FCV-1-17-A	755-C12	CLOSE VALVE	1-HS-1-17A-A	13
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	15
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.52 FIRE AREA 46**3.52.1 Room 772.0-A16**

Description: 480V Board Room 2-A

Fire Loading: The combustibles consist of plastics associated with the electrical boards, panels, boxes and lights and the insulation on the cables in the trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction. The equipment hatch opening in the floor slab is provided with a nonrated steel cover and is also protected by a water curtain.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
772.0-A16	NORTH WALL	AREA 10, ELEVATOR SHAFT	II-32A	2 Hours
		AREA 10, ROOM 772.0-A9	II-32A	2 Hours
		AREA 10, ROOM 757.0-A13	II-31A, II-32A	2 Hours
		AREA 40, ROOM 772.0-A10	II-32A	2 Hours
	SOUTH WALL	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours
		AREA 45, ROOM 772.0-A15	II-32A	2 Hours
	EAST WALL	AREA 41, ROOM 772.0-A11	II-32A	2 Hours
		AREA 42, ROOM 772.0-A12	II-32A	2 Hours
	WEST WALL	AREA 32, ROOM 772.0-A1	II-32A	2 Hours
	FLOOR	AREA 31, ROOM 757.0-A24	II-31A, II-32A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
772.0-A16	A188	AREA 40, ROOM 772.0-A10	II-32A	1.5 Hours
	A189	AREA 41, ROOM 772.0-A11	II-32A	1.5 Hours
	A193	AREA 45, ROOM 772.0-A15	II-32A	1.5 Hours
	A197	AREA 32, ROOM 772.0-A1	II-32A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
772.0-A16	2-ISD-31-2504 47A381-301F	AREA 40, ROOM 772.0-A10	47W866-3 47W920-9	3 Hours
	2-ISD-31-2515 47A381-644G	AREA 40, ROOM 772.0-A10	47W866-3 47W920-9	1.5 Hours
	2-ISD-31-2516 47A381-301F	AREA 40, ROOM 772.0-A10	47W866-3 47W920-9	3 Hours
	2-ISD-31-2526	AREA 45, ROOM 772.0-A15	47W866-3	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	47A381-311F		47W920-9	
	2-ISD-31-2554 47A381-693	AREA 45, ROOM 772.0-A15	47W866-3 47W920-9	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent room 772.0-A10.

Deviations: The justification for the hatch opening through the floor is documented in Part VII, Section 2.6.3.1. This hatch is protected with a water curtain. The justification for fire doors is documented in Part VII, Section 4.1.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Section 8.3.50, 63, and 64.

3.52.2 Fire Area 46 Safe Shutdown Analysis By Analysis Volume**3.52.2.1 AV-074**

Room No.	Description:
772.0-A16	480V Board Room 2-A

A fire in Analysis Volume 74 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control, and MCR & containment HVAC functions and Unit 2 long term decay heat removal, reactor coolant inventory control and reactor coolant pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

AV-074

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-63-39-A	757-A21	CLOSE VALVE	2-BKR-63-39-A, 2-HS-63-39C	15
2-FCV-63-40-B	757-A24	CLOSE VALVE	2-BKR-63-40-B, 2-HS-63-40C	15
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
0-BD-236-3-F	772-A15	OPERATE (TRANSFER)	0-XSW-236-3-S	120
2-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
2-MCC-213-A1-A	757-A21	MUST DE- ENERGIZE	2-BKR-212- A1/8B-A	120
2-MCC-213-A2-A	757-A21	MUST DE- ENERGIZE	2-BKR-212- A2/8B-A	120
2-FCV-67-125-A	737-A1B	MUST NOT OPEN	HANDWHEEL	122
2-FCV-67-143-A	737-A1B	MUST OPEN	HANDWHEEL	150
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
1-FCV-63-1-A	692-A8	CLOSE	HANDWHEEL	1140
1-FCV-70-153-B	772-A2	MUST OPERATE	1-BKR-70-153-B	1140
1-FCV-70-153-B	713-A1AN	THROTTLE	HANDWHEEL	1140
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-74-33-A	713-A15	CLOSE	HANDWHEEL	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	3
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	3
1-FCV-72-22-A	755-C12	CLOSE	1-HS-72-22A-A	7
1-FCV-74-3-A	755-C12	CLOSE	1-HS-74-3A-A	7
2-FCV-72-22-A	755-C12	CLOSE	2-HS-72-22A-A	7
2-FCV-74-3-A	755-C12	CLOSE	2-HS-74-3A-A	7
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
2-FCV-70-134-B	755-C12	CLOSE VALVE	2-HS-70-134A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9
2-MTR-74-10-A-P	755-C12	STOP RHR PUMP	2-HS-74-10A-A	10
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-91-B	755-C12	CLOSE	2-HS-62-91A-B	15

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.53 FIRE AREA 47**3.53.1 Room 786.0-A2, A3, A4, AR, A5, A6****Description:**

Room No.	Description:
786.0-A2	Roof Access Air Lock
786.0-A3	Mechanical Equipment Room 2B
786.0-A4	Mechanical Equipment Room 1B
786.0-A5	225 kVA DG Room B
786.0-A6	225 kVA DG Room A
786.0-AR	Roof

Fire Loading: The combustibles in rooms 786.0-A2, -A3, -A4, and -AR consists of plastics associated with electrical panels and lights and oil in chillers. The fire severity in these rooms is classified as insignificant. The combustibles in rooms 786.0-A5 and -A6 consists of fuel and lube oil contained in the DG skids and associated plastics in electrical components. The fire severity in these rooms is classified as moderate.

Compartmentation: Rooms 786.0-A2, -A3 and A4 are reinforced concrete construction. Rooms 786.0-A5 and -A6 are reinforced concrete (floor and north wall) and steel frame and plate (roof and east, west and south walls).

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
786.0-A3	Floor	Area 45, Room 772.0-A15	II-32A	2 Hours
		Area 31, Room 757.0-A24	II-31A, II-32A	2 Hours
786.0-A3	South Wall	Area 47, Room 786.0-A6	II-32A	3 Hours
786.0-A4	Floor	Area 33, Room 772.0-A2	II-32A	2 Hours
		Area 17, Room 757.0-A2	II-31A, II-32A	2 Hours
786.0-A4	South Wall	Area 47, Room 786.0-A5	II-32A	3 Hours
786.0-A5	Floor	Area 33, Room 772.0-A2	II-32A	3 Hours
786.0-A5	North Wall	Area 47, Room 786.0-A4	II-32A	3 Hours
786.0-A6	Floor	Area 45, Room 772.0-A15	II-32A	3 Hours
786.0-A6	North Wall	Area 47, Room 786.0-A3	II-32A	3 Hours

Doors: None. (Metal Doors in Rooms 786.0-A5 and 786.0-A6 are not Fire Rated)

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
786.0-A3	2-ISD-31-2517 47A381-308F	AREA 45, ROOM 772.0-A15	47W866-3 47W920-29	3 Hours
	2-ISD-31-2518 47A381-313F	AREA 45, ROOM 772.0-A15	47W866-3 47W920-29	3 Hours
	2-ISD-31-2519 47A381-307F	AREA 45, ROOM 772.0-A15	47W866-3 47W920-29	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
786.0-A4	1-ISD-31-2517 47A381-308F	AREA 33, ROOM 772.0-A2	47W866-3 47W920-29	3 Hours
	1-ISD-31-2518 47A381-313F	AREA 33, ROOM 772.0-A2	47W866-3 47W920-29	3 Hours
	1-ISD-31-2519 47A381-307F	AREA 33, ROOM 772.0-A2	47W866-3 47W920-29	3 Hours

Detection: Ionization detectors are provided for Rooms 786.0-A5 and 786.0-A6.

Suppression: Automatic preaction suppression is provided for Rooms 786.0-A5 and 786.0-A6. No automatic suppression provided in Rooms 786.0-A2, -A3, -A4 and -AR. Standpipe and hose stations are provided from the Auxiliary Building roof (786.0-AR).

Deviations: None.

Evaluations: None.

3.53.2 Fire Area 47 Safe Shutdown Analysis By Analysis Volume**3.53.2.1 AV-075**

Room No.	Description:
786.0-A2	Roof Access Air Lock
786.0-A3	Mechanical Equipment Room 2B
786.0-A4	Mechanical Equipment Room 1B
786.0-A5	225 kVA DG Room B
786.0-A6	225 kVA DG Room A
786.0-AR	Roof

A fire in Analysis Volume 75 does not impact major equipment required to maintain safe shutdown functions. However, offsite power may be lost. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Onsite power is available. Equipment credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A- A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C- A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.54 FIRE AREA 48

Fire Area 48 consists of the entire Control Building.

3.54.1 Rooms 692.0-C1 and C2

Description: Mechanical Equipment Rooms

Fire Loading: The combustibles consist of plastics associated with electrical panels, boxes and lights and insulation on pipes. The fire severity is classified as insignificant.

Compartmentation: The rooms are of reinforced concrete construction. The walls separating the Control Building and Auxiliary Building are equivalent to three-hour fire rated barriers. The ceiling separating the Control Building from the Turbine Building is equivalent to a three-hour fire rated barrier, except for the equipment hatch. The equipment hatch is covered with non-fire rated steel plates.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C1	NORTH WALL	AREA 1, ROOM 692.0-A1	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A5	II-28A, II-33A	3 Hours
	CEILING	AREA 63, TURBINE BUILDING	II-33A	3 Hours
692.0-C2	NORTH WALL	AREA 1, ROOM 692.0-A3	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A5	II-28A, II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the rooms.

Suppression: Automatic preaction sprinkler systems are provided in the rooms. Standpipes and hose stations are provided in other rooms on this building elevation (692 Stairwell C1).

Deviations: The justification for the hatch opening through the ceiling of 692.0-C1 to the Turbine Building is documented in Part VII, Section 2.6.4. No deviations are applicable to 692.0-C2.

Evaluations: None.

3.54.2 Room 692.0-C3

Description: 250V Battery Room 1

Fire Loading: The combustibles consist of plastics associated with electrical panels and boxes and lights and the battery cases. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete block and reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C3	NORTH	AREA 1, ROOM 676.0-A2	II-28A, II-33A	3 Hours
	WALL	AREA 1, ROOM 692.0-A3	II-28A, II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the stairwell (692 Stairwell C1).

Deviations: None.

Evaluations: None.

3.54.3 Rooms 692.0-C4, C5, C8, C11, and C12

Description:

Room No.	Description:
692.0-C4	250V Battery Board Room No.1
692.0-C5	250V Battery Board Room No. 2
692.0-C8	24V and 48V Battery Board and Charger Room
692.0-C11	Corridor
692.0-C12	Secondary Alarm Station Room

Fire Loading: The combustibles consist of plastics associated with electrical panels, boards, chargers, TV monitors and lights, furniture, pipe insulation and insulation on cables in trays. The fire severity classification for each room is as follows:

Room No.	Description:	Fire Loading
692.0-C4	250V Battery Board Room No. 1	Low
692.0-C5	250V Battery Board Room No. 2	Low
692.0-C8	24V and 48V Battery Board and Charger Room	Low
692.0-C11	Corridor	Low
692.0-C12	Secondary Alarm Station Room	Moderate

Compartmentation: The rooms are of reinforced concrete block and reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C4	NORTH WALL	AREA 1, ROOM 676.0-A2	II-28A, II-33A	3 Hours
692.0-C5	NORTH WALL	AREA 1, ROOM 676.0-A2	II-28A, II-33A	3 Hours
		AREA 1, ROOM 676.0-A3	II-28A, II-33A	3 Hours
	CEILING (PARTIAL)	AREA 48, ROOM 708.0-C3	II-33A	2 Hours
692.0-C8	NORTH WALL	AREA 1, ROOM 692.0-A31	II-28A, II-33A	3 Hours
692.0-C11	CEILING (PARTIAL)	AREA 48, ROOM 708.0-C2	II-33A	2 Hours
692.0-C12	NORTH WALL	AREA 1, ROOM 692.0-A30	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A31	II-28A, II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided for all the rooms except the area above the ceiling in Room 692.0-C12.

Suppression: Automatic sprinklers are provided in Rooms 692.0-C11 and C12. No suppression is provided in Rooms 692.0-C4, -C5 and -C8. Standpipe and hose stations are provided from the stairwells located at each end of the Corridor.

Deviations: The justification for not providing an automatic suppression system in rooms C4, C5, and C8 is documented in Part VII, Section 2.3. The justification for the gutter penetration in the walls separating the stairwells from corridor 692.0-C11 is documented in Part VII, Section 4.2. No deviations are applicable for Room 692.0-C12.

Evaluations: None.

3.54.4 Room 692.0-C6

Description: 250V Battery Room 2

Fire Loading: The combustibles consist of plastic associated with the batteries. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete block and reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C6	NORTH	AREA 1, ROOM 676.0-A3	II-28A, II-33A	3 Hours
	WALL	AREA 1, ROOM 692.0-A31	II-28A, II-33A	3 Hours
	CEILING (PARTIAL)	AREA 48, ROOM 708.0-C3	II-33A	2 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. Standpipe and hose stations are provided from the stairwells.

Deviations: None.

Evaluations: None.

3.54.5 Room 692.0-C7

Description: 24V and 48V Battery Room

Fire Loading: The combustibles consist of plastic associated with the batteries. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete block and reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C7	NORTH WALL	AREA 1, ROOM 692.0-A31	II-28A, II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the stairwells located at the end of the Room C11 Corridor.

Deviations: None.

Evaluations: None.

3.54.6 Room 692.0-C9

Description: Communications Room

Fire Loading: The combustibles consist of plastics, resins, and paper associated with the communications equipment panels, furniture and insulation on cables in trays. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete block and reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C9	NORTH WALL	AREA 1, ROOM 692.0-A27	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A29	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A30	II-28A, II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the C2 stairwell.

Deviations: None.

Evaluations: None.

3.54.7 Room 692.0-C10

Description: Mechanical Equipment Room

Fire Loading: The combustibles consist of lube oil in the chillers, plastics associated with the electrical panels, boxes and lights and insulation on piping. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete construction. The equipment hatch in the ceiling is covered with a nonfire rated steel cover.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-C10	NORTH WALL	AREA 1, ROOM 692.0-A27	II-28A, II-33A	3 Hours
	CEILING	AREA 63, TURBINE BUILDING	II-33A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the C2 stairwell.

Deviations: The justification for the hatch opening through the ceiling of 692.0-C10 to the Turbine Building is documented in Part VII, Section 2.6.4.

Evaluations: None.

3.54.8 Room 708.0-C1

Description: Unit 1 Auxiliary Instrument Room

Fire Loading: The combustible materials consist of plastics associated with the electrical instrument panels and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
708.0-C1	NORTH WALL	AREA 1, ROOM 676.0-A2	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A3	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A5	II-28A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A25	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A26	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A27	II-29A, II-33A	3 Hours
		AREA 63, TURBINE BUILDING	II-33A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-33A	3 Hours
	EAST WALL	AREA 48, ROOM 708.0-C2	II-33A	2 Hours
		AREA 48, ROOM 708.0-C3	II-33A	2 Hours
	WEST WALL	AREA 63, TURBINE BUILDING	II-33A	3 Hours
	CEILING (PARTIAL)	AREA 63, TURBINE BUILDING	II-33A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
708.0-C1	C19	AREA 63, TURBINE BUILDING	II-33A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
	C22	AREA 48, ROOM 708.0-C2	II-33A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
708.0-C1	0-ISD-31-3956 47A381-500	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	1.5 Hours
	0-ISD-31-3957 47A381-501F	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	3 Hours
	0-ISD-31-3968 47A381-542	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	1.5 Hours
	0-ISD-31-3969 47A381-541F	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	3 Hours

Detection: Ionization smoke detectors cross zoned with heat detectors are provided in the room.

Suppression: An automatic CO₂ suppression system is provided in the room. A standpipe and hose station is provided from the stairwell C1.

Deviations: None.

Evaluations: None.

3.54.9 Room 708.0-C2

Description: Corridor

Fire Loading: The combustible material consist of plastics associated with the electrical boxes and lights and insulation on the cables in trays. The fire severity is classified as low.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
708.0-C2	NORTH WALL	AREA 48, ROOM 708.0-C3	II-33A	2 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-33A	3 Hours
	EAST WALL	AREA 48, ROOM 708.0-C4	II-33A	2 Hours
	WEST WALL	AREA 48, ROOM 708.0-C1	II-33A	2 Hours
	FLOOR	AREA 48, ROOM 692.0-C11	II-33A	2 Hours
	CEILING	AREA 48, ROOM 729.0-C1	II-33A, II-34A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
708.0-C2	C22	AREA 48, ROOM 708.0-C1	II-33A	1.5 Hours
	C23	AREA 48, ROOM 708.0-C3	II-33A	1.5 Hours
	C24	AREA 48, ROOM 708.0-C4	II-33A	1.5 Hours
	C26A	AREA 63, TURBINE BUILDING	II-33A	3 Hours*

*Sliding Fire Door

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
708.0-C2	0-ISD-31-5033 47A381-730F	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1 47W930-10	3 Hours
	0-ISD-31-5034 47A381-730F		47W866-4 47W930-1 47W930-10	3 Hours
	0-ISD-31-5035 47A381-731F		47W866-4 47W930-1 47W930-10	3 Hours
	0-ISD-31-5036 47A381-731F		47W866-4 47W930-1 47W930-10	3 Hours

Detection: Ionization smoke detectors are provided in the corridor.

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the two stairwells.

Deviations: The justification for the lack of total area suppression is documented in Part VII, Section 2.3.

Evaluations: None.

3.54.10 Room 708.0-C3

Description: Computer Room

Fire Loading: The combustibles consist of plastics associated with the various computer equipment and electrical panels, furniture, and insulation on the cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
708.0-C3	NORTH WALL	AREA 1, ROOM 676.0-A3	II-28A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A23	II-29A, II-33A	3 Hours
	SOUTH WALL	AREA 48, ROOM 708.0-C2	II-33A	2 Hours
	EAST WALL	AREA 48, ROOM 708.0-C4	II-33A	2 Hours
	WEST WALL	AREA 48, ROOM 708.0-C1	II-33A	2 Hours
	FLOOR	AREA 48, ROOM 692.0-C5	II-33A	2 Hours
		AREA 48, ROOM 692.0-C6	II-33A	2 Hours
	CEILING	AREA 48, ROOM 729.0-C1	II-33A, II-34A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
708.0-C3	C23	AREA 48, ROOM 708.0-C2	II-33A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
708.0-C3	2-ISD-31-2058 47A381-499F	AREA 48, ROOM 708.0-C4	47W866-4 47W930-1	3 Hours
	2-ISD-31-3955 47A381-498	AREA 48, ROOM 708.0-C4	47W866-4 47W930-1	1.5 Hours
	0-ISD-31-3956 47A381-500	AREA 48, ROOM 708.0-C1	47W866-4 47W930-1	1.5 Hours
	0-ISD-31-3957 47A381-501F	AREA 48, ROOM 708.0-C1	47W866-4 47W930-1	3 Hours
	0-ISD-31-3968 47A381-542	AREA 48, ROOM 708.0-C1	47W866-4 47W930-1	1.5 Hours
	0-ISD-31-3969 47A381-541F	AREA 48, ROOM 708.0-C1	47W866-4 47W930-1	3 Hours
	0-ISD-31-5033 47A381-730F	AREA 48, ROOM 708.0-C2	47W866-4 47W930-1 47W930-10	3 Hours
	0-ISD-31-5034 47A381-730F	AREA 48, ROOM 708.0-C2	47W866-4 47W930-1 47W930-10	3 Hours
	0-ISD-31-5035 47A381-731F	AREA 48, ROOM 708.0-C2	47W866-4 47W930-1	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
			47W930-10	
	0-ISD-31-5036 47A381-731F	AREA 48, ROOM 708.0-C2	47W866-4 47W930-1 47W930-10	3 Hours

Detection: Ionization smoke detectors cross zoned with heat detectors are provided in the room except for certain areas such as the area below the raised floor.

Suppression: An automatic CO₂ suppression system is provided in the room. Standpipe and hose stations are provided from the Stairwells C1 and C2.

Deviations: None.

Evaluations: None.

3.54.11 Room 708.0-C4

Description: Unit 2 Auxiliary Instrument Room

Fire Loading: The combustibles consist of plastics associated with the electrical instrument panels and boxes and insulation on the cables in trays. The fire severity is classified as moderately severe.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
708.0-C4	NORTH WALL	AREA 1, ROOM 676.0-A3	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A29	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A30	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A31	II-28A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A23	II-29A, II-33A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-33A	3 Hours
	EAST WALL	AREA 63, TURBINE BUILDING	II-33A	3 Hours
	WEST WALL	AREA 48, ROOM 708.0-C2	II-33A	2 Hours
		AREA 48, ROOM 708.0-C3	II-33A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
708.0-C4	C24	AREA 48, ROOM 708.0-C2	II-33A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
708.0-C4	2-ISD-31-2058 47A381-499F	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	3 Hours
	2-ISD-31-3955 47A381-498	AREA 48, ROOM 708.0-C3	47W866-4 47W930-1	1.5 Hours

Detection: Ionization smoke detectors cross zoned with heat detectors are provided in the room.

Suppression: An automatic CO₂ suppression system is provided in the room. Standpipe and hose stations are provided from the Stairwell C2.

Deviations: None.

Evaluations: None.

3.54.12 Room 729.0-C1

Description: Spreading Room

Fire Loading: The combustibles consist of plastics associated with electrical panels and lights and insulation on cables in the trays. The fire severity is classified as severe.

Compartmentation: The walls and floor of this room is of reinforced concrete construction. The ceiling is not claimed as a fire rated barrier.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-C1	NORTH WALL	AREA 8, ROOM 713.0-A1	II-29A, II-34A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-34A	3 Hours
		AREA 8, ROOM 713.0-A27	II-29A, II-34A	3 Hours
		AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	EAST WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	WEST WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	FLOOR*	AREA 48, ROOM 708.0-C2	II-33A, II-34A	2 Hours
		AREA 48, ROOM 708.0-C3	II-33A, II-34A	2 Hours

* Floor is a 2 hour regulatory barrier only above the Computer Room (708.0-C3) and the Corridor (708.0-C2). The remaining floor area is a 2 hour non-regulatory barrier.

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
729.0-C1	C29A	AREA 63, TURBINE BUILDING	II-34A	3 Hours*
	C34A	AREA 63, TURBINE BUILDING	II-34A	3 Hours*

*Sliding fire doors

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
729.0-C1	0-ISD-31-3953 47A381-473F	AREA 63, TURBINE BUILDING	47W866-4 47W930-2	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic preaction sprinkler system with a ceiling layer and an intermediate layer of sprinklers is provided for the room. Standpipe and hose stations are provided from the two stairwells and from the Turbine Building.

Deviations: None.

Evaluations: None.

3.54.13 Room 755.0-C1

Description: Mechanical Equipment Room

Fire Loading: The combustibles consist of charcoal in the filter units and plastics associated with electrical panels and radiation monitors. The fire severity is classified as low.

Compartmentation: The room is constructed of reinforced concrete block or reinforced concrete, except for the ceiling of the living area, which is constructed of gypsum board and plaster.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C1	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours
		AREA 36, ROOM 772.0-A5	II-32A, II-34A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours

Doors: None.

Dampers: None

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic sprinklers are provided in the room except for areas such as north of the MCR filter housing. The charcoal filter units are provided with a fixed water spray system. A standpipe and hose station is provided in the C1 Stairwell.

Deviations: None.

Evaluations: None.

3.54.14 Stairwell C1

Description: Stairwell C1

Fire Loading: The combustibles consist of fire hoses and plastic associated with electrical panels and lights and pipe insulation. The fire severity is classified as low.

Compartmentation: The stairwell is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
STAIRWELL C1	SOUTH WALL (ALL ELEVATIONS EXCLUDING 692)	AREA 63, TURBINE BUILDING	II-33A, II-34A	3 Hours
	WEST WALL (ELS 708 AND 729)	AREA 63, TURBINE BUILDING	II-33A, II-34A	3 Hours

Doors: None.

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are located on elevations 692.0, 708.0, 729.0, and 755.0 in the stairwell.

Deviations: The justification for not providing detection and automatic suppression in the stairwell is documented in Part VII, Section 2.3. The justification for the gutter penetration in the wall separating the stairwell from corridor 692.0-C11 is documented in Part VII, Section 4.2. The justification for hose stations having more than 100 feet of hose is documented in Part VII, Section 4.3.

Evaluations: None.

3.54.15 Stairwell C2**Description:** Stairwell C2**Fire Loading:** The combustibles consist of fire hoses and plastic associated with electrical panels, boxes and lights. The fire severity is classified as low.**Compartmentation:** The stairwell is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
STAIRWELL C2	SOUTH WALL (ALL ELEVATIONS EXCLUDING 692)	AREA 63, TURBINE BUILDING	II-33A, II-34A	3 Hours
	EAST WALL (ELS 708 AND 729)	AREA 63, TURBINE BUILDING	II-33A, II-34A	3 Hours

Doors: None.**Dampers:** None.**Detection:** None.**Suppression:** No automatic suppression is provided. Standpipe and hose stations are located on elevations 692.0, 708.0, 729.0, and 755.0 in the stairwell.

Deviations: The justification for not providing detection and automatic suppression in the stairwell is documented in Part VII, Section 2.3. The justification for the gutter penetration in the wall separating the stairwell from corridor 692.0-C11 is documented in Part VII, Section 4.2. The justification for hose stations having more than 100 feet of hose is documented in Part VII, Section 4.3.

Evaluations: None.**3.54.16 Room 755.0-C2****Description:** Women's Restroom**Fire Loading:** The combustibles consist of miscellaneous wood, paper and plastic. The fire severity is classified as low.**Compartmentation:** The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C2	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke and thermal (cross zoned) detectors are provided in the room.

Suppression: An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the stairwell.

Deviations: None.

Evaluations: None.

3.54.17 Rooms 755.0-C4, C5, C6, C7, C8, C9 and C10

Description: These rooms constitute the kitchen, locker room, men's restroom and showers, and Shift Manager's office and conference room.

Fire Loading: The combustibles consist of miscellaneous wood, paper, plastic and furniture.

The fire severity classification for each room is as follows:

Room No.	Description:	Fire Loading
755.0-C4	Kitchen	Low
755.0-C5	Toilet	Low
755.0-C6	Locker Room	Insignificant
755.0-C7, C8	Showers	Insignificant
755.0-C9	Conference Room	Moderately severe
755.0-C10	Shift Manager's Office	Severe

Compartmentation: The rooms are of reinforced concrete block or reinforced concrete, except for the ceilings which are gypsum board and plaster.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C4	FLOOR (Partial)	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	NORTH WALL	AREA 14, ROOM 737.0-A1	II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-34A	3 Hours
755.0-C6	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours
	FLOOR (Partial)	AREA 63, TURBINE BUILDING	II-34A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C8	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours
755.0-C9	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours

Doors: None.

Dampers: None

Detection: Ionization smoke detectors are provided in the rooms, except for the showers. Thermal detectors are provided in the kitchen, toilet, and locker room cross zoned with the ionization smoke detectors in these rooms.

Suppression: An automatic preaction sprinkler system is provided in the rooms, except for the showers (Rooms 755.0-C7 and C8). A standpipe and hose station is provided from Stairwell C1.

Deviations: The justification for not providing total area detection and suppression in the showers (Rooms 755.0-C7 and C8) is documented in Part VII, Section 2.3. No deviations are applicable for Rooms 755.0-C4, C5, C6, C9 and C10.

Evaluations: None.

3.54.18 Rooms 755.0-C3, C12, C15

Description:

Room No.	Description:
755.0-C3	Corridor (includes space above Operations office and living area)
755.0-C12	Main Control Room
755.0-C15	Corridor

Fire Loading: The combustibles in 755.0-C3 consist of paper, cloth, plastic and wood associated with the lockers and cabinets. The fire severity is classified as insignificant. The combustibles in 755.0-C12 consist of plastics associated with the electrical panels, furniture, and lights, miscellaneous paper, wood and plastics and cables for electrical panels. The fire severity is classified as low. There are no significant combustibles in 755.0-C15. The fire severity is classified as insignificant.

Compartmentation: The room is constructed of reinforced concrete block or reinforced concrete with the following exceptions.

1. The ceiling of the living area is composed of gypsum board and plaster.
2. The Main Control Room floor is not claimed as a fire rated barrier.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C3	NORTH WALL	AREA 33, 772.0-A2	II-32A, II-34A	3 Hours
		AREA 36, 772.0-A5	II-32A, II-34A	3 Hours
		Area 27, 757.0-A5	II-31A, II-34A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	FLOOR (PARTIAL)	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C12	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 18, ROOM 757.0-A3	II-31A, II-34A	3 Hours
		AREA 19, ROOM 757.0-A4	II-31A, II-34A	3 Hours
		AREA 20, ROOM 757.0-A1	II-31A, II-34A	3 Hours
		AREA 21, ROOM 757.0-A25	II-31A, II-34A	3 Hours
		AREA 23, ROOM 757.0-A27	II-31A, II-34A	3 Hours
		AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours
		AREA 28, ROOM 757.0-A21	II-31A, II-34A	3 Hours
		AREA 29, ROOM 757.0-A22	II-31A, II-34A	3 Hours
		AREA 30, ROOM 757.0-A23	II-31A, II-34A	3 Hours
		AREA 33, ROOM 772.0-A2	II-32A, II-34A	3 Hours
		AREA 34, ROOM 772.0-A3	II-32A, II-34A	3 Hours
		AREA 35, ROOM 772.0-A4	II-32A, II-34A	3 Hours
		AREA 43, ROOM 772.0-A13	II-32A, II-34A	3 Hours
		AREA 44, ROOM 772.0-A14	II-32A, II-34A	3 Hours
		AREA 45, ROOM 772.0-A15	II-32A, II-34A	3 Hours
	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C15	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
755.0-C3	C36A	AREA 63, TURBINE BUILDING	II-34A	3 Hours*
755.0-C12	C49	AREA 27, ROOM 757.0-A5	II-31A, II-34A	3 Hours
	C50	AREA 28, ROOM 757.0-A21	II-31A, II-34A	3 Hours
755.0-C15	C54A	AREA 63, TURBINE BUILDING	II-34A	3 Hours*

* Sliding Fire Doors and Swinging Doors

Dampers: None

Detection: Ionization smoke detectors are provided in the rooms except for certain areas such as above the MCR ceiling. Room 755.0-C3 the space above the operations office and living area has no detection.

Suppression: Automatic sprinklers are provided for Room C3. No automatic suppression is provided in Rooms C12 and C15. Standpipe and hose stations are provided in the stairwells and from the Turbine Building.

Deviations: The justification for not providing automatic suppression in the control room (755.0-C12) and corridor (Room 755.0-C15) is documented in Part VII, Section 2.3. The justification for the fire doors for 755.0-C12 is documented in Part VII, Section 4.1. No deviations are applicable for Room 755.0-C3.

Evaluations: None.

3.54.19 Rooms 755.0-C13, C19 and C20

Room No.	Description:
755.0-C13	Relay Room
755.0-C19	Corridor
755.0-C20	DPSO Shop

Fire Loading: The combustibles consist of plastics associated with the electrical relay boards and panels, paper and furniture. The fire severity classification for each room is as follows:

Room No.	Description:	Fire Loading
755.0-C13	Relay Room	Low
755.0-C19	Corridor	Low
755.0-C20	DPSO Shop	Low

Compartmentation: The rooms are of reinforced concrete block and reinforced concrete construction. There is a drop gypsum board ceiling in the corridor, but it is not a required fire barrier.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C13	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 28, ROOM 757.0-A21	II-31A, II-34A	3 Hours
		AREA 42, ROOM 772.0-A12	II-32A, II-34A	3 Hours
		AREA 45, ROOM 772.0-A15	II-32A, II-34A	3 Hours
	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C19	SOUTH WALL	AREA 63, TURBINE BUILDING	II-34A	3 Hours
	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C20	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 28, ROOM 757.0-A21	II-31A, II-34A	3 Hours
		AREA 45, ROOM 772.0-A15	II-32A	3 Hours

Doors: None.

Dampers: None

Detection: Ionization smoke detectors are provided in each room.

Suppression: Automatic sprinklers are provided in Room C19. No automatic suppression is provided in Rooms C13 and C20. Standpipe and hose stations are provided from the adjacent stairwell C2 and from the Turbine Building.

Deviations: The justification for not having automatic suppression in the Relay Room (755.0-C13) and DPSO Shop (Room 755.0-C20) is documented in Part VII, Section 2.3. No deviation are applicable for Room 755.0-C19.

Evaluations: None.

3.54.20 Rooms 755.0-C14, C16, C17, and C18

Room No.	Description:
755.0-C14	Technical Support Center
755.0-C16	Conference Room
755.0-C17	Telephone Room
755.0-C18	NRC Office

Fire Loading: The combustibles consist of wood and cloth associated with the furniture, paper and plastic. The fire severity classification for each room is as follows:

Room No.	Description:	Fire Loading
755.0-C14	Technical Support Center	Low
755.0-C16	Conference Room	Low
755.0-C17	Telephone Room	Insignificant
755.0-C18	NRC Office	Low

Compartmentation: The rooms are of reinforced concrete block or reinforced concrete construction that is equivalent to at least one-hour to three-hour fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
755.0-C14	SOUTH WALL AND FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C16	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C17	FLOOR	AREA 63, TURBINE BUILDING	II-34A	3 Hours
755.0-C18	NORTH WALL	AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 28, ROOM 757.0-A21	II-31A, II-34A	3 Hours
		AREA 42, ROOM 772.0-A12	II-32A, II-34A	3 Hours
	FLOOR	AREA 63, TURBINE BUILDING	II-34	3 Hours

Doors: None.

Dampers: None

Detection: Ionization smoke detectors are provided in each room, except the Telephone Room.

Suppression: Automatic sprinklers are provided in each room, except the Telephone Room C7. |
A standpipe and hose station is provided from Stairwell C2.

Deviations: The justification for not having total area detection and suppression in the Telephone Room (755.0-C17) is documented in Part VII, Section 2.3. No deviations are applicable for Room 755.0-C14, C16 and C18. |

Evaluations: None.

3.54.21 Fire Area 48 Safe Shutdown Analysis By Analysis Volume

Fire Area 48 is considered an alternative shutdown area and must consider offsite power to be available and also consider offsite power being unavailable for 72 hours. For that reason there are two analyses for fire area 48 and both analyses cover the same physical area. Analysis volume AV-076 considers the case where offsite power may not be available and analysis volume AV-076A assumes that offsite power is available. That is, the fire is assumed to not damage the offsite power and control cables located in the control building. In both cases the fire is assumed to cause the Main Control Room to be abandoned and control of plant systems to be transferred to the Auxiliary Control System (ACS). After transfer the ACS provides controls and instrumentation necessary to achieve and maintain safe reactor shutdown from outside the MCR. Mitigating actions, including operator actions prior to abandoning the MCR, are identified below for each of the two analysis volumes.

3.54.21.1 AV-076 and AV-076A

Room No.	Description:
Stair C1	Stairwell, elevation 692 through 755
Stair C2	Stairwell, elevation 692 through 755
692.0-C1	Mechanical Equipment Room
692.0-C2	Mechanical Equipment Room
692.0-C3	250V Battery Room 1
692.0-C4	250V Battery Board Room No. 1
692.0-C5	250V Battery Board Room No. 2
692.0-C8	24V and 48V Battery Board and Charger Room
692.0-C11	Corridor
692.0-C12	Secondary Alarm Station Room
692.0-C6	250V Battery Room 2
692.0-C7	24V and 48V Battery Room
692.0-C9	Communications Room
692.0-C10	Mechanical Equipment Room
708.0-C1	Unit 1 Auxiliary Instrument Room
708.0-C2	Corridor
708.0-C3	Computer Room
708.0-C4	Unit 2 Auxiliary Instrument Room
729.0-C1	Spreading Room
755.0-C1	Mechanical Equipment Room
755.0-C2	Women's Restroom
755.0-C4	Kitchen
755.0-C5	Toilet
755.0-C6	Locker Room
755.0-C7	Shower
755.0-C8	Shower
755.0-C9	Conference Room
755.0-C10	Shift Manager's Office
755.0-C3	Corridor (includes space above Operations office and living area)
755.0-C12	Main Control Room
755.0-C15	Corridor
755.0-C13	Relay Room
755.0-C19	Corridor

Room No.	Description:
755.0-C20	DPSO Shop
755.0-C14	Technical Support Center
755.0-C16	Conference Room
755.0-C17	Telephone Room
755.0-C18	NRC Office
CB Roof	Control Building Roof

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	757-A24	MUST CLOSE	1-HS-62-69B-A	5
2-FCV-62-69-A	757-A24	MUST CLOSE	2-HS-62-69B-A	5
1-BD-211-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
1-BD-211-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
1-DG-82-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER DG 1A CONTROLS WITH TRANSFER SWITCH. IF OFFSITE POWER IS LOST, CLOSE EDG BREAKER (1912) WITHIN 18 MINUTES TO PREVENT THE EDG FROM REACHING ITS HIGH WATER TEMPERATURE LIMIT.	10
1-DG-82-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER DG1B CONTROLS WITH TRANSFER SWITCH. IF OFFSITE POWER IS LOST CLOSE EDG BREAKER (1914) WITHIN 18 MINUTES TO PREVENT THE EDG FROM REACHING ITS HIGH WATER TEMPERATURE LIMIT.	10
1-FCV-3-103A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-236	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-236	757-A3	MUST CLOSE	0-BKR-236-312-E	10

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-3-239	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-239	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-242	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-242	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-245	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-245	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-48A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-90A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
2-BD-211-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
2-BD-211-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
2-DG-82-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER DG 2A CONTROLS WITH TRANSFER SWITCH. IF OFFSITE POWER IS LOST CLOSE EDG BREAKER (1922) WITHIN 18 MINUTES TO PREVENT THE EDG FROM REACHING ITS HIGH WATER TEMPERATURE LIMIT.	10
2-DG-82-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER DG 2B CONTROLS WITH TRANSFER SWITCH. IF OFFSITE POWER IS LOST CLOSE EDG BREAKER (1924) WITHIN 18 MINUTES TO PREVENT THE EDG FROM REACHING ITS HIGH WATER TEMPERATURE LIMIT.	10
2-FCV-3-236	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-239	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-242	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-245	757-A23	MUST CLOSE	2-HS-3-945-A	10
SI_SIGNAL	757-A1	MITIGATE SI	TO MIGITATE INADVERTENT SI SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-1-17-A	772-A1	CLOSE VALVE	1-XS-1-17-A, 1-HS-1- 17C-A	13

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FSV-77-2561	757-A23	DE-ENERGIZE	1-XS-77-2561	13
1-LCV-3-148	757-A26	MUST NOT CLOSE	1-LIC-3-148B	13
1-LCV-3-156	757-A25	MUST NOT CLOSE	1-LIC-3-156B	13
1-LCV-3-164	757-A25	MUST NOT CLOSE	1-LIC-3-164B	13
1-LCV-3-171	757-A26	MUST NOT CLOSE	1-LIC-3-171B	13
1-MCC-213-A2-A	772-A1	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-PNL-276-L011A	757-A25	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-PNL-276-L011B	757-A26	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-FCV-1-17-A	772-A1	CLOSE VALVE	2-XS-1-17-A, 2-HS-1-17C-A	13
2-FSV-77-2561	757-A23	DE-ENERGIZE	2-XS-3-2561	13
2-LCV-3-148	757-A28	MUST NOT CLOSE	2-LIC-3-148B	13
2-LCV-3-156	757-A27	MUST NOT CLOSE	2-LIC-3-156B	13
2-LCV-3-164	757-A27	MUST NOT CLOSE	2-LIC-3-164B	13
2-LCV-3-171	757-A28	MUST NOT CLOSE	2-LIC-3-171B	13
2-MCC-213-A2-A	772-A16	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-PNL-278-L11A	757-A27	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-PNL-278-L11B	757-A28	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-MCC-213-A1-A	772-A1	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
1-MCC-213-B1-B	772-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
2-MCC-213-A1-A	772-A16	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
2-MCC-213-B1-B	772-A15	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-81-7	757-A5	MUST BE	1-BKR-81-7-B	15

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-68-334-B	757-A26	TRIPPED CLOSE/OPEN	1-XS-68-334C-B;1- HS-68-334AC-B	15
1-PCV-68-340A-A	757-A25	CLOSE/OPEN	1-XS-68-340C-A;1- HS-68-340AC-A	15
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
2-MTR-81-7	757-A24	MUST BE TRIPPED	2-BKR-81-007-B	15
2-PCV-68-334-B	757-A28	CLOSE/OPEN	2-XS-68-334C-B;2- HS-68-334AC-B	15
2-PCV-68-340A-A	757-A27	CLOSE/OPEN	2-XS-68-340C-A;2- HS-68-340AC-A	15
0-MTR-26-1-A	757-A2	START	0-HS-26-1C-A	20
0-MTR-26-11-B	757-A24	START	0-HS-26-11A-B	20
1-BD-212-A1-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-A2-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-B1-B	757-A5	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-B2-B	757-A5	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-FCV-3-100-B	772-A2	MUST CLOSE	1-XS-3-100, 1-HS-3- 100C	20
1-FCV-3-33-A	772-A1	MUST CLOSE	1-XS-3-33, 1-HS-3- 33C	20
1-FCV-3-47-B	772-A2	MUST CLOSE	1-XS-3-47, 1-HS-3- 47C	20
1-FCV-3-87-A	772-A1	MUST CLOSE	1-XS-3-87, 1-HS-3- 87C	20
1-FCV-67-123-B	772-A2	MUST NOT OPEN	1-BKR-67-123-B	20
1-FCV-67-124-B	772-A2	MUST NOT OPEN	1-BKR-67-124-B	20
1-FCV-67-125-A	772-A1	MUST NOT OPEN	1-BKR-67-125-A	20
1-FCV-67-126-A	772-A1	MUST NOT OPEN	1-BKR-67-126-A	20
1-LCV-62-135-A	772-A1	OPEN	1-XS-62-135-A, 1-HS- 62-135C-A	20
1-LCV-62-136-B	772-A2	OPEN	1-XS-62-136-B, 1-HS- 62-136C-B	20
1-MCC-213-B2-B	772-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-MCC-214-A1-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MCC-214-B1-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-MTR-30-38-A	757-A2	MUST NOT START	1-BKR-30-38-A	20
1-MTR-30-39-B	757-A5	MUST NOT START	1-BKR-30-39-B	20
1-MTR-68-31	YARD	MUST STOP	MANUAL	20
1-MTR-68-50	YARD	MUST STOP	MANUAL	20
1-MTR-68-73	YARD	MUST STOP	MANUAL	20
1-MTR-68-8	YARD	MUST STOP	MANUAL	20
2-BD-212-A1-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-A2-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-B1-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-B2-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-FCV-3-100-B	772-A15	MUST CLOSE	2-XS-3-100, 2-HS-3-100C	20
2-FCV-3-33-A	772-A16	MUST CLOSE	2-XS-3-33, 2-HS-3-33C	20
2-FCV-3-47-B	772-A15	MUST CLOSE	2-XS-3-47, 2-HS-3-47C	20
2-FCV-3-87-A	772-A16	MUST CLOSE	2-XS-3-87, 2-HS-3-87C	20
2-FCV-67-123-B	772-A15	MUST NOT OPEN	2-BKR-67-123-B	20
2-FCV-67-124-B	772-A15	MUST NOT OPEN	2-BKR-67-124-B	20
2-FCV-67-125-A	772-A16	MUST NOT OPEN	2-BKR-67-125-A	20
2-FCV-67-126-A	772-A16	MUST NOT OPEN	1-BKR-67-126-A	20
2-LCV-62-135-A	772-A16	OPEN	2-XS-62-135-A, 2-HS-62-135C-A	20
2-LCV-62-136-B	772-A15	OPEN	2-XS-62-136-B, 2-HS-62-136C-B	20
2-MCC-213-B2-B	772-A15	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MCC-214-A1-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MCC-214-B1-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MTR-30-38-A	757-A21	MUST NOT	2-BKR-30-38-A	20

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-30-39-B	757-A24	START MUST NOT START	2-BKR-30-39-B	20
2-MTR-68-31	YARD	MUST STOP	MANUAL	20
2-MTR-68-50	YARD	STOP PUMP	MANUAL	20
2-MTR-68-73	YARD	MUST STOP	MANUAL	20
2-MTR-68-8	YARD	MUST STOP	MANUAL	20
1-FCV-30-10-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-14-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-15-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-16-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-17-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-19-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-20-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-37-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-40-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-50-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-51-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-52-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-53-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-56-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-57-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-58-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-59-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-7-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-8-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-9-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-FCV-30-10-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-14-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-15-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-16-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-17-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-19-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-20-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-37-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-40-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-50-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-51-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-30-52-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-53-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-56-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-57-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-58-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-59-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-7-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-8-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-9-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
1-FCV-74-1-A	772-A1	MUST OPEN	1-BKR-74-1-A, 1-HS- 74-1-A	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-BKR-74-2-B, 1-HS- 74-2-B	1140
1-HCV-74-36	713-A1C	THROTTLE AS REQD	HANDWHEEL	1140
1-HCV-74-37	713-A1C	THROTTLE AS REQD	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-74-1-A	772-A16	MUST OPEN	2-BKR-74-1-A, 2-HS- 74-1-A	1140
2-FCV-74-2-B	772-A15	MUST OPEN	2-BKR-74-2-B, 2-HS- 74-2-B	1140
2-HCV-74-36	713-A15	THROTTLE AS	HANDWHEEL	1140

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-HCV-74-37	713-A16	REQD THROTTLE AS REQD	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BKR-99- L116/1B-A	755-C12	TRIP REACTOR	RX TRIP SW 1- RT-1	0
1-BKR-99- L116/1C-B	755-C12	TRIP REACTOR	RX TRIP SW 1- RT-2	0
1-FCV-1-11	755-C12	CLOSE VALVE	1-HS-1-11A-T	0
1-FCV-1-22	755-C12	CLOSE VALVE	1-HS-1-22A-T	0
1-FCV-1-29	755-C12	CLOSE VALVE	1-HS-1-29A-T	0
1-FCV-1-4	755-C12	CLOSE VALVE	1-HS-1-4A-T	0
1-FCV-3-100-B	755-C12	MUST CLOSE	1-HS-3-100A-B	0
1-FCV-3-33-A	755-C12	MUST CLOSE	1-HS-3-33A-A	0
1-FCV-3-47-B	755-C12	MUST CLOSE	1-HS-3-47A-B	0
1-FCV-3-87-A	755-C12	MUST CLOSE	1-HS-3-87A-A	0
1-FCV-68-332-B	755-C12	MUST CLOSE	1-HS-68-332A	0
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	0
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	0
1-MTR-68-31	755-C12	TRIP RCP	CS-2514,CS- 2612	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	TRIP RCP	CS-2512,CS- 2614	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	TRIP RCP	CS-2514,CS- 2612	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-MTR-68-8	755-C12	TRIP RCP	CS-2512,CS- 2614	0
1-PCV-1-12	755-C12	CLOSE VALVE	1-HS-1-13-T	0
1-PCV-1-23	755-C12	CLOSE VALVE	1-HS-1-24-T	0
1-PCV-1-30	755-C12	CLOSE VALVE	1-HS-1-31-T	0
1-PCV-1-5	755-C12	CLOSE VALVE	1-HS-1-6-T	0
1-PCV-68-334-B	755-C12	CLOSE	1-HS-68-334A-B	0
1-PCV-68-340A-A	755-C12	CLOSE	1-HS-68-340AA- A	0
2-BKR-99- L116/1B-A	755-C12	TRIP REACTOR	RX TRIP SW 2- RT-1	0
2-BKR-99- L116/1C-B	755-C12	TRIP REACTOR	RX TRIP SW 2- RT-2	0
2-FCV-1-11	755-C12	CLOSE VALVE	2-HS-1-11A-T	0
2-FCV-1-22	755-C12	CLOSE VALVE	2-HS-1-22A-T	0
2-FCV-1-29	755-C12	CLOSE VALVE	2-HS-1-29A-T	0
2-FCV-1-4	755-C12	CLOSE VALVE	2-HS-1-4A-T	0
2-FCV-3-100-B	755-C12	MUST CLOSE	2-HS-3-100A-B	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-3-33-A	755-C12	MUST CLOSE	2-HS-3-33A-A	0
2-FCV-3-47-B	755-C12	MUST CLOSE	2-HS-3-47A-B	0
2-FCV-3-87-A	755-C12	MUST CLOSE	2-HS-3-87A-A	0
2-FCV-68-332-B	755-C12	MUST CLOSE	2-HS-68-332A-B	0
2-FCV-68-333-A	755-C12	MUST CLOSE	2-HS-68-333A-A	0
2-LCV-62-135-A	755-C12	OPEN	2-HS-62-136A-B	0
2-LCV-62-135-A	755-C12	OPEN	2-HS-62-135A-A	0
2-MTR-68-31	755-C12	TRIP RCP	CS-2514,CS- 2612	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	TRIP RCP	CS-2512,CS- 2614	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-73	755-C12	TRIP RCP	CS-2514,CS- 2612	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
2-MTR-68-8	755-C12	TRIP RCP	CS-2512,CS- 2614	0
2-PCV-1-12	755-C12	CLOSE VALVE	2-HS-1-13-T	0
2-PCV-1-23	755-C12	CLOSE VALVE	2-HS-1-24-T	0
2-PCV-1-30	755-C12	CLOSE VALVE	2-HS-1-31-T	0
2-PCV-1-5	755-C12	CLOSE VALVE	2-HS-1-6-T	0
2-PCV-68-334-B	755-C12	CLOSE	2-HS-68-334A-B	0
2-PCV-68-340A-A	755-C12	CLOSE	2-HS-68-340AA- A	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	757-A24	MUST CLOSE	1-HS-62-69B-A	5
2-FCV-62-69-A	757-A24	MUST CLOSE	2-HS-62-69B-A	5
1-BD-211-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
1-BD-211-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
1-FCV-3-103A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-236	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-236	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-239	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-239	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-242	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-242	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-245	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-245	757-A4	MUST CLOSE	1-HS-3-945-A	10
1-FCV-3-48A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
1-FCV-3-90A	757-A3	MUST CLOSE	0-BKR-236-312-E	10
2-BD-211-A-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
2-BD-211-B-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	10
2-FCV-3-236	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-239	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-242	757-A23	MUST CLOSE	2-HS-3-945-A	10
2-FCV-3-245	757-A23	MUST CLOSE	2-HS-3-945-A	10
SI_SIGNAL	757-A1	MITIGATE SI	TO MITIGATE INADVERTENT SI SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-1-17-A	772-A1	CLOSE VALVE	1-XS-1-17-A, 1-HS-1- 17C-A	13
1-FSV-77-2561	757-A23	DE-ENERGIZE	1-XS-77-2561	13
1-LCV-3-148	757-A26	MUST NOT CLOSE	1-LIC-3-148B	13
1-LCV-3-156	757-A25	MUST NOT	1-LIC-3-156B	13

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-LCV-3-164	757-A25	CLOSE MUST NOT	1-LIC-3-164B	13
1-LCV-3-171	757-A26	CLOSE MUST NOT	1-LIC-3-171B	13
1-MCC-213-A2-A	772-A1	CLOSE TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-PNL-276-L011A	757-A25	CLOSE TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-PNL-276-L011B	757-A26	CLOSE TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-FCV-1-17-A	772-A1	CLOSE VALVE	2-XS-1-17-A, 2-HS-1-17C-A	13
2-FSV-77-2561	757-A23	DE-ENERGIZE	2-XS-3-2561	13
2-LCV-3-148	757-A28	MUST NOT CLOSE	2-LIC-3-148B	13
2-LCV-3-156	757-A27	MUST NOT CLOSE	2-LIC-3-156B	13
2-LCV-3-164	757-A27	MUST NOT CLOSE	2-LIC-3-164B	13
2-LCV-3-171	757-A28	MUST NOT CLOSE	2-LIC-3-171B	13
2-MCC-213-A2-A	772-A16	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-PNL-278-L11A	757-A27	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
2-PNL-278-L11B	757-A28	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	13
1-MCC-213-A1-A	772-A1	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
1-MCC-213-B1-B	772-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
2-MCC-213-A1-A	772-A16	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
2-MCC-213-B1-B	772-A15	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	14
1-MTR-81-3	757-A2	MUST BE TRIPPED	1-BKR-81-3-A	15
1-MTR-81-7	757-A5	MUST BE TRIPPED	1-BKR-81-7-B	15
1-PCV-68-334-B	757-A26	CLOSE/OPEN	1-XS-68-334C-B;1-HS-68-334AC-B	15
1-PCV-68-340A-	757-A25	CLOSE/OPEN	1-XS-68-340C-A;1-	15

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
A			HS-68-340AC-A	
2-MTR-81-3	757-A21	MUST BE TRIPPED	2-BKR-81-3-A	15
2-MTR-81-7	757-A24	MUST BE TRIPPED	2-BKR-81-007-B	15
2-PCV-68-334-B	757-A28	CLOSE/OPEN	2-XS-68-334C-B;2- HS-68-334AC-B	15
2-PCV-68-340A- A	757-A27	CLOSE/OPEN	2-XS-68-340C-A;2- HS-68-340AC-A	15
0-MTR-26-1-A	757-A2	START	0-HS-26-1C-A	20
0-MTR-26-11-B	757-A24	START	0-HS-26-11A-B	20
1-BD-212-A1-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-A2-A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-B1-B	757-A5	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-BD-212-B2-B	757-A5	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-FCV-3-100-B	772-A2	MUST CLOSE	1-XS-3-100, 1-HS-3- 100C	20
1-FCV-3-33-A	772-A1	MUST CLOSE	1-XS-3-33, 1-HS-3- 33C	20
1-FCV-3-47-B	772-A2	MUST CLOSE	1-XS-3-47, 1-HS-3- 47C	20
1-FCV-3-87-A	772-A1	MUST CLOSE	1-XS-3-87, 1-HS-3- 87C	20
1-FCV-67-123-B	772-A2	MUST NOT OPEN	1-BKR-67-123-B	20
1-FCV-67-124-B	772-A2	MUST NOT OPEN	1-BKR-67-124-B	20
1-FCV-67-125-A	772-A1	MUST NOT OPEN	1-BKR-67-125-A	20
1-FCV-67-126-A	772-A1	MUST NOT OPEN	1-BKR-67-126-A	20
1-LCV-62-135-A	772-A1	OPEN	1-XS-62-135-A, 1-HS- 62-135C-A	20
1-LCV-62-136-B	772-A2	OPEN	1-XS-62-136-B, 1-HS- 62-136C-B	20
1-MCC-213-B2- B	772-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-MCC-214-A1- A	757-A2	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-MCC-214-B1- B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
1-MTR-30-38-A	757-A2	MUST NOT	1-BKR-30-38-A	20

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-39-B	757-A5	START MUST NOT START	1-BKR-30-39-B	20
1-MTR-68-31	YARD	MUST STOP	MANUAL	20
1-MTR-68-50	YARD	MUST STOP	MANUAL	20
1-MTR-68-73	YARD	MUST STOP	MANUAL	20
1-MTR-68-8	YARD	MUST STOP	MANUAL	20
2-BD-212-A1-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-A2-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-B1-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-BD-212-B2-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-FCV-3-100-B	772-A15	MUST CLOSE	2-XS-3-100, 2-HS-3-100C	20
2-FCV-3-33-A	772-A16	MUST CLOSE	2-XS-3-33, 2-HS-3-33C	20
2-FCV-3-47-B	772-A15	MUST CLOSE	2-XS-3-47, 2-HS-3-47C	20
2-FCV-3-87-A	772-A16	MUST CLOSE	2-XS-3-87, 2-HS-3-87C	20
2-FCV-67-123-B	772-A15	MUST NOT OPEN	2-BKR-67-123-B	20
2-FCV-67-124-B	772-A15	MUST NOT OPEN	2-BKR-67-124-B	20
2-FCV-67-125-A	772-A16	MUST NOT OPEN	2-BKR-67-125-A	20
2-FCV-67-126-A	772-A16	MUST NOT OPEN	1-BKR-67-126-A	20
2-LCV-62-135-A	772-A16	OPEN	2-XS-62-135-A, 2-HS-62-135C-A	20
2-LCV-62-136-B	772-A15	OPEN	2-XS-62-136-B, 2-HS-62-136C-B	20
2-MCC-213-B2-B	772-A15	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MCC-214-A1-A	757-A21	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MCC-214-B1-B	757-A24	TRANSFER CONTROL LOCATION	TRANSFER SWITCH	20
2-MTR-30-38-A	757-A21	MUST NOT START	2-BKR-30-38-A	20
2-MTR-30-39-B	757-A24	MUST NOT START	2-BKR-30-39-B	20
2-MTR-68-31	YARD	MUST STOP	MANUAL	20

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-68-50	YARD	STOP PUMP	MANUAL	20
2-MTR-68-73	YARD	MUST STOP	MANUAL	20
2-MTR-68-8	YARD	MUST STOP	MANUAL	20
1-FCV-30-10-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-14-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-15-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-16-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-17-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-19-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-20-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-37-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-40-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-50-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-51-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-52-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-53-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-56-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-57-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-58-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-59-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-7-A	757-A4	MUST CLOSE	1-HS-30-1080-A	60
1-FCV-30-8-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-FCV-30-9-B	757-A3	MUST CLOSE	0-BKR-236-312-E	60
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-FCV-30-10-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-14-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-15-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-16-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-17-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-19-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-20-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-37-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-40-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-50-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-51-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-52-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-53-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-30-56-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-57-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-58-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-59-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-7-A	757-A23	DE-ENERGIZE	2-XS-30-1080A-A & - 1080B-A	60
2-FCV-30-8-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-FCV-30-9-B	757-A22	DE-ENERGIZE	2-XS-30-1085A-B & - 1085B-B	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	60
1-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
1-FCV-67-10A-B	757-A5	MUST OPERATE	1-BKR-67-10A-B	720
1-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
1-FCV-67-10B-B	757-A5	MUST OPERATE	1-BKR-67-10B-B	720
1-FCV-67-9A-A	757-A2	MUST OPERATE	1-BKR-67-9A-A	720
1-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
1-FCV-67-9B-A	757-A2	MUST OPERATE	1-BKR-67-9B-A	720
2-FCV-67-10A-B	IPS-B	OPEN/CLOSE	HANDWHEEL	720
2-FCV-67-10A-B	757-A24	MUST OPERATE	2-BKR-67-10A-B	720
2-FCV-67-10B-B	757-A24	MUST OPERATE	2-BKR-67-10B-B	720
2-FCV-67-10B-B	IPS-B	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9A-A	757-A21	MUST OPERATE	2-BKR-67-9A-A	720
2-FCV-67-9B-A	IPS-A	MUST OPERATE	HANDWHEEL	720
2-FCV-67-9B-A	757-A21	MUST OPERATE	2-BKR-67-9B-A	720
1-FCV-74-1-A	772-A1	MUST OPEN	1-BKR-74-1-A, 1-HS- 74-1-A	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-BKR-74-2-B, 1-HS- 74-2-B	1140
1-HCV-74-36	713-A1C	THROTTLE AS REQD	HANDWHEEL	1140
1-HCV-74-37	713-A1C	THROTTLE AS REQD	HANDWHEEL	1140
1-TI-74-15	713-A12	MONITOR TEMPERATURE	LOCAL INDICATOR	1140
2-FCV-74-1-A	772-A16	MUST OPEN	2-BKR-74-1-A, 2-HS- 74-1-A	1140
2-FCV-74-2-B	772-A15	MUST OPEN	2-BKR-74-2-B, 2-HS- 74-2-B	1140
2-HCV-74-36	713-A15	THROTTLE AS REQD	HANDWHEEL	1140
2-HCV-74-37	713-A16	THROTTLE AS REQD	HANDWHEEL	1140

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Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-BKR-99-L116/1B-A	755-C12	TRIP REACTOR	RX TRIP SW 1-RT-1	0
1-BKR-99-L116/1C-B	755-C12	TRIP REACTOR	RX TRIP SW 1-RT-2	0
1-FCV-1-11	755-C12	CLOSE VALVE	1-HS-1-11A-T	0
1-FCV-1-22	755-C12	CLOSE VALVE	1-HS-1-22A-T	0
1-FCV-1-29	755-C12	CLOSE VALVE	1-HS-1-29A-T	0
1-FCV-1-4	755-C12	CLOSE VALVE	1-HS-1-4A-T	0
1-FCV-3-100-B	755-C12	MUST CLOSE	1-HS-3-100A-B	0
1-FCV-3-33-A	755-C12	MUST CLOSE	1-HS-3-33A-A	0
1-FCV-3-47-B	755-C12	MUST CLOSE	1-HS-3-47A-B	0
1-FCV-3-87-A	755-C12	MUST CLOSE	1-HS-3-87A-A	0
1-FCV-68-332-B	755-C12	MUST CLOSE	1-HS-68-332A	0
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-LCV-62-135-A	755-C12	OPEN	1-HS-62-135A-A	0
1-LCV-62-136-B	755-C12	OPEN	1-HS-62-136A-B	0
1-MTR-68-31	755-C12	TRIP RCP	CS-2514,CS-2612	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	TRIP RCP	CS-2512,CS-2614	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	TRIP RCP	CS-2514,CS-2612	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-MTR-68-8	755-C12	TRIP RCP	CS-2512,CS-2614	0
1-PCV-1-12	755-C12	CLOSE VALVE	1-HS-1-13-T	0
1-PCV-1-23	755-C12	CLOSE VALVE	1-HS-1-24-T	0
1-PCV-1-30	755-C12	CLOSE VALVE	1-HS-1-31-T	0
1-PCV-1-5	755-C12	CLOSE VALVE	1-HS-1-6-T	0
1-PCV-68-334-B	755-C12	CLOSE	1-HS-68-334A-B	0
1-PCV-68-340A-A	755-C12	CLOSE	1-HS-68-340AA-A	0
2-BKR-99-L116/1B-A	755-C12	TRIP REACTOR	RX TRIP SW 2-RT-1	0
2-BKR-99-L116/1C-B	755-C12	TRIP REACTOR	RX TRIP SW 2-RT-2	0
2-FCV-1-11	755-C12	CLOSE VALVE	2-HS-1-11A-T	0
2-FCV-1-22	755-C12	CLOSE VALVE	2-HS-1-22A-T	0
2-FCV-1-29	755-C12	CLOSE VALVE	2-HS-1-29A-T	0
2-FCV-1-4	755-C12	CLOSE VALVE	2-HS-1-4A-T	0
2-FCV-3-100-B	755-C12	MUST CLOSE	2-HS-3-100A-B	0
2-FCV-3-33-A	755-C12	MUST CLOSE	2-HS-3-33A-A	0
2-FCV-3-47-B	755-C12	MUST CLOSE	2-HS-3-47A-B	0
2-FCV-3-87-A	755-C12	MUST CLOSE	2-HS-3-87A-A	0
2-FCV-68-332-B	755-C12	MUST CLOSE	2-HS-68-332A-B	0
2-FCV-68-333-A	755-C12	MUST CLOSE	2-HS-68-333A-A	0
2-LCV-62-135-A	755-C12	OPEN	2-HS-62-136A-B	0
2-LCV-62-135-A	755-C12	OPEN	2-HS-62-135A-A	0
2-MTR-68-31	755-C12	TRIP RCP	CS-2514,CS-	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-68-31	755-C12	STOP PUMP	2612 2-HS-68-31AA	0
2-MTR-68-50	755-C12	TRIP RCP	CS-2512,CS- 2614	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-73	755-C12	TRIP RCP	CS-2514,CS- 2612	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
2-MTR-68-8	755-C12	TRIP RCP	CS-2512,CS- 2614	0
2-PCV-1-12	755-C12	CLOSE VALVE	2-HS-1-13-T	0
2-PCV-1-23	755-C12	CLOSE VALVE	2-HS-1-24-T	0
2-PCV-1-30	755-C12	CLOSE VALVE	2-HS-1-31-T	0
2-PCV-1-5	755-C12	CLOSE VALVE	2-HS-1-6-T	0
2-PCV-68-334-B	755-C12	CLOSE	2-HS-68-334A-B	0
2-PCV-68-340A-A	755-C12	CLOSE	2-HS-68-340AA- A	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.55 FIRE AREA 49**3.55.1 Room 742.0-D4**

Description: Diesel Generator Unit 1A-A

Fire Loading: The combustibles in this room consist of lube oil in the diesel generator and valves, fuel oil in the diesel generator and the day tanks, plastics associated with electrical panels and boards and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D4	South Wall	Area 53, Room 742.0-D9A	II-35A	3 Hours
	East Wall	Area 50, Room 742.0-D5	II-35A	3 Hours
	West Wall	Area 54, Room 742.0-D1	II-35A	3 Hours
		Area 54, Room 742.0-D2	II-35A	3 Hours
		Area 54, Stair D1	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D4	D10	Area 53, Room 742.0-D9A	II-35A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
742.0-D4	0-ISD-30-619 47A381-448F	Area 54, Room 742.0-D1	47W866-9 17W910-1	3 Hours

Detection: The room is provided with thermal detectors. Relay Board Panel has ionization smoke detectors.

Suppression: The room is provided with a total flooding CO₂ suppression system. Standpipe and hose stations are provided within the Diesel Generator Building on both elevations, and fire hydrant from the Yard.

Deviations: The justification for the Appendix A deviation for the manway openings to the buried tanks is documented in Part VII, Section 4.4.

Evaluations: None.

3.55.2 DGB Rooms 760.5-D3, D4, and D5

Room No.	Description:
760.5-D3	Unit 1A-A Air Exhaust Room

Room No.	Description:
760.5-D4	480V Board Room 1A-A
760.5-D5	Unit 1A-A Air Intake Room

Fire Loading: The combustibles in room 760.5-D3 consist of grease for the fans and insulation on cables in trays. The fire severity classified as moderate. The combustibles in room 760.5-D4 consist of plastic associated with electrical boards and panels and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D5 consist of lube oil for the combustion air intake filters, and ERFBS Thermo-Lag. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
760.5-D3	East Wall	Area 50, Room 760.5-D6	II-35A	3 Hours
	West Wall	Area 54, Room 760.5-D2	II-35A	3 Hours
	Floor (partial)	Area 53, Room 742.0-D9A	II-35A	3 Hours
760.5-D4	East Wall	Area 50, Room 760.5-D7	II-35A	3 Hours
	West Wall	Area 54, Room 760.5-D1	II-35A	3 Hours
		Area 54, Room 760.5-D2	II-35A	3 Hours
760.5-D5	East Wall	Area 50, Room 760.5-D8	II-35A	3 Hours
	West Wall	Area 54, Room 760.5-D1	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
760.5-D4	D22	Area 54, Room 760.5-D1	II-35A	3 Hours
	D24	Area 50, Room 760.5-D7	II-35A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
760.5-D3	0-ISD-30-617 47A381-449F	Area 53, Room 742.0-D9A	47W866-9 17W910-2	3 Hours
	0-ISD-30-620 47A381-447	Area 53, Room 742.0-D9A	47W866-9 17W910-2	1.5 Hours
	0-ISD-30-621 47A381-537F	Area 54, Room 760.5-D2	47W866-9 17W910-2	3 Hours
760.5-D5	0-ISD-30-631 47A381-526F	Area 54, Room 760.5-D1	47W866-9 17W910-1	3 Hours

Detection: Heat detectors are provided for rooms 760.5-D3 and -D5; ionization smoke detectors cross zoned with heat detectors are provided in room 760.5-D4.

Suppression: Room 760.5-D4 is provided with a total flooding CO₂ suppression system. No automatic suppression is provided in Rooms 760.5-D3 and D5. Standpipe and hose stations are provided from rooms 742.0-D9 and 760.5-D1.

Deviations: None.

Evaluations: None.

3.55.3 Fire Area 49 Safe Shutdown Analysis By Analysis Volume**3.55.3.1 AV-077**

DGB-1A, Diesel Generator Building 1A:	
Room No.	Description:
742.0-D4	Diesel Generator Unit 1A-A
760.5-D3	Unit 1A-A Air Exhaust Room
760.5-D4	480-V Board Room 1A-A
760.5-D5	Unit 1A-A Air Intake Room

A fire in Analysis Volume 77 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.56 FIRE AREA 50**3.56.1 Room 742.0-D5**

Description: Diesel Generator Unit 2A-A

Fire Loading: The combustibles in this room consist of lube oil in the diesel generator and valves, fuel oil in the diesel generator and the day tanks, plastics associated with electrical panels and boards and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D5	South Wall	Area 53, Room 742.0-D9A	II-35A	3 Hours
		Area 53, Room 792.0-D9N	II-35A	3 Hours
	East Wall	Area 51, Room 742.0-D6	II-35A	3 Hours
	West Wall	Area 49, Room 742.0-D4	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D5	D11	Area 53, Room 742.0-D9A	II-35A	3 Hours

Dampers: None.

Detection: This room is provided with thermal detectors. Relay Board Panel has ionization smoke detectors.

Suppression: This room is provided with a total flooding CO₂ suppression system. Standpipe and hose stations are provided within the Diesel Generator Building on both elevations, and fire hydrant from the Yard.

Deviations: The justification for the Appendix A deviation for the manway openings to the buried tanks is documented in Part VII, Section 4.4.

Evaluations: None.

3.56.2 Rooms 760.5-D6, D7, and D8

Room No.	Description:
760.5-D6	Unit 2A-A Air Exhaust Room
760.5-D7	480V Board Room 2A-A
760.5-D8	Unit 2A-A Air Intake Room

Fire Loading: The combustibles in room 760.5-D6 consist of grease for the fans and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D7 consist of plastic associated with electrical boards and panels and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D8 consist of lube oil for the combustion air intake filters. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
760.5-D6	East Wall	Area 51, Room 760.5-D9	II-35A	3 Hours
	West Wall	Area 49, Room 760.5-D3	II-35A	3 Hours
	Floor (partial)	Area 53, Room 742.0-D9A	II-35A	3 Hours
		Area 53, Room 742.0-D9N	II-35A	3 Hours
760.5-D7	East Wall	Area 51, Room 760.5-D10	II-35A	3 Hours
	West Wall	Area 49, Room 760.5-D4	II-35A	3 Hours
760.5-D8	East Wall	Area 51, Room 760.5-D11	II-35A	3 Hours
	West Wall	Area 49, Room 760.5-D5	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
760.5-D7	D24	Area 49, Room 760.5-D4	II-35A	3 Hours
	D27	Area 51, Room 760.5-D10	II-35A	3 Hours

Dampers: None.

Detection: Heat detectors are provided for room 760.5-D6 and -D8; ionization smoke detectors cross zoned with heat detectors are provided in room 760.5-D7.

Suppression: Room 760.5-D7 is provided with a total flooding CO₂ suppression system. No automatic suppression is provided in Rooms 760.5-D6 and D8. Standpipe and hose stations are provided from rooms 742.0-D9 and 760.5-D1.

Deviations: None.

Evaluations: None.

3.56.3 Fire Area 50 Safe Shutdown Analysis By Analysis Volume**3.56.3.1 AV-078**

DGB-2A, Diesel Generator Building 2A:	
Room No.	Description:
742.0-D5	Diesel Generator Unit 2A-A
760.5-D6	Unit 2A-A Air Exhaust Room
760.5-D7	480V Board Room 2A-A
760.5-D8	Unit 2A-A Air Intake Room

A fire in Analysis Volume 78 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.57 FIRE AREA 51**3.57.1 Room 742.0-D6**

Description: Diesel Generator Unit 1B-B

Fire Loading: The combustibles in this room consist of lube oil in the diesel generator and valves, fuel oil in the diesel generator and the day tanks, plastics associated with electrical panels and boards and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D6	South Wall	Area 53, Room 742.0-D9B	II-35A	3 Hours
		Area 53, Room 742.0-D9N	II-35A	3 Hours
	East Wall	Area 52, Room 742.0-D7	II-35A	3 Hours
	West Wall	Area 50, Room 742.0-D5	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D6	D12	Area 53, Room 742.0-D9B	II-35A	3 Hours

Dampers: None.

Detection: This room is provided with heat detectors. Relay Board Panel has ionization smoke detectors.

Suppression: This room is provided with a total flooding CO₂ suppression system. Standpipe and hose stations are provided within the Diesel Generator Building on both elevations, and fire hydrant from the yard.

Deviations: The justification for the Appendix A deviation for the manway openings to the buried tanks is documented in Part VII, Section 4.4.

Evaluations: None.

3.57.2 Rooms 760.5-D9, D10, and D11

Room No.	Description:
760.5-D9	Unit 1B-B Air Exhaust Room
760.5-D10	480V Board Room 1B-B
760.5-D11	Unit 1B-B Air Intake Room

Fire Loading: The combustibles in room 760.5-D9 consist of grease for the fans and insulation on cables in trays. The combustible loading for this room is moderate. The combustibles in room 760.5-D10 consist of plastic associated with electrical boards and panels and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D11 consist of lube oil for the combustion air intake filters. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
760.5-D9	East Wall	Area 52, Room 760.5-D12	II-35A	3 Hours
	West Wall	Area 50, Room 760.5-D6	II-35A	3 Hours
	Floor (partial)	Area 53, Room 742.0-D9B	II-35A	3 Hours
		Area 53, Room 742.0-D9N	II-35A	3 Hours
760.5-D10	East Wall	Area 52, Room 760.5-D13	II-35A	3 Hours
	West Wall	Area 50, Room 760.5-D7	II-35A	3 Hours
760.5-D11	East Wall	Area 52, Room 760.5-D14	II-35A	3 Hours
	West Wall	Area 50, Room 760.5-D8	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
760.5-D10	D27	Area 50, Room 760.5-D7	II-35A	3 Hours
	D30	Area 52, Room 760.5-D13	II-35A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
760.5-D9	0-ISD-30-1090 47A381-757	Area 53, Room 742.0-D9N	47W866-9 17W910-2	3 Hours

Detection: Heat detectors are provided for room 760.5-D9 and D11; ionization smoke detectors cross zoned with heat detectors are provided in room 760.5-D10.

Suppression: Room 760.5-D10 is provided with a total flooding CO₂ suppression system. No automatic suppression is provided in Rooms 760.5-D9 and D11. Standpipe and hose stations are provided from rooms 742.0-D9 and 760.5-D1.

Deviations: None.

Evaluations: None.

3.57.3 Fire Area 51 Safe Shutdown Analysis By Analysis Volume**3.57.3.1 AV-079**

DGB-1B - Diesel Generator Building 1B:	
Room No.	Description:
742.0-D6	Diesel Generator Unit 1B-B
760.5-D9	Unit 1B-B Air Exhaust Room
760.5-D10	480V Board Room 1B-B
760.5-D11	Unit 1B-B Air Intake Room

A fire in Analysis Volume 79 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.58 FIRE AREA 52**3.58.1 Room 742.0-D7**

Description: Diesel Generator Unit 2B-B

Fire Loading: The combustibles in this room consist of lube oil in the diesel generator and valves, fuel oil in the diesel generator and the day tanks, plastics associated with electrical panels and boards and insulation on cables in trays. The fire severity is classified as moderately severe.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D7	South Wall	Area 53, Room 742.0-D9B	II-35A	3 Hours
	West Wall	Area 51, Room 742.0-D6	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D7	D13	Area 53, Room 742.0-D9B	II-35A	3 Hours

Dampers: None.

Detection: This room is provided with heat detectors. Relay Board Panel has ionization smoke detectors.

Suppression: This room is provided with a total flooding CO₂ suppression system. Standpipe and hose stations are provided within the Diesel Generator Building on both elevations, and fire hydrant from the yard.

Deviations: The justification for the Appendix A deviation for the manway openings to the buried tanks is documented in Part VII, Section 4.4.

Evaluations: None.

3.58.2 Rooms 760.5-D12, D13, and D14

Room No.	Description:
760.5-D12	Unit 2B-B Air Exhaust Room
760.5-D13	480V Board Room 2B-B
760.5-D14	Unit 2B-B Air Intake Room

Fire Loading: The combustibles in room 760.5-D12 consist of grease for the fans and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D13 consist of plastic associated with electrical boards and panels and insulation on cables in trays. The fire severity is classified as moderate. The combustibles in room 760.5-D14 consist of lube oil for the combustion air intake filters. The fire severity is classified as low.

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
760.5-D12	West Wall	Area 51, Room 760.5-D9	II-35A	3 Hours
	Floor (Partial)	Area 53, Room 742.0-D9B	II-35A	3 Hours
760.5-D13	West Wall	Area 51, Room 760.5-D10	II-35A	3 Hours
760.5-D14	West Wall	Area 51, Room 760.5-D11	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
760.5-D13	D30	Area 51, 760.5-D10	II-35A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
760.5-D12	0-ISD-30-616	AREA 53, ROOM 742.0-D9B	47W866-9	3 Hours
	47A381-449F		17W910-2	

Detection: Heat detectors are provided for room 760.5-D12 and -D14; ionization smoke detectors cross zoned with heat detectors are provided in room 760.5-D13.

Suppression: Room 760.5-D13 is provided with a total flooding CO₂ suppression system. No automatic suppression is provided in Rooms 760.5-D12 and D14. Standpipe and hose stations are provided from rooms 742.0-D9 and 760.5-D1.

Deviations: None.

Evaluations: None.

3.58.3 Fire Area 52 Safe Shutdown Analysis By Analysis Volume**3.58.3.1 AV-080**

DGB-2B - Diesel Generator Building 2B:	
Room No.	Description:
742.0-D7	Diesel Generator Unit 2B-B
760.5-D12	Unit 2B-B Air Exhaust Room
760.5-D13	480V Board Room 2B-B
760.5-D14	Unit 2B-B Air Intake Room

A fire in Analysis Volume 80 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.59 FIRE AREA 53**3.59.1 Rooms 742.0-D3 and D9****Description:**

Room No.	Description:
742.0-D3	Toilet
742.0-D9	Pipe Gallery and Corridor (742.0-D9A, D9B, & D9N)

Fire Loading: The fire severity is classified as low for 742.0-D3. The combustibles in 742.0-D9 consist of miscellaneous material in the storage cages, plastics associated with electrical panels and lights and insulation on cables in trays. The fire severity is classified as low.

Compartmentation: The walls separating the Fuel Oil Transfer room from the Pipe Gallery and Corridor are of reinforced concrete block construction and the ceiling is reinforced concrete. The Pipe Gallery and Corridor is of reinforced concrete construction. The walls and ceiling of the Toilet are reinforced concrete block and reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D3	South and West Walls	Area 54, Room 742.0-D10	II-35A	3 Hours
742.0-D9	North Wall	Area 49, Room 742.0-D4	II-35A	3 Hours
		Area 50, Room 742.0-D5	II-35A	3 Hours
		Area 51, Room 742.0-D6	II-35A	3 Hours
		Area 52, Room 742.0-D7	II-35A	3 Hours
	South Wall	Area 54, Room 742.0-D10	II-35A	3 Hours
		Area 55, DGB Cable Chase - A	II-35A	3 Hours
		Area 56, DGB Cable Chase - B	II-35A	3 Hours
	West Wall	Area 54, Room 742.0-D2	II-35A	3 Hours
		Area 54, Room 742.0-D10	II-35A	3 Hours
	Ceiling	Area 49, Room 760.5-D3	II-35A	3 Hours
		Area 50, Room 760.5-D6	II-35A	3 Hours
		Area 51, Room 760.5-D9	II-35A	3 Hours
		Area 52, Room 760.5-D12	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D9	D8A	Area 54, Room 742.0-D2	II-35A	3 Hours*
	D10	Area 49, Room 742.0-D4	II-35A	3 Hours
	D11	Area 50, Room 742.0-D5	II-35A	3 Hours
	D12	Area 51, Room 742.0-D6	II-35A	3 Hours
	D13	Area 52, Room 742.0-D7	II-35A	3 Hours
	D35	Area 56, DGB Cable Chase -B	II-35A	3 Hours
	D36	Area 55, DGB Cable Chase -A	II-35A	3 Hours

* Sliding Fire Door

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
742.0-D9A	0-ISD-30-594 47A381-627F	Area 54, Room 742.0-D2	47W866-9 17W910-2	3 Hours
742.0-D9B	0-ISD-30-616 47A381-449F	Area 52, Room 760.5-D12	47W866-9 17W910-2	3 Hours
742.0-D9A	0-ISD-30-617 47A381-449F	Area 49, Room 760.5-D3	47W866-9 17W910-2	3 Hours
742.0-D9A	0-ISD-30-620 47A381-447	Area 49, Room 760.5-D3	47W866-9 17W910-2	1.5 Hours
742.0-D9N	0-ISD-30-1090 47A381-757	Area 51, Room 760.5-D9	47W866-9 17W910-2	3 Hours

Detection: Smoke detectors are provided in the Pipe Gallery and Corridor. No detection for toilet (742.0-D3).

Suppression: An automatic preaction sprinkler system is provided in the Pipe Gallery and Corridor. No automatic suppression is provided in Room 742.0-D3. A standpipe and hose station is provided in the Pipe Gallery and Corridor.

Deviations: Deviations are as follows for Rooms 742.0-D9. The justification for the Appendix A deviation for the manway openings to the buried tanks in the pipe gallery/corridor is documented in Part VII, Section 4.4. The justification for the Appendix A deviation for the fire barrier separating the Fuel Oil Transfer Pump Room from the DG Building Corridor is documented in Part VII, Section 4.6. The justification for sliding fire doors having fusible links on only one side of barrier opening is documented in Part VII, Section 5.2. The justification for a hose station having more than 100 feet of hose is documented in Part VII, Section 4.3. No deviations are applicable for Room 742.0-D3.

Evaluations: None.

3.59.2 Room 742.0-D8

Description: Fuel Oil Transfer Room

Fire Loading: The combustibles consist of plastics associated with electrical panels and lights and insulation. The fire severity is classified as insignificant.

Compartmentation: The room is of reinforced concrete block walls with a reinforced concrete ceiling.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D8	South Wall	Area 54, Room 742.0-D10	II-35A	3 Hours

Doors: None.

Dampers: None.

Detection: Heat detectors are provided in the room.

Suppression: An automatic total flooding CO₂ suppression system is provided in the room. A standpipe and hose station is provided from the adjacent Pipe Gallery and Corridor.

Deviations: The justification for the Appendix A deviation for the fire barrier separating the Fuel Oil Transfer Pump Room from the DG Building Corridor is documented in Part VII, Section 4.6.

Evaluations: None.

3.59.3 Fire Area 53 Safe Shutdown Analysis By Analysis Volume**3.59.3.1 AV-081A**

DGB-PGA - Diesel Generator Building Pipe Gallery A:	
Room No.	Description:
742.0-D9A	Pipe Gallery/Corridor, West wall to Door D11
742.0-D9N	Pipe Gallery/Corridor, Door D11 to Door D12
742.0-D3	Toilet

A fire in Analysis Volume 81A would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

AV-081A

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.59.3.2 AV-081B

DGB-PGB - Diesel Generator Building Pipe Gallery B:	
Room No.	Description:
742.0-D9B	Pipe Gallery/Corridor, East wall to Door D12
742.0-D9N	Pipe Gallery/Corridor, Door D11 to Door D12
742.0-D8	Fuel Oil Transfer Room

A fire in Analysis Volume 81B would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

AV-081B

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.60 FIRE AREA 54**3.60.1 Room 742.0-D10**

Description: Conduit Interface Room

Fire Loading: The combustibles consist of insulation on cables in trays. The fire severity is classified as moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D10	North Wall	Area 53, Room 742.0-D3	II-35A	3 Hours
		Area 53, Room 742.0-D8	II-35A	3 Hours
		Area 53, Room 742.0-D9	II-35A	3 Hours
		Area 55, DGB Cable Chase - A	II-35A	3 Hours
		Area 56, DGB Cable Chase - B	II-35A	3 Hours
	East Wall	Area 53, Room 742.0-D3	II-35A	3 Hours
		Area 55, DGB Cable Chase - A	II-35A	3 Hours
		Area 56, DGB Cable Chase - B	II-35A	3 Hours
	West Wall	Area 55, DGB Cable Chase - A	II-35A	3 Hours
		Area 56, DGB Cable Chase - B	II-35A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: No automatic suppression is provided. Fire hydrants are located across the street between the DG and Auxiliary Buildings outside the entrance doors at each end of the room.

Deviations: None.

Evaluations: None.

3.60.2 Room 742.0-D2

Description: Lube Oil Storage Room

Fire Loading: The combustibles consist of insignificant amounts of in situ combustibles and various numbers of sealed 55 gallon drums of lube oil and fuel oil. A number of drums (18) were chosen to represent a conservative fixed combustible load. The fire severity classification with the above assumption is severe.

Compartmentation: The walls are of reinforced concrete construction. The ceiling is of reinforced construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D2	East Wall	Area 49, Room 742.0-D4	II-35A	3 Hours
		Area 53, Room 742.0-D9	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
742.0-D2	D8A	Area 53, Room 742.0-D9	II-35A	3 Hours (Sliding)

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
742.0-D2	0-ISD-30-594	Area 53, Room 742.0-D9A	47W866-9	3 Hours
	47A381-627F		17W910-2	

Detection: Heat detectors are provided in the room.

Suppression: A total flooding CO₂ suppression system is provided in the room. A standpipe and hose station is provided from the adjacent Corridor and Pipe Gallery 742.0-D9.

Deviations: The justification for the sliding fire doors only having fusible links on one side of the opening is documented in Part VII, Section 5.2.

Evaluations: None.

3.60.3 Rooms 742.0-D1, Stairwell D1, 760.5-D1 and 760.5-D2

Room No.	Description:
742.0-D1	CO ₂ Storage Room
Stair D1	Stairwell
760.5-D1	Corridor
760.5-D2	Radiation Shelter

Fire Loading: The combustibles in these rooms consist of plastics, wood and paper associated with storage cabinets, electrical panels and lights. The fire severity classification for each room is as follows:

Room No.	Description:	Fire Loading:
742.0-D1	CO ₂ Storage Room	Insignificant
Stair D1	Stairwell	Low
760.5-D1	Corridor	Insignificant
760.5-D2	Radiation Shelter	Low

Compartmentation: The rooms are of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
742.0-D1	East Wall	Area 49, Room 742.0-D4	II-35A	3 Hours
Stair D1	East Wall	Area 49, Room 742.0-D4	II-35A	3 Hours
760.5-D1	East Wall	Area 49, Room 760.5-D4	II-35A	3 Hours
		Area 49, Room 760.5-D5	II-35A	3 Hours
760.5-D2	East Wall	Area 49, Room 760.5-D3	II-35A	3 Hours
		Area 49, Room 760.5-D4	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
760.5-D1	D22	Area 49, Room 760.5-D4	II-35A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
742.0-D1	0-ISD-30-619	Area 49, Room 742.0-D4	47W866-9	3 Hours
	47A381-448F		17W910-1	
760.5-D1	0-ISD-30-631	Area 49, Room 760.5-D5	47W866-9	3 Hours
	47A381-526F		17W910-1	
760.5-D2	0-ISD-30-621	Area 49, Room 760.5-D3	47W866-9	3 Hours
	47A381-537F		17W910-2	

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations provided in Room 760.5-D1.

Deviations: None.

Evaluations: None.

3.60.4 FIRE AREA 54 SAFE SHUTDOWN ANALYSIS BY ANALYSIS VOLUME**3.60.4.1 AV-082**

DGB-CO - Diesel Generator Building Corridor:	
Room No.	Description:
742.0-D1	CO2 Storage Room
742.0-D10	Conduit Interface Room
742.0-D2	Lube Oil Storage Room
Stair D1	Stairwell
760.5-D1	Corridor
760.5-D2	Radiation Shelter

A fire in Analysis Volume 82 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.61 FIRE AREA 55**3.61.1 Cable Chase - A****Description:** Cable Chase - A**Fire Loading:** The combustibles are insulation on the cables in the trays. The fire severity is classified as severe.**Compartmentation:** The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
Cable Chase - A	North Wall	Area 53, Room 742.0-D9A	II-35A	3 Hours
	South, East, and West Walls	Area 54, Room 742.0-D10	II-35A	3 Hours
	Ceiling	Area 54, Room 742.0-D10	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Cable Chase - A	D36	Area 53, Room 742.0-D9A	II-35A	3 Hours

Dampers: None.**Detection:** Ionization smoke detectors are provided in the room.**Suppression:** An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent Pipe Gallery and Corridor.**Deviations:** None.**Evaluations:** None.

3.61.2 Fire Area 55 Safe Shutdown Analysis By Analysis Volume**3.61.2.1 AV-083**

Room No.	Description:
DGB-A	Cable Chase - A (From 713.0-A1A3 to DG Building Pipe Gallery A)

A fire in Analysis Volume 83 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

AV-083

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.62 FIRE AREA 56**3.62.1 Cable Chase - B****Description:** Cable Chase - B**Fire Loading:** The combustibles are insulation on the cables in the trays. The fire severity is classified as severe.**Compartmentation:** The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
Cable Chase - B	North Wall	Area 53, Room 742.0-D9B	II-35A	3 Hours
	South, East, and West Walls	Area 54, Room 742.0-D10	II-35A	3 Hours
	Ceiling	Area 54, Room 742.0-D10	II-35A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Cable Chase - B	D35	Area 53, Room 742.0-D9B	II-35A	3 Hours

Dampers: None.**Detection:** Ionization smoke detectors are provided in the room.**Suppression:** An automatic preaction sprinkler system is provided in the room. A standpipe and hose station is provided from the adjacent Pipe Gallery and Corridor.**Deviations:** None.**Evaluations:** None.

3.62.2 Fire Area 56 Safe Shutdown Analysis By Analysis Volume**3.62.2.1 AV-084**

Room No.	Description:
DGB-B	Cable Chase - B (From 713.0-A1B to DG Building Pipe Gallery B)

A fire in Analysis Volume 84 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment affected and credited to achieve shutdown is identified below:

AV-084

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.63 FIRE AREA 57**3.63.1 (Deleted - Formerly Assigned to the Additional Diesel Generator Building)****3.64 FIRE AREA 58****3.64.1 IPS EL 741 West****Description:** ERCW Pump Room A

Fire Loading: The combustibles in the ERCW Pump Room A consist of lube oil associated with the pumps, pipe insulation, plastics associated with electrical panels and lights and insulation on cables in trays. The fire severity is classified as moderate.

Compartmentation: The walls and floor of this room are of reinforced concrete construction. The wall between the pump room and the Screen Wash pump room has two unprotected openings (scupper holes). The ceiling is an open steel missile barrier that allows air flow to the outside.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
ERCW Pump Room A	North, East and West Walls	Area 60, Roof Deck EL 728	II-36A	3 Hours
	South Wall	Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours
	East Wall	Area 59, ERCW Pump Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
ERCW Pump Room A	W5	Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours
	W9	Area 60, Roof Deck EL 728	II-36A	3 Hours

Dampers: None.**Detection:** Heat detectors are provided over the ERCW pumps. (See note below)

Suppression: No automatic suppression is provided. Standpipe and hose stations are accessible from the ERCW Strainer room and the Screen Wash Pump room. (See note below)

Deviations: The justification for the unprotected openings (scupper holes) in the wall between this room and the Screen Wash Pump room is documented in Part VII, Section 2.6.2.1.

Evaluations: The justification for the gap between the door and frame for Door W9 is documented in Part VII, Section 6.3. The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Section 8.3.57 and 64.

Note: Although this room is not provided with suppression and full area detection, per the guidelines of Appendix A, Section F.11, fire area barrier ratings are sufficient given the combustible loadings in the area. This fire area does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Section F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.64.2 IPS EL 741 West

Description: Screen Wash and HPFP A Pump Room

Fire loading: The combustibles in the Screen Wash and HPFP A Pump room consist of lube oil in the pumps, hydraulic oil in the Crane, and plastic associated with electrical panels and lights. The fire severity is classified as low.

Compartmentation: The walls and floor of this room are of reinforced concrete construction. The wall between the Pump room and the Screen Wash Pump room has two unprotected openings (scupper holes). The ceiling of this room is an open steel missile barrier that allows air flow into the room.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
Screen Wash and HPFP A Pumps Room	North Wall	Area 58, ERCW Pump Room A	II-36A	3 Hours
		Area 59, ERCW Pump Room B	II-36A	3 Hours
	South Wall	Area 59, ERCW Strainer Room B	II-36A	3 Hours
	East Wall	Area 59, HPFP B Pump Room	II-36A	3 Hours
		Area 59, ERCW Strainer Room B	II-36A	3 Hours
	Floor (partial)	Area 59, ERCW Strainer Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Screen Wash and HPFP A Pumps Room	W5	Area 58, ERCW Pump Room A	II-36A	3 Hours
	W8	Area 59, HPFP B Pump Room	II-36A	3 Hours

Dampers: None.

Detection: None. (See note below)

Suppression: A standpipe and hose station is provided in this room and another is accessible from the ERCW strainer room. (See note below)

Deviations: The justification for the unprotected openings (scupper holes) in the wall between this room and the ERCW Pump Room is documented in Part VII, Section 2.6.2.1. The justification for the non-listed, non-approved fire pumps and fire pump controllers is documented in Part VII, Section 5.1.

Evaluations: The justification of the adequacy of HPFP system pumps and controllers is documented in Part VII, Section 3.3

Note: Although this room is not provided with suppression and detection, per the guidelines of Appendix A, Section F.11, fire area barrier ratings are sufficient given the combustible loadings in the area. This fire area does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Section F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.64.3 IPS EL 722 West

Description: ERCW Strainer Room A

Fire loading: The combustibles in this room consist of lube oil associated with the strainers and valves, and plastics associated with electrical panels and lights. The fire severity is classified as insignificant.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
ERCW Strainer Room A	North Wall	Area 60, IPS 711 Board Room	II-36A	3 Hours
		Area 60, Roof Deck Area EL 728	II-36A	3 Hours
	East Wall	Area 59, ERCW Strainer Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
ERCW Strainer Room A	W10A	Area 59, ERCW Strainer Room B	II-36A	3 Hours
	W10B	Area 59, ERCW Strainer Room B	II-36A	3 Hours

Dampers: None.

Detection: This room is provided with ionization smoke detectors.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in this room and another is accessible from the Screen Wash pump room.

Deviations: The justification for the fire doors is documented in Part VII, Section 4.1

Evaluations: None.

3.64.4 Fire Area 58 Safe Shutdown Analysis by Analysis Volume**3.64.4.1 AV-086**

Room No.	Description:
IPS-A El. 741	ERCW Pump Room A
IPS-A El. 741	Screen Wash and HPFP A Pump Room
IPS-A El. 722	ERCW Strainer Room A

A fire in Analysis Volume 86 could potentially affect systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, containment HVAC and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-88-A	MOTOR COOLER 1A-A CONTROL ROD DRIVE	KEY 37J
1-MTR-62-108-A	MOTOR COOLER 1C-A CENTRIFUGAL CHARGING	KEY 1 PATH 1
1-MTR-70-46-A	PUMP 1A-A COMPONENT COOLING	KEY 1 PATH 1
1-MTR-74-10-A	SYSTEM PUMP 1A-A RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
1-PCV-68-340A-A	PUMP 1A-A PZR PORV	KEY 48 (PORV)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER	KEY 37J
2-MTR-30-77-A	FAN 2A-A REACTOR LOWER	KEY 37J
2-MTR-30-83-A	COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-62-108-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-70-59-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-SG-COOLDN-1	RHR PUMP 2A-A STEAM GENERATOR 1 COOL	KEY 31 PATH 1
2-SG-COOLDN-2	DOWN STEAM GENERATOR 2 COOL	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	DOWN ESSENTIAL RAW COOLING	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-2A	WTR SUPPLY HDR 1A ESSENTIAL RAW COOLING	KEY 1 PATH 1
SG-COOLDN-1	WTR SUPPLY HDR 2A SG-1 COOLDOWN	KEY 1 PATH 1
SG-COOLDN-2	COMPONENTS SG-2 COOLDOWN	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	COMPONENTS TURBINE-DRIVEN AFW PUMP	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.65 FIRE AREA 59**3.65.1 IPS EL 741 East**

Description: ERCW Pump Room B

Fire Loading: The combustibles in the ERCW Pump Room B consist of lube oil associated with the pumps, pipe insulation, plastics associated with electrical panels and lights and insulation on cables in trays. The fire severity is classified as moderate.

Compartmentation: The walls and floor of this room are of reinforced concrete construction. The wall between the pump room and the Screen Wash pump room has two unprotected openings (scupper holes). The ceiling is an open steel missile barrier that allows air flow to the outside.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
ERCW Pump Room B	North Wall	Area 60, Roof Deck EL 728	II-36A	3 Hours
		Area 60, IPS 711 Board Room	II-36	3 Hours
	South Wall	Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours
		Area 59, HPFP B Pump Room	II-36A	3 Hours
	West Wall	Area 58, ERCW Pump Room A	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
ERCW Pump Room B	W3	Area 60, STAIR	II-36A	3 Hours
	W6	Area 59, HPFP B Pump Room	II-36A	3 Hours

Dampers: None.

Detection: Heat detectors are provided over the ERCW pumps. (See note below)

Suppression: No automatic suppression is provided. Standpipe and hose stations are provided from the ERCW strainer room and the Screen Wash Pump room. (See note below)

Deviations: The justification for the unprotected openings (scupper holes) in the wall between this room and the Screen Wash Pump room is documented in Section VII, Section 2.6.2.1.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.58 and 65.

Note: Although this room is not provided with suppression and full area detection, per the guidelines of Appendix A, Section F.11, fire area barrier ratings are sufficient given the combustible loadings in the area. This fire area does not contain redundant safe shutdown

equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Section F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.65.2 IPS EL 741 East

Description: HPFP B Pump Room

Fire loading: The combustibles in this room consist of lube oil in the pumps, and plastic associated with junction boxes and rubber floor mats. The fire severity is classified as low.

Compartmentation: The walls and floor of this room is of reinforced concrete construction. The ceiling of this room is an open steel missile barrier that allows air flow into the room.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
HPFP B Pump Room	North Wall	Area 59, ERCW Pump Room B	II-36A	3 Hours
	West Wall	Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours
	Floor	Area 59, ERCW Strainer Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
HPFP B Pump Room	W6	Area 59, ERCW Pump Room B	II-36A	3 Hours
	W8	Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours

Dampers: None.

Detection: None. (See note below)

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in this room and another is accessible from the ERCW strainer room. (See note below)

Deviations: The justification for the non-listed, non-approved fire pumps and fire pump controllers is documented in Part VII, Section 5.1.

Evaluations: The justification for the adequacy of the HPFP system pumps and controllers is documented in Part VII, Section 3.3.

Note: Although this room is not provided with suppression and detection, per the guidelines of Appendix A, Section F.11, fire area barrier ratings are sufficient given the combustible loadings in the area. This fire area does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger other safety related equipment required for safe plant shutdown. Refer to Section F.11 of Part VIII of the FPR for information on conformance to Appendix A regarding this issue.

3.65.3 IPS EL 722 East

Description: ERCW Strainer Room B

Fire loading: The combustibles in this room consist of lube oil associated with the strainers and valves, and plastics associated with electrical panels and lights. The fire severity is classified as insignificant.

Compartmentation: This room is constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
ERCW Strainer Room B	North	Area 60, IPS 711 Board Room	II-36A	3 Hours
		Area 60, Roof Deck EL 728	II-36A	3 Hours
	West	Area 58, ERCW Strainer Room A	II-36A	3 Hours
		Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours
	Ceiling (partial)	Area 59, HPFP B Pump Room	II-36A	3 Hours
		Area 58, Screen Wash and HPFP A Pump Room	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
ERCW Strainer Room B	W10A	Area 58, ERCW Strainer Room A	II-36A	3 Hours
	W10B	Area 58, ERCW Strainer Room A	II-36A	3 Hours

Dampers: None.

Detection: This room is provided with ionization smoke detectors.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in this room and another is accessible from the Screen Wash pump room.

Deviations: The justification for fire doors is documented in Part VII, Section 4.1.

Evaluations: None.

3.65.4 Fire Area 59 Safe Shutdown Analysis by Analysis Volume**3.65.4.1 AV-087**

Room No.	Description:
IPS-B El. 741	ERCW Pump Room B
IPS-B El. 741	HPFP B Pump Room
IPS-B El. 722	ERCW Strainer Room B

A fire in Analysis Volume 87 could potentially affect systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, containment HVAC and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-74-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1A-A	
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1C-A	
1-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 1A-A	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
	PUMP 1A-A	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-395-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-396-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-FSV-68-397-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2A-A MOTOR	
2-MTR-30-74-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2A-A	
2-MTR-30-77-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2C-A	
2-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2A-A	
2-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2C-A	
2-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 2A-A	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.66 FIRE AREA 60**3.66.1 Room IPS-711.0**

Description: Board Room (Subdivided into IPS-CA, IPS-CC-A, IPS-CB, IPS-CC-B)

Fire Loading: The combustibles in the room consist of plastics associated with electrical panels and boards, oil in the transformers and insulation on cables in trays. The fire severity is classified moderate.

Compartmentation: The room is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
IPS-711.0	South Wall	Area 58, ERCW Strainer Room A	II-36A	3 Hours
		Area 59, ERCW Strainer Room B	II-36A	3 Hours
		Area 58, ERCW Pump Room A	II-36A	3 Hours
		Area 59, ERCW Pump Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
IPS-711.0	W3	Area 59, STAIR B	II-36A	3 Hours

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic sprinkler system is provided in the room. A standpipe and hose station is provided in the room.

Deviations: The room contains intervening combustibles in the form of insulation on cables in trays. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Part VII, Section 2.4.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.59, 60, 61, 64, and 65.

3.66.2 Roof Deck EL 728

Description: RCW Pump Deck EL 728

Fire Loading: The combustibles in this area consist of lube oil in the pumps and plastics associated with junction and control boxes. The fire severity is classified as insignificant.

Compartmentation: The RCW Pump area is on the roof deck of the Board Room (IPS 711.0). The barrier separating the roof deck from Areas 58 and 59 is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
Roof Deck EL 728	South Wall	Area 58, ERCW Strainer Room A	II-36A	3 Hours
		Area 58, ERCW Pump Room A	II-36A	3 Hours
		Area 59, ERCW Strainer Room B	II-36A	3 Hours
		Area 59, ERCW Pump Room B	II-36A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Roof Deck EL 728	W9	Area 58, ERCW Pump Room A	II-36A	3 Hours

Dampers: None.

Detection: None.

Suppression: No automatic suppression is provided. A standpipe and hose station is provided in the Screen Wash Pump Room.

Deviations: None.

Evaluations: Evaluation of gap between door and frame on door W9 is documented in Part VII, Section 6.3 of FPR.

The RCW pump area is on the roof of the Intake Pumping Station Electrical Board Room and open to the atmosphere. There are no required fire safe shutdown (FSSD) components (equipment or cables) located on the deck, and a fire on the deck will not impact any FSSD components. The pump deck is thus not included in the analysis for the Intake Pumping Station (AV-088, AV-089, AV-090) because it has no impact.

3.66.3 Fire Area 60 Safe Shutdown Analysis by Analysis Volume**3.66.3.1 AV-088**

Room No.	Description:
IPS-CA El. 711.0	Board Room, 20ft West of 480V Bd/Transformer
IPS-CC-A El. 711.0	Board Room, Mid to 20ft West of 480V Bd/Transformer

A fire in Analysis Volume 88 could potentially affect systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, containment HVAC and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 1B-B	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
	PUMP 1B-B	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-395-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-396-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-FSV-68-397-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2B-B MOTOR	
2-MTR-30-75-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2B-B	
2-MTR-30-78-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2D-B	
2-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2D-B	
2-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2B-B	
2-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 2B-B	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Room No.	Description:
IPS-CC-A El. 711.0	Board Room, Mid to 20ft West of 480V Bd/Transformer
IPS-CC-B El. 711.0	Board Room, Mid to 20ft East of 480V Bd/Transformer

A fire in Analysis Volume 89 could potentially affect systems and components necessary to maintain the long term decay heat removal, containment HVAC, reactor coolant inventory control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown for both units. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60
1-MTR-67-9-A	757-A2	MUST OPERATE	1-BKR-67-9C-A	720
1-MTR-67-9-A	IPS-B	MUST OPERATE	HANDWHEEL	720

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.66.3.3 AV-090

Room No.	Description:
IPS-CB El. 711.0	Board Room, 20ft East of 480V Bd/Transformer
IPS-CC-B El. 711.0	Board Room, Mid to 20ft East of 480V Bd/Transformer

A fire in Analysis Volume 90 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 long term decay heat removal, steam generator inventory control, containment HVAC and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-74-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1A-	
	A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1C-	
	A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1A-A	
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1C-A	
1-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 1A-A	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
	PUMP 1A-A	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-395-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-396-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-FSV-68-397-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2A-A MOTOR	
2-MTR-30-74-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2A-A	
2-MTR-30-77-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2C-A	
2-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2A-A	
2-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2C-A	
2-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 2A-A	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.67 FIRE AREA 61**3.67.1 Unit 1 Reactor Building - Annulus**

Description: Annulus

Fire Loading: The combustibles consist of foam plastic insulation, plastic associated with electrical panels and boxes, rubber expansion joints, and insulation on cables in trays. The fire severity is classified as severe.

Compartmentation: The Annulus is separated from Primary Containment by the Steel Containment Vessel which prevents the passage of flames, smoke and hot gases, but allows heat transfer. The Annulus is separated from the Auxiliary Building fire areas by reinforced concrete construction.

Barriers:			
Room	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
ANNULUS	AREA 1, ROOM 713.0-A28	II-29A	3 Hours
	AREA 5, ROOM 692.0-A7	II-28A	3 Hours
	AREA 9, ROOM 713.0-A6	II-29A	3 Hours
	AREA 9, ROOM 713.0-A8	II-29A	3 Hours
	AREA 10, ROOM 729.0-A8	II-29A	3 Hours
	AREA 12, ROOM 729.0-A1	II-30A, II-31A, II-32A	3 Hours
	AREA 13, ROOM 729.0-A2	II-38A	3 Hours
	AREA 13, ROOM 729.0-A12	II-38A	3 Hours
	AREA 13, ROOM 729.0-A14	II-38A	3 Hours
	AREA 13, ROOM 729.5-A16	II-38A	3 Hours
	AREA 12, ROOM 737.0-A6	II-30A	3 Hours
	AREA 16, ROOM 737.0-A5	II-30A	3 Hours
	AREA 13, ROOM 737.0-A13	II-30A	3 Hours
	AREA 13, ROOM 775.25-A1	II-32A	3 Hours
	AREA 13, ROOM 763.5-A1	II-38A	3 Hours
	AREA 13, ROOM 786.5-A1	II-32A	3 Hours
	AREA 25, ROOM 757.0-A10	II-31A	3 Hours
	AREA 25, ROOM 757.0-A12	II-31A	3 Hours
	AREA 25, ROOM 782.0-A1	II-32A	3 Hours
	AREA 25, ROOM 782.0-A2	II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
ANNULUS	A65	AREA 9, ROOM 713.0-A8A	II-29A	3 Hours

Dampers: None.

Detection: Photoelectric smoke detectors provide partial coverage in the Annulus.

Suppression: Automatic preaction sprinkler systems provide partial coverage in the Annulus. Standpipe and hose stations are provided throughout the Annulus.

Deviations: The justification for the radiant energy shields not meeting the ASTM E136 criteria of non-combustibility is documented in Part VII, Section 2.2. The justification for using dedicated hand-held portable lanterns in lieu of installed battery pack lighting is documented in Part VII, Section 2.7.1.

Evaluations: The lack of fire dampers for the containment purge air system return and exhaust air duct openings to the 713.0-A6 Unit 1 Penetration Room is documented in Part VII, Section 3.2.

3.67.2 Unit 1 Reactor Building - Primary Containment

Description: Primary Containment (Subdivided into RO-1, RO-2, RO-3, RO-4, RI-1, RI-2, RI-3, RI-4, RIR, RA1, RA2, RA3, RA4, RF1, RF2, RU)

Fire Loading: The combustibles consist of foam plastic insulation, plastic associated with electrical panels and boxes, rubber expansion joints, lube oil in pumps, motors and valves, glycol for the ice condenser insulation on cables in trays and wood (used only for insulation and framing of the ice condenser intermediate deck end wall doors). The fire severity for individual areas, range from a classification of insignificant to moderate.

Compartmentation: The Primary Containment is separated from the Annulus by the Steel Containment Vessel which prevents the passage of flames, smoke and hot gases, but allows heat transfer.

Barriers: None.

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
PRIMARY CONTAINMENT	A95	AREA 9, ROOM 713.0-A8	II-29A	3 HR
	A96	AREA 9, ROOM 713.0-A8	II-29A	3 HR
	A164	AREA 25, ROOM 757.0-A12	II-31A	3 HR
	A165	AREA 25, ROOM 757.0-A12	II-31A	3 HR

Dampers: None.

Detection: Ionization smoke detectors are provided in the LOWER and upper compartment cooler units. Heat detectors are provided over the Reactor Coolant Pumps.

Suppression: Automatic fixed water spray systems are provided for each Reactor Coolant Pump. Standpipes and hose stations are provided inside containment.

Deviations: The justification for the radiant energy shields not meeting the ASTM E136 criteria of non-combustibility is documented in Part VII, Section 2.2. The justification for using dedicated hand-held portable lanterns in lieu of installed battery pack lighting is documented in Part VII, Section 2.7.1. The justification to allow for minor amount of oil to escape the RCP oil collection system is documented in Part VII, Section 2.8.

Evaluations: None.

3.67.3 Fire Area 61 Safe Shutdown Analysis by Analysis Volume**3.67.3.1 AV-091**

Room No.	Description:
ANN	Unit 1 Reactor Building - Annulus

A fire in Analysis Volume 91 could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control functions and Unit 1 long term decay heat removal, containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing smoke detectors, automatic fire suppression, and non-combustible radiant energy shields to protect redundant Unit 1 safe shutdown cables in the event of a fire and manual operations of Unit 1 equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below. Since compliance in this area utilizes options III.G.2.d, e, and / or f the equipment train which is affected or credited for containment cooling, primary system depressurization during cooldown and RHR cooldown is determined subsequent to firefighting activities by the location of the fire. Adequate time is available to make this determination since the earliest safe shutdown requirement for these functions is approximately 2 hours when containment cooling must be established.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-74-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-B MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1A-A	
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1C-A	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 1B-B	
1-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 1A-A	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
	PUMP 1A-A	
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
	PUMP 1B-B	
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
1-FCV-67-104-A	772-A1	MUST NOT CLOSE	1-BKR-67-104-A	120
1-FCV-67-104-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-107-A	772-A1	MUST NOT CLOSE	1-BKR-67-107-A	120
1-FCV-67-107-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-112-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-112-A	772-A1	MUST NOT CLOSE	1-BKR-67-112-A	120
1-FCV-67-83-B	772-A2	MUST NOT CLOSE	1-BKR-67-83-B	120
1-FCV-67-83-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-88-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-88-B	772-A2	MUST NOT CLOSE	1-BKR-67-88-B	120
1-FCV-67-91-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-91-B	772-A2	MUST NOT CLOSE	1-BKR-67-91-B	120
1-FCV-67-96-B	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-FCV-67-96-B	772-A2	MUST NOT CLOSE	1-BKR-67-96-B	120
1-FCV-67-99-A	772-A1	MUST NOT CLOSE	1-BKR-67-99-A	120
1-FCV-67-99-A	RB-ANN	MUST NOT CLOSE	HANDWHEEL	120
1-TCO-30-82-B	757-A3	MUST NOT CLOSE	FUSE	120
1-TCO-30-85-A	757-A4	MUST NOT CLOSE	FUSE	120
1-TCO-30-90-A	757-A4	MUST NOT CLOSE	FUSE	120
1-TCO-30-94-B	757-A3	MUST NOT CLOSE	FUSE	120
1-TCV-67-100-B	757-A3	MUST NOT CLOSE	FUSE	120
1-TCV-67-100-B	757-A3	MUST NOT CLOSE	BREAKER 39	120
1-TCV-67-101-B	757-A3	MUST NOT CLOSE	BREAKER 39	120
1-TCV-67-101-B	757-A3	MUST NOT CLOSE	FUSE	120
1-TCV-67-108-B	757-A3	MUST NOT CLOSE	FUSE	120
1-TCV-67-108-B	757-A3	MUST NOT	BREAKER 39	120

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LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCV-67-109-B	757-A3	CLOSE MUST NOT	BREAKER 39	120
1-TCV-67-109-B	757-A3	CLOSE MUST NOT	FUSE	120
1-TCV-67-84-A	757-A4	CLOSE MUST NOT	BREAKER 48	120
1-TCV-67-84-A	757-A4	CLOSE MUST NOT	FUSE	120
1-TCV-67-85-A	757-A4	CLOSE MUST NOT	FUSE	120
1-TCV-67-85-A	757-A4	CLOSE MUST NOT	BREAKER 48	120
1-TCV-67-92-A	757-A4	CLOSE MUST NOT	FUSE	120
1-TCV-67-92-A	757-A4	CLOSE MUST NOT	BREAKER 48	120
1-TCV-67-93-A	757-A4	CLOSE MUST NOT	FUSE	120
1-TCV-67-93-A	757-A4	CLOSE MUST NOT	BREAKER 48	120
1-FCV-63-118-A	RA1	CLOSE MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	CLOSE MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	CLOSE MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	CLOSE MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	CLOSE MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	CLOSE MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	RA2	CLOSE MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	CLOSE MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-74-1-A	772-A1	CLOSE MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	CLOSE MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-332-B	755-C12	CLOSE MUST CLOSE	1-HS-68-332A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION	10

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-LCV-3-148	755-C12	MODULATE VALVE	1-LIC-3-148A	13
1-LCV-3-171	755-C12	MUST NOT CLOSE	1-LIC-3-171A	13
1-LM-3-148A	755-C12	MODULATE VALVE	1-LIC-3-148A	13
1-LM-3-171A	755-C12	MUST NOT CLOSE	1-LIC-3-171A	13
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	14
1-FCV-62-91-B	755-C12	MUST CLOSE	1-HS-62-91A-B	35

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1NM1333D	1-NI-92-131-D, 1-NI-92-138P	SOURCE RANGE NEUTRON DETECTOR, PORTABLE NEUTRON SOURCE RANGE INDICATOR
1PM1071E	1-LI-68-335A-E	PZR LEVEL INDICATOR
1PM1664E	1-LI-3-93	#3SG LEVEL INDICATOR (NR)
1PM1771E	1-LI-3-106	#4SG LEVEL INDICATOR (NR)
1PM595E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM691E	1-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
1PM784E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
1PM8761D	1-PDI-30-45-J, 1-PDT-30-45-D	U1 CONTAINMENT PRESSURE INDICATOR,

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM876E	1-TI-68-83	PROTECT SET I - CTMT PRESS HIGH RCS LOOP 4 COLD LEG TEMPERATURE
1PM950D	1-PT-68-340-D	PRESSURIZER PRESSURE
1PM988E	1-PT-68-334-E	PRESSURIZER PRESSURE
1V1206A	1-PCV-68-340A-A	PZR PORV
1V1212A	1-FCV-62-69-A	REACTOR COOLANT LOOP 3 LETDOWN FLOW VALVE
1V2780A	1-FCV-74-1-A	RHR SYSTEM ISOLATION VALVE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RO-2	Outside Crane Wall (90° - 180°)
RO-3	Outside Crane Wall (180° - 270°)
RA2	Accumulator Room 2
RF2	Fan Room 2

A fire in Analysis Volume 92A could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-LCV-3-164	755-C12	MUST NOT CLOSE	1-LIC-3-164A	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1007F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM590D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM594D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE

3.67.3.3

AV-092B

Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RO-2	Outside Crane Wall (90° - 180°)
RO-3	Outside Crane Wall (180° - 270°)
RA3	Accumulator Room 3
RF2	Fan Room 2

A fire in Analysis Volume 92B could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and repair procedures. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

AV-092B

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-LCV-3-164	755-C12	MUST NOT CLOSE	1-LIC-3-164A	13
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	35

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1007F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM590D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM594D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RO-3	Outside Crane Wall (180° - 270°)
RO-4	Outside Crane Wall (270° - 360°)
RA3	Accumulator Room 3
RA4	Accumulator Room 4

A fire in Analysis Volume 92C could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control, long term decay heat removal, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include manual operation of Unit 1 equipment required for safe shutdown and repair procedures. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
1-MTR-30-88-A	MOTOR COOLER 1D-B CONTROL ROD DRIVE	KEY 37J
SG-COOLDN-4	MOTOR COOLER 1C-A SG-4 COOLDOWN	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	COMPONENTS TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-1-A	RI	MUST OPEN	HANDWHEEL	120
1-FCV-74-2-B	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-74-8-A	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RO-1	Outside Crane Wall (0° - 90°)
RO-4	Outside Crane Wall (270° - 360°)
RF1	Fan Room 1
RA4	Accumulator Room 4

A fire in Analysis Volume 92D could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control, long term decay heat removal, containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and repair procedures. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

AV-092D

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-1-A	RI	MUST OPEN	HANDWHEEL	120
1-FCV-74-2-B	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-74-8-A	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM777E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM783E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RO-1	Outside Crane Wall (0° - 90°)
RO-4	Outside Crane Wall (270° - 360°)
RF1	Fan Room 1
RA1	Accumulator Room 1

A fire in Analysis Volume 92E could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control, and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and repair procedures. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-1-A	RI	MUST OPEN	HANDWHEEL	120
1-FCV-74-2-B	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT	1-HS-32-112	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-90-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCO-30-94-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-109-B	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-84-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-85-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	CLOSE MUST NOT	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM777E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM783E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RIR	Instrument Room

A fire in Analysis Volume 92F could potentially affect systems and components necessary to maintain the Unit 1 reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and operation of equipment required for safe shutdown. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
1-PCV-68-334-B	MOTOR COOLER 1B-B PZR PORV	KEY 48 (PORV)

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1007F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM1085F	1-LI-68-320-F	PZR LEVEL INDICATOR
1PM949D	1-PT-68-340-D	PRESSURIZER PRESSURE

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Unit 1 Reactor Building – Primary Containment	
Room No.	Description:
RU	Upper Containment

A fire in Analysis Volume 92G would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment available to achieve shutdown are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RI-2	Inside Crane Wall (90° - 180°)
RI-3	Inside Crane Wall (180° - 270°)
RA2	Accumulator Room 2
RF2	Fan Room 2

A fire in Analysis Volume 92H could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13
1-LCV-3-164	755-C12	MUST NOT	1-LIC-3-164A	13

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-90-A	755-C12	CLOSE MUST CLOSE	1-HS-62-90A-A	35
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1007F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM590D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM594D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1V1207A	1-PCV-68-340A-A	PZR PORV
1V5492B	1-FSV-68-395-B, 1-FSV-68-396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
1V5663B	1-FSV-68-395-B, 1-FSV-68-396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RI-2	Inside Crane Wall (90° - 180°)
RI-3	Inside Crane Wall (180° - 270°)
RA3	Accumulator Room 3
RF2	Fan Room 2

A fire in Analysis Volume 92J could potentially affect systems and components necessary to maintain the Unit 1 long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

AV-092J

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-63-80-A	772-A1	MUST CLOSE	1-BKR-63-80-A	1140
1-FCV-63-80-A	RA3	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-68-333-A	755-C12	MUST CLOSE	1-HS-68-333A	0
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
SI_SIGNAL	755-C12	MIGITATE SI	TO MIGITATE INADVERTENT SI, SEE CALCULATION EDQ00099920090016, APPENDIX B.43, TABLE 3 AND ASSOCIATED NOTES	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13
1-LCV-3-164	755-C12	MUST NOT	1-LIC-3-164A	13

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-90-A	755-C12	CLOSE MUST CLOSE	1-HS-62-90A-A	35
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM1007F	1-PT-68-323-F	PRESSURIZER PRESSURE
1PM590D	1-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
1PM594D	1-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
1V1207A	1-PCV-68-340A-A	PZR PORV
1V5492B	1-FSV-68-395-B, 1-FSV-68-396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE
1V5663B	1-FSV-68-395-B, 1-FSV-68-396-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE, REACTOR VESSEL HEAD VENT THROTTLE VALVE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RI-1	Inside Crane Wall (0° - 90°)
RI-4	Inside Crane Wall (270° - 360°)
RA4	Accumulator Room 4
RF1	Fan Room 1

A fire in Analysis Volume 92K could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

AV-092K

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-1-A	RI	MUST OPEN	HANDWHEEL	120
1-FCV-74-2-B	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-74-8-A	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM777E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM783E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE

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Unit 1 Reactor Building – Lower Containment	
Room No.	Description:
RI-1	Inside Crane Wall (0° - 90°)
RI-4	Inside Crane Wall (270° - 360°)
RA1	Accumulator Room 1
RF1	Fan Room 1

A fire in Analysis Volume 92L could potentially affect Unit 1 systems and components necessary to maintain the long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 include providing radiant energy shields to selected cables to preclude damage in the event of a fire and manual operation of equipment required for safe shutdown and post fire repairs. The following is an exception to the general methodology for providing cable protection (ERFBS) from analysis volume boundary to analysis boundary as described in FPR Part III, Section 10.3.1. The redundant control cables and/or equipment are separated greater than 20 feet inside containment. These features and equipment affected and credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-74-1-A	RI	MUST OPEN	HANDWHEEL	120
1-FCV-74-2-B	RA4	MUST OPEN	HANDWHEEL	120
1-FCV-63-118-A	RA1	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-118-A	772-A1	MUST CLOSE	1-BKR-63-118-A	1140
1-FCV-63-67-B	772-A2	MUST CLOSE	1-BKR-63-67-B	1140
1-FCV-63-67-B	RA4	MUST CLOSE	HANDWHEEL	1140
1-FCV-63-98-B	772-A2	MUST CLOSE	1-BKR-63-98-B	1140
1-FCV-63-98-B	RA2	MUST CLOSE	HANDWHEEL	1140
1-FCV-74-1-A	772-A1	MUST OPEN	1-XS-74-1-A, 1- HS-74-1C-A OR USE REPAIR PROCEDURE	1140
1-FCV-74-2-B	772-A2	MUST OPEN	1-XS-74-2-B, 1- HS-74-2C-B OR USE REPAIR PROCEDURE	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	0
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	0
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	0
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	0
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-35	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-62-48	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-110A-A	11
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-112	11
1-FCV-62-9	755-C12	MUST BE OPEN	1-HS-32-110A-A	11
1-FCV-32-102-B	755-C12	CLOSE VALVE	1-HS-32-102A-B	13
1-FCV-32-80-A	755-C12	CLOSE VALVE	1-HS-32-80A-A	13
1-LCV-3-148	755-C12	MUST NOT CLOSE	1-LIC-3-148A	13
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-82-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-94-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-100-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-101-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-108-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-109-B	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
1PM777E	1-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
1PM783E	1-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE

3.68 FIRE AREA 62**3.68.1 CDWE Building**

Description: Condensate Demineralizer Waste Evaporator Building (CDWE)

Fire Loading: The combustibles in this building consist of plastic associated with electrical equipment and lights and lubricating oil associated with various pumps and motors, and rubber hoses. The fire severity is classified as moderate.

Compartmentation: The CDWE building is of reinforced concrete construction.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
CDWE Building	West Wall	Area 10, Room 729.0-A5	II-38A	3 Hours
		Area 11, Room 729.0-A4	II-38A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
CDWE Building	DE2	Area 11, Room 729.0-A4	II-38A	3 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
AREA 62,	0-ISD-31-2427 47A381-517	Area 11, Room 729.0-A4	47W866-10 47W920-39	1.5 Hours
CDWE Building	0-ISD-31-2429 47A381-517	Area 11, Room 729.0-A4	47W866-10 47W920-39	1.5 Hours

Detection: None.

Suppression: No automatic suppression is provided. The CDWE building is provided with a standpipe and hose stations at various levels.

Deviations: None.

Evaluations: None.

3.68.2 Fire Area 62 Safe Shutdown Analysis by Analysis Volume**3.68.2.1 AV-093**

Room No.	Description:
CDWE	Condensate Demineralizer Waste Evaporator Building (CDWE)

A fire in Analysis Volume 93 would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Equipment available to achieve shutdown are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.69 FIRE AREA 63**3.69.1 Turbine Building****Description:** Turbine Building

Fire Loading: The combustibles in the Turbine Building include lubricating oils and greases, plastics associated with electrical equipment and cables, fuel oil for the auxiliary boiler, and other miscellaneous materials associated with the function of an electrical generating facility. A combustible loading walkdown has not been performed for this building; however, this occupancy would be defined as mixed Ordinary Group 2 and 3 per NFPA 13 (Part II, Reference 4.4.12).

Compartmentation: The Turbine Building is of steel frame construction with concrete floors and is separated from the Control Building and Auxiliary Building by reinforced concrete walls, ceilings and floors which are equivalent to 3 hour fire barriers. The floors separating the various elevations within the Turbine Building are not fire rated barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
TURBINE BUILDING	NORTH WALL	AREA 1, ROOM 692.0-A1	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A5	II-28A, II-33A	3 Hours
		AREA 1, ROOM 692.0-A27	II-28A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-33A, II-34A	3 Hours
		AREA 8, ROOM 713.0-A1	II-29A, II-33A	3 Hours
		AREA 8, ROOM 713.0-A2	II-29A, II-33A, II-34A	3 Hours
		AREA 8, ROOM 713.0-A27	II-29A, II-33A	3 Hours
		AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 14, ROOM 737.0-A1	II-30A, II-34A	3 Hours
		AREA 48, ROOM 708.0-C1	II-33A	3 Hours
		AREA 48, ROOM 708.0-C2	II-33A	3 Hours
		AREA 48, ROOM 708.0-C4	II-33A	3 Hours
		AREA 48, ROOM 729.0-C1	II-34A	3 Hours
		AREA 48, ROOM 755.0-C1	II-34A	3 Hours
		AREA 48, ROOM 755.0-C2	II-34A	3 Hours
		AREA 48, ROOM 755.0-C3	II-34A	3 Hours
		AREA 48, ROOM 755.0-C12	II-34A	3 Hours
		AREA 48, ROOM 755.0-C14	II-34A	3 Hours
		AREA 48, ROOM 755.0-C15	II-34A	3 Hours
		AREA 48, ROOM 755.0-C19	II-34A	3 Hours
		STAIR C1 (ALL ELS EXCEPT 692)	II-33A, II-34A	3 Hours
		STAIR C2 (ALL ELS EXCEPT 692)	II-33A, II-34A	3 Hours
		SERVICE BUILDING	II-29A, II-33A	3 Hours
	SOUTH WALL	AREA 48, ROOM 708.0-C1	II-33A	3 Hours
	EAST WALL	AREA 48, ROOM 708.0-C1	II-33A	3 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	WEST WALL	AREA 48, ROOM 729.0-C1	II-34A	3 Hours
		AREA 48, ROOM 708.0-C4	II-33A	3 Hours
	CEILING	AREA 48, ROOM 729.0-C1	II-34A	3 Hours
		AREA 48, ROOM 755.0-C1	II-34A	3 Hours
		AREA 48, ROOM 755.0-C2	II-34A	3 Hours
		AREA 48, ROOM 755.0-C3	II-34A	3 Hours
		AREA 48, ROOM 755.0-C4	II-34A	3 Hours
		AREA 48, ROOM 755.0-C6	II-34A	3 Hours
		AREA 48, ROOM 755.0-C13	II-34A	3 Hours
		AREA 48, ROOM 755.0-C14	II-34A	3 Hours
		AREA 48, ROOM 755.0-C16	II-34A	3 Hours
		AREA 48, ROOM 755.0-C17	II-34A	3 Hours
		AREA 48, ROOM 755.0-C18	II-34A	3 Hours
	FLOOR	AREA 48, ROOM 755.0-C19	II-34A	3 Hours
		AREA 48, ROOM 692.0-C1	II-33A	3 Hours
		AREA 48, ROOM 692.0-C10	II-33A	3 Hours
		AREA 48, ROOM 708.0-C1*	II-33A	3 Hours
		(*PARTIAL HEIGHT ENTRANCE)		

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
TURBINE BUILDING	C19	AREA 48, ROOM 708.0-C1	II-33A	3 Hours
	C26A	AREA 48, ROOM 708.0-C2	II-33A	3 Hours*
	C29A	AREA 48, ROOM 729.0-C1	II-34A	3 Hours*
	C34A	AREA 48, ROOM 729.0-C1	II-34A	3 Hours*
	C36A	AREA 48, ROOM 755.0-C3	II-34A	3 Hours*
	C54A	AREA 48, ROOM 755.0-C15	II-34A	3 Hours*

* Sliding Fire Doors

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
AREA 63, TURBINE BUILDING	0-ISD-31-3953 47A381-473F	AREA 48, ROOM 729.0-C1	47W866-4 47W930-2	3 HRS

Detection: Heat detectors are provided to actuate the various fixed suppression systems. Area detection is not provided.

Suppression: Fixed automatic water spray systems are provided for the feedwater pump turbine oil tanks, main turbine oil tanks, seal oil units and turbine head ends. An automatic sprinkler system is provided around the Auxiliary Boilers. A water curtain is provided for each tray penetration into the Control Building. Standpipes and hose stations are provided for each elevation.

Deviations: The justification for the hatch openings through the floor to the Control Building Mechanical Equipment Rooms is documented in Part VII, Section 2.6.4. The justification for using DG Backed Standby Lighting in the Turbine Building is documented in Part VII, Section 2.7.3. |

Evaluations: None

3.69.2 Fire Area 63 Safe Shutdown Analysis by Analysis Volume**3.69.2.1 AV-094**

Room No.	Description:
TB	Turbine Building

A fire in Analysis Volume 94 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 containment HVAC function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown is achieved through the use of the equipment and associated flowpaths shown below as credited. Onsite power is available. The equipment available to achieve shutdown is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

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Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.70 FIRE AREA 64**3.70.1 Yard**

Description: Above Ground – Yard
Below Ground – Duct Banks A and B

Fire Loading: The major combustibles in the Yard include fuel oil and turbine oil in storage tanks, transformers, hydrogen in storage tank/trailers, and various combustible structures.

Compartmentation: The oil tanks and transformers are located at least 50 feet from any safety related structure. The transformers are provided with an absorbent bed of gravel which drains spills away from all structures. The oil tanks are provided with spill containment dikes which are sized to collect the entire contents of the largest single tank within the dike. The hydrogen storage trailers are located 300 feet from any safety related structure. Other combustible structures are located at least 30 feet from safety related buildings.

Barriers: None. The Duct Banks are separated and are buried underground. They are separated from the Yard by locked covers.

Doors: None.

Dampers: None.

Detection: Heat detectors are provided to actuate water spray systems where provided.

Suppression: The yard is provided with a looped, cross connected, underground fire main and fire hydrants. The fire hydrants are spaced approximately every 250 feet with fire equipment houses located every 1000 feet. The transformers and hydrogen storage trailers are provided with fixed automatic water spray systems.

Deviations: The justification for the scupper openings in the manholes for the duct banks is documented in Part VII, Section 2.6.2.2. The justification for using dedicated portable hand-held lantern in lieu of installed battery pack lighting is documented in Part VII, Section 2.7.2.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions, needed for a fire in this area are documented in Part VII, Sections 8.3.55, 56, 64 and 65.

3.70.2 Fire Area 64 Safe Shutdown Analysis by Analysis Volume**3.70.2.1 AV-095**

Room No.	Description:
Yard	Yard

A fire in Analysis Volume 95 could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 containment HVAC and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Onsite power is available. The required mitigating features include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(ONSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(ONSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(ONSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(ONSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-DG-82-A-A	UNIT 1 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
1-DG-82-B-B	UNIT 1 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-DG-82-A-A	UNIT 2 TRAIN A DIESEL GENERATOR	KEY 38 PATH 1
2-DG-82-B-B	UNIT 2 TRAIN B DIESEL GENERATOR	KEY 38 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

AV-095

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-TK-63-RWST	YARD	MONITOR LEVEL	LEVEL GAGE	1440
2-TK-63-RWST	YARD	MONITOR LEVEL	LEVEL GAGE	1440

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-MTR-30-74-A	755-C12	MUST OPERATE	1-HS-30-74A	120
1-MTR-30-77-A	755-C12	MUST OPERATE	1-HS-30-77A	120
1-MTR-30-83-A	755-C12	MUST OPERATE	1-HS-30-83A	120
1-MTR-30-88-A	755-C12	MUST OPERATE	1-HS-30-88A	120
2-MTR-30-74-A	755-C12	MUST OPERATE	2-HS-30-74A	120
2-MTR-30-77-A	755-C12	MUST OPERATE	2-HS-30-77A	120
2-MTR-30-83-A	755-C12	MUST OPERATE	2-HS-30-83A	120
2-MTR-30-88-A	755-C12	MUST OPERATE	2-HS-30-88A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.70.2.2 DUCT BANK A

Duct Bank A runs from the Auxiliary Building 713.0-A1B to Intake Pumping Station A and is analyzed as AV-097.

AV-097

Room No.	Description:
DBIPS-A	Cable Chase from Auxiliary Building 713.0-A1B to IPS-A

A fire in Analysis Volume 97 could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

:

AV-097

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1B-B MOTOR	
1-MTR-30-75-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1B-	
	B MOTOR	
1-MTR-30-78-B	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1D-	
	B MOTOR	
1-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1D-B	
1-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1B-B	
1-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 1B-B	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL	KEY 31 PATH 2
	PUMP 1B-B	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-395-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-396-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-FSV-68-397-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2B-B MOTOR	
2-MTR-30-75-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2B-B	
2-MTR-30-78-B	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2D-B	
2-MTR-30-80-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2D-B	
2-MTR-30-92-B	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2B-B	
2-MTR-62-104-B	CENTRIFUGAL CHARGING	KEY 1 PATH 2
	PUMP 2B-B	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

AV-097

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
1-FCV-67-458-A	737-A1A	MUST OPEN	HANDWHEEL	150

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-FCV-62-69-A	755-C12	MUST CLOSE	1-HS-62-69A	4
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-62-69A	4
0-FCV-70-194-B	755-C12	CLOSE	0-HS-70-194A-B	9
0-FCV-70-197-A	755-C12	CLOSE	0-HS-70-197A-A	9
1-MTR-68-31	755-C12	STOP PUMP	1-HS-68-31AA	9
1-MTR-68-50	755-C12	STOP PUMP	1-HS-68-50AA	9
1-MTR-68-73	755-C12	STOP PUMP	1-HS-68-73AA	9
1-MTR-68-8	755-C12	STOP PUMP	1-HS-68-8AA	9
1-MTR-70-130-B	755-C12	STOP PUMP	1-HS-70-130A-B	9
1-MTR-70-131-A	755-C12	STOP PUMP	1-HS-70-131A-A	9
1-MTR-70-38-B	755-C12	RUN	1-HS-70-38A-B	9
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	9
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	9
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	9
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	9
2-MTR-70-130-B	755-C12	STOP PUMP	2-HS-70-130A-B	9
2-MTR-70-131-A	755-C12	STOP PUMP	2-HS-70-131A-A	9
2-MTR-70-33-B	755-C12	RUN	2-HS-70-33A-B	9

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.70.2.3 DUCT BANK B

Duct Bank B runs from Auxiliary Building 713.0-A1B to Intake Pumping Station B and is analyzed as AV-098.

AV-098

Room No.	Description:
DBIPS-B	Cable Chase from Auxiliary Building 713.0-A1B to IPS-B

A fire in Analysis Volume 98 could potentially affect Unit 1 and Unit 2 systems and components necessary to maintain the long term decay heat removal, containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

AV-098

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

AV-098

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE	KEY 37O
	COOLER 1A-A MOTOR	
1-MTR-30-74-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1A-A MOTOR	
1-MTR-30-77-A	CONTAINMENT LOWER	KEY 37J
	COMPARTMENT COOLER 1C-A MOTOR	
1-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1A-A	
1-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 1C-A	
1-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 1A-A	
1-MTR-70-38-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1B-B	
1-MTR-70-46-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 1A-A	
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL	KEY 31 PATH 1
	PUMP 1A-A	
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-395-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT ISOLATION VALVE	
2-FSV-68-396-B	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-FSV-68-397-A	REACTOR VESSEL HEAD	KEY 48 (HEAD VENT)
	VENT THROTTLE VALVE	
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE	KEY 37O
	COOLER 2A-A MOTOR	
2-MTR-30-74-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2A-A	
2-MTR-30-77-A	REACTOR LOWER	KEY 37J
	COMPARTMENT COOLER	
	FAN 2C-A	
2-MTR-30-83-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2A-A	
2-MTR-30-88-A	CONTROL ROD DRIVE	KEY 37J
	MOTOR COOLER 2C-A	
2-MTR-62-108-A	CENTRIFUGAL CHARGING	KEY 1 PATH 1
	PUMP 2A-A	
2-MTR-70-33-B	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2B-B	
2-MTR-70-59-A	COMPONENT COOLING	KEY 1 PATH 1
	SYSTEM PUMP 2A-A	
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.71 FIRE AREA 65

Fire Area 65 is the Unit 2 Pipe Chase. The area is composed of rooms 676.0-A17, 692.0-A24, and 713.0-A29. Parts of this area go from floor elevation 676.0 to ceiling elevation 756.0 with only metal grating at intermediate elevations.

3.71.1 Room 676.0-A17, 692.0-A24 and 713.0-A29

Room No.	Description:
676.0-A17	Unit 2 Pipe Chase
692.0-A24	Unit 2 Pipe Chase
713.0-A29	Unit 2 Pipe Chase

Fire Loading: The fire severity for these rooms (individually and combined) is classified as insignificant. The in situ combustibles consist of small amounts of lube oil in valves and plastics associated with electrical panels, boxes and lights; anticipated amounts of Radwaste trash and laundry; and miscellaneous other materials.

Compartmentation: These rooms are separated from adjacent fire areas in the Auxiliary Building by reinforced concrete that has a fire resistance of at least 2-hours and from the Unit 2 Reactor Building by reinforced concrete that has a fire resistance of at least 3-hours.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
676.0-A17	SOUTH WALL	Area 1, Room 676.0-A4	II-27A	2-Hours
	WEST WALL	Area 1, Room 676.0-A1	II-27A	2-Hours
		Area 1, Room 676.0-A4	II-27A	2-Hours
		Area 1, Room 676.0-A4A	II-27A	2-Hours
		Area 1, Room 676.0-A14	II-27A	2-Hours
		Area 1, Room 676.0-A15	II-27A	2-Hours
		Area 2-2, Room 676.0-A13	II-27A	2-Hours
		Area 3-2, Room 676.0-A12	II-27A	2-Hours
692.0-A24	NORTH WALL	Area 70, Room 692.0-A25	II-28A	2-Hours
	SOUTH WALL	Area 66, Room 692.0-A21	II-28A	2-Hours
		Area 67, Room 692.0-A22	II-28A	2-Hours
		Area 68, Room 692.0-A23	II-28A	2-Hours
	EAST WALL	Area 70, Room 692.0-A25	II-28A	2-Hours
	WEST WALL	Area 1, Room 692.0-A1	II-28A	2-Hours
		Area 1 Room 692.0-A18	II-28A	2-Hours
		Area 1-1, Room 692.0-A20	II-28A	2-Hours
		Area 1-2, Room 692.0-A19	II-28A	2-Hours
		Area 10, Room 692.0-A14	II-28A	2-Hours
		Area 10, Room 692.0-A15	II-28A	2-Hours
		Area 10, Room 692.0-A16	II-28A	2-Hours
713.0-A29	NORTH WALL	Area 10, Room 729.0-A9	II-29A	2-Hours
		Area 74, Room 737.0-A9	II-30A	2-Hours
		Area 10, Spent Fuel Pit	II-29A	2-Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
	SOUTH WALL	Area 8, Room 713.0-A18	II-29A	2-Hours
		Area 8, Room 713.0-A14	II-29A	2-Hours
		Area 8, Room 713.0-A31	II-29A	2-Hours
		Area 14, Room 737.0-A1	II-30A	2-Hours
		Area 71, Room 713.0-A19	II-29A	2-Hours
	EAST WALL	Area 71, Room 713.0-A19	II-29A	2-Hours
		Area 71-1, Room 713.0-A20	II-29A	2-Hours
		Area 74, Room 737.0-A9	II-30A	2-Hours
		Area 77, Unit 2 Reactor Building	II-29A	3-Hours
	WEST WALL	Area 1, Room 713.0-A28	II-29A	2-Hours
		Area 8, Room 713.0-A14	II-29A	2-Hours
		Area 8, Room 713.0-A15	II-29A	2-Hours
		Area 8, Room 713.0-A16	II-29A	2-Hours
		Area 8, Room 713.0-A17	II-30A	2-Hours
		Area 14, Room 737.0-A1	II-30A	2-Hours
		Area 14, Room 737.0-A8	II-30A	2-Hours
	FLOOR	Area 1, Room 692.0-A1	II-28A & II-29A	2-Hours
		Area 70, Room 692.0-A25	II-28, II-29	2-Hours
	CEILING	Area 14, Room 737.0-A1	II-29A & II-30A	2-Hours
		Area 74, Room 737.0-A9	II-29A & II-30A	2-Hours
		Area 74, Room 737.0-A8	II-29A & II-30A	2-Hours
		Area 75, Room 757.0-A16	II-29A, II-30A, II-31A	2-Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
676.0-A17	A12	Area 1, Room 676.0-A1	II-27A	1.5 Hours
692.0-A24	A45	Area 70, Room 692.0-A25	II-28A	1.5 -Hours
713.0-A29	A92	Area 8, Room 713.0-A14	II-28A	1.5 Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
676.0-A17	2-ISD-31-3852 47A381-391	Area 3-2, Room 676.0-A12	47W920-1 47W866-11	1.5-Hours
	2-ISD-31-3853 47A381-391	Area 2-2, Room 676.0-A13	47W920-1 47W866-11	1.5-Hours
	2-ISD-31-3854 47A381-391	Area 1, Room 676.0-A14	47W920-1 47W866-11	1.5-Hours
	2-ISD-31-3855 47A381-391	Area 1, Room 676.0-A15	47W920-1 47W866-11	1.5-Hours

Dampers:				
Room	Damper/Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A24	2-isd-31-1001 47A920-A8022	Area 1, Room 676.0-A1	47W920-1	3 Hours
	2-isd-31-3856 47A381-394	Area 1-2, Room 692.0-A19	47W920-2 47W866-11	1.5-Hours
	2-isd-31-3857 47A381-394	Area 1-1, Room 692.0-A20	47W920-2 47W866-11	1.5-Hours
	2-isd-31-3858 47A381-394	Area 66, Room 692.0-A21	47W920-2 47W866-11	1.5-Hours
	2-isd-31-3859 47A381-394F	Area 67, Room 692.0-A22	47W920-2 47W866-11	3-Hours
	2-isd-31-3860 47A381-394	Area 68, Room 692.0-A23	47W920-2 47W866-11	1.5-Hours
	2-isd-31-3861 47A381-396F	Area 70, Room 692.0-A25	47W920-2 47W866-11	3-Hours
	2-isd-31-3862 47A381-393F	Area 70, Room 692.0-A25	47W920-2 47W866-11	1.5-Hours
	2-isd-31-2930 47A381-402F	Area 70, Room 692.0-A25	47W866-8 47W920-2, 3	1.5-Hours
713.0-A29	2-isd-31-3927 47A381-408F	Area 71, Room 713.0-A19	47W920-4 47W866-8	1.5-Hours
	2-isd-31-3870 47A381-401F	Area 71-1, Room 713.0-A20	47W920-4 47W866-11	3-Hours
	2-isd-31-3872 47A381-407	Area 14, Room 737.0-A8	47W920-5 47W866-11	1.5-Hours
	2-isd-31-3873 47A381-407	Area 8, Room 713.0-A15	47W866-11 47W920-5	1.5-Hours
	2-isd-31-3874 47A381-407F	Area 8, Room 713.0-A16	47W866-11 47W920-5	3-Hours
	2-isd-31-3875 47A381-432F	Area 65, Room 713.0-A29	47W920-23 47W866-11	3-Hours
	2-isd-31-3876 47A381-409F	Area 65, Room 713.0-A29	47W920-5 47W866-11	3-Hours
	2-isd-31-3877 47A388-398F	Area 14, Room 737.0-A1	47W920-5 47W866-11	1.5-Hours

Detection: Ionization smoke detectors are provided in all three rooms.

Suppression: There is no automatic suppression in these rooms. Fire hose stations are available from adjacent rooms (676.0-A1, 692.0-A1 and 713.0-A1).

Deviations: Non-Rated Hatch in room 676.0-A17 provides access into room 692.0-A27. Justification is documented in Part VII, Section 2.6.3.4. No deviations are applicable for rooms 692.0-A24 and 713.0-A29.

Evaluations: The lack of total area suppression and detection is addressed in Part VII, Section 3.1.9.

3.71.2 Fire Area 65 Safe Shutdown Analysis by Analysis Volume**AV-099**

Room No.	Description:
676.0-A17	Unit 2 Pipe Chase
692.0-A24	Unit 2 Pipe Chase
713.0-A29	Unit 2 Pipe Chase

A fire in Analysis Volume 99 could potentially affect Unit 2 systems and components necessary to maintain the long term decay heat removal, reactor coolant inventory control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of equipment required for safe shutdown. Equipment affected and credited is identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-ISV-62-537	692-A25	CLOSE	HANDWHEEL	120
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-63-93-A	713-A29	OPEN VALVE	HANDWHEEL	1140
2-FCV-63-93-A	772-A16	MUST NOT CLOSE	2-BKR-63-93-A	1140
2-FCV-72-40-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-72-40-A	772-A16	MUST NOT OPEN	2-BKR-72-40-A	1140
2-FCV-74-12-A	772-A16	MUST OPERATE	2-BKR-74-12-A	1140
2-FCV-74-12-A	676-A17	THROTTLE	HANDWHEEL	1140
2-FCV-74-3-A	772-A16	MUST NOT CLOSE	2-BKR-74-3-A	1140
2-FCV-74-3-A	676-A12	OPEN	HANDWHEEL	1140
2-ISV-70-705	692-A25	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
2-FCV-1-18-B	755-C12	CLOSE VALVE	2-HS-1-18A-B	13
2-FCV-62-89	755-C12	CLOSE	2-HIC-62-89A	35
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.72 FIRE AREA 66**3.72.1 Room 692.0-A21**

Description: Charging Pump 2C

Fire Loading: The combustibles consist of lube oil in the flex pump and flex equipment consisting of wood, plastic, nylon, urethane, polyethylene, and rubber. The existing pump and valves have been abandoned in place. The fire severity is classified as low.

Compartmentation: The room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A21	North Wall	Area 1-1, Room 692.0-A20	II-28A	2 Hours
		Area 65, Room 692.0-A24	II-28A	2 Hours
	East Wall	Area 67, Room 692.0-A22	II-28A	2 Hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
	West Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
	Floor	Area 1, Room 676.0-A14	II-27A, II-28A	2 Hours
		Area 1, Room 676.0-A15	II-27A, II-28A	2 Hours
		Area 65, Room 676.0-A17	II-27A, II-28A	2 Hours
	Ceiling	Area 8, Room 713.0-A1	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A17	II-28A, II-29A	2 Hours
		Area 8, Room 713.0-A18	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A21	A41	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A21	2-ISD-31-3858 47A381-394	Area 65, Room 692.0-A24	2-47W866-11 47W920-2	1.5 Hours

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). See note below.

Suppression: An automatic, preaction suppression system is provided in the room (except in the entrance labyrinth). See note below. A standpipe and hose station is available from the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: None.

Note: Due to the insignificant quantity of in situ combustibles and robust rated fire barriers, this room is not provided with full area detection and suppression. The room is a separate fire area which does not contain redundant safe shutdown equipment. Therefore, a fire in this area/room will not endanger other safety related equipment required for safe plant shutdown

3.72.2 Fire Area 66 Safe Shutdown Analysis by Analysis Volume**3.72.2.1 AV-103**

Room No.	Description:
692.0-A21	Charging Pump 2C

A fire in Analysis Volume 103 could not impact safe shutdown. The only safe shutdown components in the room are circuits (routed in conduit) associated with Train B Containment Spray. The Positive Displacement charging pump has been abandoned in place as well as its associated components disabled. The room is constructed of reinforced concrete with a fire resistance rating of 2-hours; has insignificant quantities of combustible material; and is provided with detection and automatic suppression. Shutdown can be achieved by utilizing both Train A and B systems and components without mitigation actions. Offsite power is available. Equipment credited to achieve shutdown is identified below: |

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.73 FIRE AREA 67**3.73.1 Room 692.0-A22**

Description: Charging Pump 2B-B

Fire Loading: The combustibles consist of the lube oil in the charging pump and plastics associated with lights and junction boxes and anticipated amounts of radwaste trash and laundry. The fire severity is classified as low.

Compartmentation: The room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A22	North Wall	Area 65, Room 692.0-A24	II-28A	2 hours
	East Wall	Area 68, Room 692.0-A23	II-28A	2 hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 hours
	West Wall	Area 1, Room 692.0-A1	II-28A	2 hours
		Area 66, Room 692.0-A21	II-28A	2 hours
	Floor	Area 65, Room 676.0-A17	II-27A, II-28A	2 hours
	Ceiling	Area 8, Room 713.0-A1	II-28A, II-29A	2 hours
		Area 8, Room 713.0-A18	II-28A, II-29A	2 hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A22	A42	Area 1, Room 692.0-A1	II-28A	1.5 hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A22	2-ISD-31-3859	Area 65, Room 692.0-A24	2-47W866-11	1.5 hours
	47A381-394		47W920-2	

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). See Evaluations below.

Suppression: An automatic, preaction suppression system is provided in the room (except in the entrance labyrinth). See Evaluations below. A standpipe and hose station is available from the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: The justification for not having full area detection and suppression is documented in Part VII, Section 3.1.1. The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.2.

3.73.2 Fire Area 67 Safe Shutdown Analysis by Analysis Volume**3.73.2.1 AV-104**

Room No.	Description:
692.0-A22	Charging Pump 2B-B

A fire in Analysis Volume 104 could potentially affect systems and components necessary to maintain the Unit 2 reactor coolant inventory control and steam generator inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 2 equipment required for safe shutdown. These features and equipment affected and credited are identified below.

AV-104

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-ISV-62-526	692-A23	MUST OPEN	HANDWHEEL	75
2-ISV-62-527	692-A23	MUST CLOSE	HANDWHEEL	75
2-ISV-62-550	713-A1B	THROTTLE	HANDWHEEL	75

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-62-104-B	755-C12	STOP	2-HS-62-104A-B	35
2-MTR-62-108-A	755-C12	STOP	2-HS-62-108A-A	35
2-MTR-62-108-A	755-C12	MUST START	2-HS-62-108A-A	75
2-PCV-1-12	755-C12	OPEN/CLOSE	2-PIC-1-13A	75
2-PCV-1-5	755-C12	OPEN/CLOSE	2-PIC-1-6A	75

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.74 FIRE AREA 68**3.74.1 Room 692.0-A23**

Description: Charging Pump 2A-A

Fire Loading: The combustibles consist of the lube oil in the charging pump and plastics associated with lights and junction boxes and anticipated amounts of radwaste trash and laundry, and grease, oil, paint, glue, and solvent contained in a storage cabinet. The fire severity is classified as moderate.

Compartmentation: The room is bounded by regulatory fire barriers.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A23	NORTH WALL	Area 65, Room 692.0-A24	II-28A	2 Hours
		Area 70, Room 692.0-A25	II-28A	2 Hours
	EAST AND SOUTH WALL	Area 1, Room 692.0-A1	II-28A	2 Hours
	WEST WALL	Area 67, Room 692.0-A22	II-28A	2 Hours
	CEILING	Area 8, Room 713.0-A1 Area 8, Room 713.0-A18	II-28A, II-29A II-28A, II-29A	2 Hours 2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A23	A43	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A23	2-ISD-31-3860 47A381-394	Area 65, Room 692.0-A24	2-47W866-11 47W920-2	1.5 Hours

Detection: Ionization smoke detectors are provided in the room (except in the entrance labyrinth). See Evaluations below.

Suppression: An automatic, preaction suppression system is provided in the room (except in the entrance labyrinth). See Evaluations below. A standpipe and hose station is available from the adjacent room (Corridor 692.0-A1).

Deviations: None.

Evaluations: The Justification for not having full area suppression and detection is documented in Part VII, Section 3.1.1.

3.74.2 Fire Area 68 Safe Shutdown Analysis by Analysis Volume**3.74.2.1 AV-105**

Room No.	Description:
692.0-A23	Charging Pump 2A-A

A fire in Analysis Volume 105 could potentially affect systems and components necessary to maintain the Unit 2 reactor coolant inventory control and steam generator inventory control functions however no mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. Equipment affected and credited to achieve shutdown are identified below:

AV-105

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.75 FIRE AREA 69**3.75.1 Room 692.0-A26**

Description: Turbine Driven Aux Feedwater Pump 2A-S Room

Fire Loading: The combustibles consist of the lube oil associated with the feedwater pump, turbine oil cooler, 2 sump pumps and 5 valves and various amounts of plastics associated with electrical panels and lights, and rubber hoses. The fire severity is classified as low.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A26	NORTH WALL	Area 70, Room 692.0-A25	II-28A	2 Hours
	SOUTH AND WEST WALL	Area 1, Room 692.0-A1	II-28A	2 Hours
	CEILING	Area 1, Room 692.0-A1	II-28A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A26	A46	Area 1, Room 692.0-A1	II-28A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A26	2-ISD-31-3958 47A381-131F	Area 1, Room 692.0-A1	2-47W866-11 47W920-2	3 Hours
	2-ISD-31-3865 47A381-647F	Area 1, Room 692.0-A1	2-47W866-11 47W920-2	3 Hours
	2-ISD-31-3866 47A381-647F	Area 1, Room 692.0-A1	2-47W866-11 47W920-2	3 Hours
	2-ISD-31-3868 47A381-131F	Area 1, Room 692.0-A1	2-47W866-11 47W920-2	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic, preaction suppression system is provided in the room. A standpipe and hose station is available from the adjacent room (692.0-A1).

Deviations: None.

Evaluations: None.

3.75.2 Fire Area 69 Safe Shutdown Analysis by Analysis Volume**3.75.2.1 AV-107**

Room No.	Description:
692.0-A26	Turbine Driven Aux Feedwater Pump 2A-S Room

A fire in Analysis Volume 107 could potentially affect Unit 2 systems and components used to maintain steam generator inventory control functions by affecting the Unit 2 Turbine-Driven AFW pump. Safe shutdown for Unit 1 and Unit 2 can be achieved through the remaining Train A and B systems and components without mitigating actions. Offsite power is available. These features and equipment affected and credited are identified below:

AV-107

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.76 FIRE AREA 70**3.76.1 Room 692.0- A25**

Description: Unit 2 Penetration Room

Fire Loading: The combustibles located in the room consist of lube oil and grease associated with fans, pumps and valves and plastics associated with electrical panels, boxes and lights, and rubber hoses. The fire severity classification is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
692.0-A25	North Wall	Area 77, Unit 2 Reactor Building	II-28A	3 Hours
	South Wall	Area 1, Room 692.0-A1	II-28A	2 Hours
		Area 65, Room 692.0-A24	II-28A	2 Hours
		Area 69, Room 692.0-A26	II-28A	2 Hours
	West Wall	Area 65, Room 692.0-A24	II-28A	2 Hours
	Ceiling	Area 65, Room 713.0-A29	II-28A, II-29A	2 Hours
		Area 71, Room 713.0-A19	II-28A, II-29A	2 Hours
		Area 71-1, Room 713.0-A20	II-28A, II-29A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
692.0-A25	A44	Area 1, Room 692.0-A1	II-28A	1.5 Hours
	A45	Area 65, Room 692.0-A24	II-28A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
692.0-A25	2-ISD-31-3861 47A381-396F	Area 65, Room 692.0-A24	2-47W866-11 47W920-2, 3	3 Hours
	2-ISD-31-2930 47A381-402F	Area 65, Room 692.0-A24	2-47W866-8 47W920-2, 3	3 Hours
	2-ISD-31-3862 47A381-393F	Area 1, Room 692.0-A1	2-47W866-11 47W920-2	3 Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic, preaction suppression system is provided in the room except for the containment sump valve structure area. A standpipe and hose station is available from the adjacent room (692.0-A1). Pump enclosures lack suppression.

Deviations: None.

Evaluations: The feasibility and reliability evaluation for Unit 2 Operator Manual Action is documented in Part VII, Section 8.3.3.

3.76.2 Fire Area 70 Safe Shutdown Analysis by Analysis Volume**3.76.2.1 AV-106**

Room No.	Description:
692.0-A25	Unit 2 Penetration Rm

A fire in Analysis Volume 106 could potentially affect Unit 2 systems and components necessary to maintain the long term decay heat removal, steam generator inventory control, reactor coolant inventory control and containment HVAC functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features for Unit 2 include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-62-136-B	692-A25	OPEN	HANDWHEEL	75
2-LCV-62-136-B	772-A15	MUST OPEN	2-BKR-62-136-B	75
2-FCV-63-8-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-63-8-A	772-A16	MUST NOT OPEN	2-BKR-63-8-A	1140
2-FCV-72-40-A	713-A29	MUST NOT OPEN	HANDWHEEL	1140
2-FCV-72-40-A	772-A16	MUST NOT OPEN	2-BKR-72-40-A	1140
2-FCV-74-3-A	772-A16	MUST NOT CLOSE	2-BKR-74-3-A	1140
2-FCV-74-3-A	676-A12	OPEN	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FT-70-81A	755-C12	OPEN	2-HS-70-81EA	4
2-FT-70-81B	755-C12	OPEN	2-HS-70-81BA	4
2-FT-70-81D	755-C12	OPEN	2-HS-70-81BA	4
2-FT-70-81E	755-C12	OPEN	2-HS-70-81EA	4
2-MTR-62-104-B	755-C12	MUST STOP	2-HS-62-104A-B	4
2-MTR-62-108-A	755-C12	MUST STOP	2-HS-62-108A-A	4
2-FCV-1-17-A	755-C12	CLOSE VALVE	2-HS-1-17A-A	13
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70
2-MTR-62-104-B	755-C12	MUST START	2-HS-62-104A-B	75
2-PCV-1-12	755-C12	OPEN/CLOSE	2-PIC-1-13A	75
2-PCV-1-5	755-C12	OPEN/CLOSE	2-PIC-1-6A	75
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-84-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-85-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-92-A	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-93-A	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-93-A	755-C12	MUST NOT	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
CLOSE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.77 FIRE AREA 71**3.77.1 Room 713.0-A19 and -A21**

Description: Unit 2 Penetration Rm and Unit 2 RB Access Room

Fire Loading: The combustibles located in the area consist of lube oil and grease associated with air handling units, charcoal in an air exhaust filter assembly, plastics associated with electrical panels, radiation monitors and lights, insulation on cables in cable trays and anticipated quantities of radwaste trash and laundry. The fire severity classification for room 713.0-A19 is moderate, and for room 713.0-A21 is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A19	NORTH WALL	Area 77, Unit 2 Reactor Building	II-29A	3 Hours
	SOUTH WALL	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 71-1, Room 713.0-A20	II-29A	2 Hours
	WEST WALL	Area 65, Room 713.0-A29	II-29A	2 Hours
		Area 71-1, Room 713.0-A20	II-29A	2 Hours
	FLOOR	Area 65, Room 692.0-A24	II-28A, II-29A	2 Hours
713.0-A21	CEILING	Area 70, Room 692.0-A25	II-28A, II-29A	2 Hours
		Area 72, Room 729.0-A11	II-29A, II-30A	2 Hours
		Area 74, Room 737.0-A9	II-29A, II-30A	2 Hours
		Area 74, Room 737.0-A10	II-29A, II-30A	2 Hours
713.0-A21	NORTH	Area 77, Unit 2 Reactor Building	II-29A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A19	A75	Area 1, Room 713.0-A1	II-29A	1.5 Hours
	A76	Area 71-1, Room 713.0-A20	II-29A	1.5 Hours
713.0-A21	A78	Area 77, Unit 2 Reactor Building	II-29A	3 Hours*

* See Note 4 on FPR Fig. II-28

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A19	2-ISD-31-3871 47A381-403F	Area 8, Room 713.0-A1	2-47W866-11 47W920-4	3 Hours
	2-ISD-31-3927 47A381-408F	Area 65, Room 713.0-A29	2-47W866-8 47W920-4	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
	2-ISD-31-3970 47A381-331	Area 71-1, Room 713.0-A20	2-47W866-11 47W920-4	1.5 Hours
	2-ISD-31-3929 47A381-397F	Area 70, Room 692,0-A25	2-47W866-8 47W920-4	3 Hours

Detection: Ionization smoke detectors are provided in the Unit 2 Penetration Rm, 713.0-A19 only.

Suppression: An automatic, preaction suppression system is provided in the Unit 2 Penetration Rm, 713.0-A19 only. A standpipe and hose station is available from the adjacent room (713.0-A1).

Deviations: None.

Evaluations: Justification for the lack of fire dampers in the containment purge air system return and exhaust air duct openings to the annulus is documented in Part VII, Section 3.2 for Room 713.0-A19. The lack of total area suppression and detection is documented in Part VII, Section 3.1.10 for both rooms.

3.77.2 Fire Area 71 Safe Shutdown Analysis by Analysis Volume**3.77.2.1 AV-110**

Room No.	Description:
713.0-A19	Unit 2 Penetration Rm
713.0-A21	Unit 2 RB Access Room

A fire in Analysis Volume 110 could potentially affect Unit 2 systems and components necessary to maintain the long term decay heat removal, containment HVAC, steam generator inventory control and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features for Unit 2 include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-1228-A	757-A23	CLOSE VALVE	2-HS-62-1228-A	70
2-FCV-63-11-B	772-A15	MUST NOT OPEN	2-BKR-63-11-B	1140
2-FCV-63-11-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-63-94-B	772-A15	MUST NOT CLOSE	2-BKR-63-94-B	1140
2-FCV-63-94-B	713-A29	OPEN	HANDWHEEL	1140
2-FCV-72-41-B	713-A29	CLOSE	HANDWHEEL	1140
2-FCV-72-41-B	772-A15	MUST NOT OPEN	2-BKR-72-41-B	1140
2-FCV-74-24-B	772-A15	MUST OPERATE	2-BKR-74-24-B	1140
2-FCV-74-24-B	676-A17	THROTTLE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4
2-FCV-1-52	755-C12	CLOSE VALVE	2-FIC-46-57A	13
2-LCV-62-133-B	755-C12	CLOSE	2-HS-62-133A-B	70

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.78 FIRE AREA 71-1**3.78.1 Room 713.0-A20**

Description: Unit 2 Volume Control Tank (VCT) Room

Fire Loading: The combustibles located in the area consist of hydrogen in the VCT, lube oil associated with valves, plastics associated with electrical panels and lights, and anticipated quantities of radwaste trash and laundry. The fire severity classification is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
713.0-A20	North Wall	Area 71, Room 713.0-A19	II-29A	2 Hours
	East Wall	Area 71, Room 713.0-A19	II-29A	2 Hours
	South Wall	Area 8, Room 713.0-A1	II-29A	2 Hours
		Area 8, Room 713.0-A18	II-29A	2 Hours
	West Wall	Area 65, Room 713.0-A29	II-29A	2 Hours
	Floor	Area 65, Room 692.0-A24	II-28A, II-29A	2 Hours
		Area 70, Room 692.0-A25	II-28A, II-29A	2 Hours
	Ceiling	Area 74, Room 737.0-A9	II-29A, II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
713.0-A20	A76	Area 71-1, Room 713.0-A20	II-29A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
713.0-A20	2-ISD-31-3870 47A381-401F	Area 71-1, Room 713.0-A29	47W920-4 47W866-11	3 Hours
	2-ISD-31-3970 47A381-331	Area 71, Room 713.0-A19	47W920-4 47W866-11	1.5-Hours

Detection: Ionization smoke detectors are provided in the room.

Suppression: An automatic, preaction suppression system is provided in the room (except in the entrance labyrinth). A standpipe and hose station is available from adjacent room (713.0-A1).

Deviations: None

Evaluations: The fire damper in door A76 (Unit 2 VCT room 713.0-A20) is the same configuration as door A63 (Unit 1 VCT room 713.0-A7) which has been reviewed by NRC and documented in Part VII, Section 3.5 of the FPR. Refer to Part VII, Section 3.1.10a for the evaluation of the lack of full suppression. The Unit 2 evaluation for performing a manual action in the room of fire origin is documented in Part VII, Section 8.4.2.

3.78.2 Fire Area 71-1 Safe Shutdown Analysis by Analysis Volume**3.78.2.1 AV-111**

Room No.	Description:
713.0-A20	Unit 2 Volume Control Tank Room

A fire in Analysis Volume 111 could potentially affect Unit 2 systems and components necessary to maintain the reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include manual operation of Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-1228-A	757-A23	CLOSE VALVE	2-HS-62-1228-A	70
2-LCV-62-133-B	713-A20	CLOSE	HANDWHEEL	70
2-LCV-62-133-B	772-A15	MUST CLOSE	2-BKR-62-133-B	70
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-62-136-B	755-C12	OPEN	2-HS-62-136A-B	4

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.79 FIRE AREA 72**3.79.1 Room 729.0-A11 and 737.0-A10**

Room No.	Description:
729.0-A11	Unit 2 South Main Steam Valve Rm
737.0-A10	Air Lock

Fire Loading: The combustibles located in the area consist of lube oil associated with valves and plastics associated with electrical panels and lights. The fire severity classification for both rooms is insignificant.

Compartmentation: The rooms are bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A11	NORTH WALL	Area 77, Unit 2 Reactor Building	II-30A	3 Hours
	SOUTH WALL	Area 15-2, Room 737.0-A12	II-30A	2 Hours
		Area 31, Room 757.0-A24	II-31A	2 Hours
		Area 41, Room 772.0-A11	II-32A	2 Hours
	WEST WALL	Area 74, Room 737.0-A9	II-30A	2 Hours
		Area 75, Room 757.0-A16	II-31A	2 Hours
		Area 75, Room 782.0-A3	II-32A	2 Hours
	FLOOR	Area 71, Room 713.0-A19	II-29A, II-30A	2 Hours
737.0-A10	NORTH WALL	Area 77, Unit 2 Reactor Building	II-30A	3 Hours
	SOUTH WALL	Area 15-2, Room 737.0-A12	II-30A	2 Hours
	WEST WALL	Area 74, Room 737.0-A9	II-30A	2 Hours
	CEILING	Area 74, Room 737.0-A9	II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A10	A130	Area 74, Room 737.0-A9	II-30A	1.5 Hours

Dampers: None

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are available from Room 737.0-A1B. |

Deviations: The justification of compliance with III.G.1 with a FHA is in Part VII, Section 2.9.6. |

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.11. |

3.79.2 Fire Area 72 Safe Shutdown Analysis by Analysis Volume**3.79.2.1 AV-113**

Room No.	Description:
729.0-A11	Unit 2 South Main Steam Valve Rm
737.0-A10	Air Lock

The in situ combustible loading for AV-113 consists of small quantities of lubricants in several valves and miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes, and lighting. The total combustible loading results in a fire severity classification of Insignificant. The area is designated a Combustible Control Zone which in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The area radiation monitors are not considered a significant ignition source because they contain insignificant quantities of combustible material and their power supply is adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 729.0-A11 or 737.0-A10 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.80 FIRE AREA 73

Fire Area 73 consists of several rooms within the Auxiliary Building associated with the Unit 2 North Main Steam Valve Room and the Unit 2 Additional Equipment Building.

3.80.1 Room 729.0-A10

Room No.	Description:
729.0-A10	Unit 2 North Main Steam Valve Rm

Fire Loading: The combustibles located in the room consist of lube oil associated with valves and plastics associated with electrical panels and lights. The fire severity classification is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A10	SOUTH WALL	Area 77, Unit 2 Reactor Building	II-38A	3 Hours
		Area 73, Room 729.0-A13	II-38A	3 Hours
	WEST WALL	Area 73, Room 729.0-A13	II-38A	3 Hours

Doors: None

Dampers: None

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are available from Room 729.0-A15.

Deviations: The justification of compliance with III.G.1 with a FHA is in Part VII, Section 2.9.5.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.12.

3.80.2 Room 729.0-A13

Room No.	Description:
729.0-A13	Unit 2 North Main Steam Valve Instrument Room B

Fire Loading: The combustibles located in the room consist of plastics associated with electrical panels and lights. The fire severity classification is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.0-A13	NORTH WALL	Area 73, Room 729.0-A10	II-38A	3 Hours
	EAST WALL	Area 73, Room 729.0-A10	II-38A	3 Hours
	SOUTH WALL	Area 77, Unit 2 Reactor Building	II-38A	3 Hours
	CEILING	Area 73, Room 729.0-A10	II-38A	3 Hours

Doors: None.

Dampers: None

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are available from the Unit 2 Additional Equipment Room Building 729.0-A15.

Deviations: The justification of compliance with III.G.1 with a FHA is in Part VII, Section 2.9.8.

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.12.

3.80.3 Room 729.5-A17

Room No.	Description:
729.5-A17	Unit 2 Shield Bldg Vent Rad Monitor Room

Fire Loading: The combustibles located in the room consist of plastics associated with electrical panels and lights. The fire severity classification is insignificant.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
729.5-A17	SOUTH WALL	Area 77, Unit 2 Reactor Building	II-38A	3 Hours

Doors: None

Dampers: None

Detection: None.

Suppression: No automatic suppression is provided. Standpipe and hose stations are available from the U2-AEB 729.0-A15.

Deviations: None

Evaluations: The lack of total area suppression and detection is documented in Part VII, Section 3.1.12.

3.80.4 Unit 2 Additional Equipment Building (U2 AEB)

Description: U2-AEB (Rooms 729.0-A15, 737.0-A14, and 763.5-A2).

Fire Loading: The combustibles located in the rooms consist of plastics associated with electrical panels and lights, and flex equipment. The fire severity classification for room 737.0-A14 is insignificant and rooms 729.0-A15 and 763.5-A2 is low.

Compartmentation: The room is bounded by regulatory fire barriers constructed of reinforced concrete.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
U2 AEB BLDG. (ALL ELEV.)	EAST WALL	Area 77, Unit 2 Reactor Building	II-38A	3 Hours
	SOUTH WALL	Area 10, Room 729.0-A9	II-30A, II-38A	3 Hours
		Area 74, Room 737.0-A9	II-30A, II-38A	3 Hours
		Area 73, Room 737.0-A14	II-30A, II-38A	3 Hours
		Area 75, Room 757.0-A14	II-31A, II-38A	3 Hours
		Area 75, Room 782.0-A4	II-32A, II-38A	3 Hours
	WEST WALL	Area 10, Room 729.0-A6	II-30A, II-38A	3 Hours
		Area 10, Room 741.5	II-38A	3 Hours
		Area 10, Room 757.0-A13	II-31A, II-38A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A14	A192	Area 74, Room 737.0-A9	II-30A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
763.5-A2	2-ISD-31-2990	Area 10, Room 757.0A13	47W920-7	3 Hours
	47A381-528F		47W866-8	

Detection: Ionization smoke detectors are provided in the building on the 729.0 and 763.5 elevations. There are no detectors in room 737.0-A14.

Suppression: No automatic suppression is provided. Standpipe and hose stations are available in Room 729.0-A15. |

Deviations: The justification of compliance with III.G.1 with a FHA for rooms 729.0-A15 and 763.5-A2 is in Part VII, Section 2.9.9. No deviations are applicable for Room 737.0-A14. |

Evaluations: None.

3.80.5 Fire Area 73 Safe Shutdown Analysis by Analysis Volume**3.80.5.1 AV-112**

Room No.	Description:
729.0-A13	Unit 2 North Main Steam Valve Instrument Room B
729.5-A17	Unit 2 Shield Bldg Vent Rad Monitor Room
729.0-A15	U2-AEB
737.0-A14	Air Lock
763.5-A2	U2-AEB

A fire in Analysis Volume 112 could potentially affect systems and components necessary to maintain the Unit 2 steam generator inventory control and secondary side isolation functions. The Appendix R required circuits that route through room 729.5-A17 are all routed in conduits that are embedded in the floor and are not affected by a postulated fire in the room; therefore, a fire in this room does not affect any required FSSD function. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 729.0-A13, 729.0-A15 or 763.5-A2 per deviation documented in Part VII, Section 2.9.

Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both Train A and B system components. Offsite power is available. Safe shutdown for both units can be achieved without mitigating actions. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.80.5.2 AV-112A

Room No.	Description:
729.0-A10	Unit 2 North Main Steam Valve Rm

The in situ combustible loading for AV-112A consists of small quantities of lubricants in several valves and miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes, and lighting. The total combustible loading results in a fire severity classification of Insignificant. The area is designated a Combustible Control Zone which in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The area radiation monitors are not considered a significant ignition source because they contain insignificant quantities of combustible material and their power supply is adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in room 729.0-A10 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.81 FIRE AREA 74**3.81.1 Rooms 737.0-A9 and -A16**

Room No.	Description:
737.0-A9	Ventilation and Purge Air Room (Subdivided into 737.0-A9S, -A9M, -A9N)
737.0-A16	Unit 2 Gross Failed Fuel Detect. Room

Fire Loading: The combustibles in the rooms consist of lube oil in valves, and ERFBS Thermo-Lag, charcoal filter, rubber hoses, and plastic associated with electrical panels and lights. The fire severity classification for room 737.0-A9 is low and for room 737.0-A16 is insignificant.

Compartmentation: The area is enclosed by regulatory fire barriers constructed of reinforced concrete. Room 737.0-A16 is within Room 737.0-A9.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
737.0-A9	North Wall	Area 73, Room 729.0-A15	II-30A, II-38A	3 Hours
		Area 73, Room 737.0-A14	II-30A	3 Hours
	East Wall	Area 72, Room 729.0-A11	II-30A	2 Hours
		Area 72, Room 737.0-A10	II-30A	2 Hours
		Area 73, Room 737.0-A14	II-30A	3 Hours
		Area 77, UNIT 2 RB	II-30A	3 Hours
	South Wall	Area 14, Room 737.0-A1	II-30A	2 Hours
		Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
	West Wall	Area 10, Room 737.0-A1	II-30A	2 Hours
		Area 10, Room 713.0-A15	II-30A	2 Hours
		Area 10, Room 729.0-A6	II-30A, II-38A	2 Hours
		Area 10, Spent Fuel Pit	II-30A	2 Hours
		Area 65, Room 713.0-A29	II-30A	2 Hours
	Floor	Area 10, Room 729.0-A9	II-30A	2 Hours
		Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours
		Area 71, Room 713.0-A19	II-29A, II-30A	2 Hours
		Area 71-1, Room 713.0-A20	II-29A, II-30A	2 Hours
	Ceiling	Area 75, Room 757.0-A14	II-30A, II-31A	2 Hours
		Area 75, Room 757.0-A16	II-30A, II-31A	2 Hours
		Area 76, Room 757.0-A15	II-30A, II-31A	3 Hours
737.0-A16	Floor	Area 65, Room 713.0-A29	II-29A, II-30A	2 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
737.0-A9	A129	Area 14, Room 737.0-A1	II-30A	1.5 Hours
	A130	Area 72, Room 737.0-A10	II-30A	1.5 Hours
	A131	Area 14, Room 737.0-A1	II-30A	1.5 Hours
	A192	Area 73, Room 737.0-A14	II-30A	1.5 Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
737.0-A9	2-ISD-31-3879 47A381-431F	Area 14, Room 737.0-A1	47W920-5 47W866-11	3-Hours
	2-ISD-31-3880 47A381-405F	Area 14, Room 737.0-A1	47W920-5 47W866-11	3-Hours
	2-ISD-31-3881 47A381-405F	Area 14, Room 737.0-A1	47W920-5 47W866-11	3-Hours
	0-ISD-31-3833 47A381-426F	Area 14, Room 729.0-A6	47W920-6 47W866-10	3-Hours
	0-ISD-31-3834 47A381-425	Area 14, Room 737.0-A1	47W920-5 47W866-11	3-Hours
	0-ISD-31-3835 47A381-446F	Area 74, Room 757.0-A14	47W920-23 47W866-10	3-Hours
	2-ISD-31-3876 47A381-409F	Area 65, Room 713.0-A29	47W920-5 47W866-11	3 Hours
	2-ISD-31-3875 47A381-432F	Area 65, Room 713.0-A29	47W920-23 47W866-11	3 Hours
	2-ISD-31-3883 47A381-405F	Area 75, Room 737.0-A14	47W920-23 47W866-11	3-Hours

Detection: Ionization smoke detectors are provided in the area (see note below).

Suppression: Automatic preaction sprinkler system is provided in the area (see note below). Standpipe and hose stations are available from adjacent room (737.0-A1).

Note: Room 737.0-A16 is a small room inside room 737.0-A9 (see FPR Figure II-30A) and is of reinforced masonry construction. There are no detectors inside the room, but there is a sprinkler head. This sprinkler head is on the same suppression system piping that protects room 737.0-A9 and is activated by the detection system in 737.0-A9. This small room has an insignificant amount of combustibles and has no safe shutdown equipment or cables.

Deviations: HVAC ducts (spiral wound pipe ducts) penetrate two of the required fire barriers, but are not provided with fire dampers. The justification for these undampened HVAC penetrations is documented in Part VII, Section 2.6.1 of the FPR. Intervening combustibles are present in Room 737.0-A9. The justification for intervening combustibles, such as cables in

trays and thermo-lag, is documented in Part VII, Section 2.4. No deviations are applicable for Room 737.0-A16.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.15, 16, 17, 63 and 64 for room 737.0-A9. No evaluations are applicable to Room 737.0-A16.

3.81.2 Fire Area 74 Safe Shutdown Analysis by Analysis Volume

3.81.2.1 AV-114

Room No.	Description:
737.0-A9	Ventilation and Purge Air Room
737.0-A16	Unit 2 Gross Failed Fuel Detect. Room

AV-114 is a large area and is divided into three analysis volumes AV-114M, AV-114N and AV-114S.

3.81.2.2 AV-114M

Room No.	Description:
737.0-A9M	Middle portion of the room extending from 2 feet north of column line V to 2'-6"
737.0-A16	south of the Unit 2 Reactor Building center line.

A fire in Analysis Volume 114M could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control functions and Unit 2 reactor coolant inventory control function. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap for selected Unit 2 cables and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

AV-114M

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-3-148	755-C12	MODULATE VALVE	2-LIC-3-148A	13
2-LCV-3-171	755-C12	MODULATE VALVE	2-LIC-3-171A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2NM2333D	2-NI-92-138, 2-NI-92-131-D	NEUTRON SOURCE RANGE INDICATOR, SOURCE RANGE DETECTOR AND INDICATION
2PM1008F	2-PT-68-323-F	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2PM1041D	2-LI-68-339A-D	PZR LEVEL INDICATOR
2PM1086F	2-LI-68-320-F	PZR LEVEL INDICATOR
2PM1241G	2-LI-3-98A	#3SG LEVEL INDICATOR (WR)
2PM1401F	2-LI-3-39	SG 1 NARROW RANGE LEVEL
2PM1474D	2-PI-1-9A, 2-PT-1-2A-D, 2-PT-1-9A-D	#2SG PRESSURE INDICATION, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PM1595D	2-PI-1-20A, 2-PT-1-20A-D, 2-PT-1-27A-D	#3SG PRESSURE INDICATION, LOOP 3

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM1840F	2-PDT-30-43-F, 2-PDI-30-43-J	MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, U2 CONTAINMENT PRESSURE INDICATION
2PM1854D	2-PDT-30-45-D, 2-PDI-30-45-J	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, U2 CONTAINMENT PRESSURE INDICATION
2PM4781D	2-FCV-63-72-A, 2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP A-A, CONTAINMENT SUMP TO RHR PUMP B-B
2PM4801F	2-FCV-63-72-A, 2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP A-A, CONTAINMENT SUMP TO RHR PUMP B-B
2PM591D	2-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
2PM686D	2-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
2PM778D	2-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
2PM871D	2-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
2PM950D	2-PT-68-340-D	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP

3.81.2.3 AV-114N

Room No.	Description:
737.0-A9N	North portion of room 737.0-A9 extending from 2 feet north of room 737.0-A16 to the north wall of room 737.0-A9.

A fire in Analysis Volume AV-114N could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control functions and Unit 2 reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap for selected Unit 2 cables and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

AV-114N

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-LCV-3-148	755-C12	MODULATE VALVE	2-LIC-3-148A	13
2-LCV-3-171	755-C12	MODULATE VALVE	2-LIC-3-171A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2NM2333D	2-NI-92-138, 2-NI-92-131-D	NEUTRON SOURCE RANGE INDICATOR, SOURCE RANGE DETECTOR AND INDICATION
2PM1008F	2-PT-68-323-F	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2PM1041D	2-LI-68-339A-D	PZR LEVEL INDICATOR
2PM1086F	2-LI-68-320-F	PZR LEVEL INDICATOR
2PM1241G	2-LI-3-98A	#3SG LEVEL INDICATOR (WR)
2PM1401F	2-LI-3-39	SG 1 NARROW RANGE LEVEL
2PM1474D	2-PI-1-9A, 2-PT-1-2A-D, 2-PT- 1-9A-D	#2SG PRESSURE INDICATION, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PM1595D	2-PI-1-20A, 2-PT-1-20A-D, 2- PT-1-27A-D	#3SG PRESSURE INDICATION, LOOP 3

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM1840F	2-PDT-30-43-F, 2-PDI-30-43-J	MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, U2 CONTAINMENT PRESSURE INDICATION
2PM1854D	2-PDT-30-45-D, 2-PDI-30-45-J	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, U2 CONTAINMENT PRESSURE INDICATION
2PM4781D	2-FCV-63-72-A, 2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP A-A, CONTAINMENT SUMP TO RHR PUMP B-B
2PM4801F	2-FCV-63-72-A, 2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP A-A, CONTAINMENT SUMP TO RHR PUMP B-B
2PM591D	2-TI-68-1	RCS LOOP 1 HOT LEG TEMPERATURE
2PM686D	2-TI-68-24A	RCS LOOP 2 HOT LEG TEMPERATURE
2PM778D	2-TI-68-18	RCS LOOP 1 COLD LEG TEMPERATURE
2PM871D	2-TI-68-41	RCS LOOP 2 COLD LEG TEMPERATURE
2PM950D	2-PT-68-340-D	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP

3.81.2.4 AV-114S

Room No.	Description:
737.0-A9S	South portion of room 737.0-A9 extending from column line U to column line W.

A fire in Analysis Volume AV-114S could potentially affect systems and components necessary to maintain the Unit 1 and Unit 2 steam generator inventory control and Unit 2 reactor coolant pressure control, containment HVAC, secondary side isolation, long term decay heat removal and reactor coolant inventory control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features include providing fire wrap to selected Unit 2 cables to preclude damage in the event of a fire and manual operation of Unit 1 and Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FSV-77-2562	755-C12	CLOSE	2-HS-3-174A	13
2-LCV-3-148	755-C12	MODULATE VALVE	2-LIC-3-148A	13
2-LCV-3-171	755-C12	MODULATE VALVE	2-LIC-3-171A	13

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM1041D 2PM1474D	2-LI-68-339A-D 2-PI-1-9A, 2-PT-1-2A-D, 2-PT-1-9A-D	PZR LEVEL INDICATOR #2SG PRESSURE INDICATION, LOOP 1 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 2 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PM1595D	2-PI-1-20A, 2-PT-1-20A-D, 2-PT-1-27A-D	#3SG PRESSURE INDICATION, LOOP 3 MAIN STEAM PRESSURE INSTRUMENTATION LOOP, LOOP 4 MAIN STEAM PRESSURE INSTRUMENTATION LOOP
2PM1854D	2-PDT-30-45-D, 2-PDI-30-45-J	U2 CONTAINMENT PRESSURE INSTRUMENTATION LOOP, U2 CONTAINMENT PRESSURE INDICATION
2PM4781D	2-FCV-63-72-A, 2-FCV-63-73-B	CONTAINMENT SUMP TO RHR PUMP A-A, CONTAINMENT SUMP TO RHR PUMP B-B
2PM591D	2-TI-68-1	RCS LOOP 1 HOT LEG

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PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM595E	2-TI-68-43	TEMPERATURE RCS LOOP 3 HOT LEG
2PM686D	2-TI-68-24A	TEMPERATURE RCS LOOP 2 HOT LEG
2PM691E	2-TI-68-65	TEMPERATURE RCS LOOP 4 HOT LEG
2PM778D	2-TI-68-18	TEMPERATURE RCS LOOP 1 COLD LEG
2PM784E	2-TI-68-60	TEMPERATURE RCS LOOP 3 COLD LEG
2PM871D	2-TI-68-41	TEMPERATURE RCS LOOP 2 COLD LEG
2PM876E	2-TI-68-83	TEMPERATURE RCS LOOP 4 COLD LEG
2PM950D	2-PT-68-340-D	TEMPERATURE U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP

3.82 FIRE AREA 75**3.82.1 Rooms 757.0-A14 and -A16 and 782.0-A3 and -A4**

Room No.	Description:
757.0-A14	Unit 2 RB Access Room
757.0-A16	Emergency Gas Treatment Filter Room
782.0-A3	Unit 2 CRD Equipment Room
782.0-A4	Pressurizer Heater Transformer Room 2

Fire Loading: The combustibles in the rooms consist of plastics associated with electrical transformers, panels and lights, oil in the transformers, and insulation on cables in trays. The fire severity classification for room 757.0-A14 is low. The fire severity classification for the other three rooms is moderate.

Compartmentation: The area is enclosed by regulatory fire barriers constructed of reinforced concrete. The floor slab separating Room 782.0-A3 from Room 757.0-A16 has an equipment hatch that is covered with a non-fire rated steel cover, two HVAC ducts without fire dampers, and a stairway entry enclosure that is a non-regulatory 2-hour rated fire barrier. The floor slab separating Room 782.0-A4 from Room 757.0-A14 also has a stairway entry enclosure that is a non-regulatory 2-hour rated fire barrier.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A14	NORTH WALL	Area 73, Room 729.0-A15 Area 73, Room 763.5-A2	II-31A, II-38A II-31A, II-38A	3 Hours 3 Hours
	EAST WALL	Area 77, Unit 2 Reactor Building	II-31A	3 Hours
	SOUTH WALL	Area 76, Room 757.0-A15	II-31A	3 Hours
	WEST WALL	Area 10, Room 757.0-A13	II-31A	2 Hours
	FLOOR	Area 10, Room 737.0-A9	II-31A, II-31A	2 Hours
	CEILING	Area 75, Room 782.0-A4	II-31A, II-32A	2 Hours
757.0-A16	NORTH WALL	Area 76, Room 757.0-A15 Area 77, Unit 2 Reactor Building	II-31A II-31A	3 Hours 3 Hours
	EAST WALL	Area 72, Room 729.0-A11	II-31A	2 Hours
	SOUTH WALL	Area 31, Room 757.0-A17 Area 31, Room 757.0-A24	II-31A II-31A	2 Hours 2 Hours
	WEST WALL	Area 10, Room 757.0-A13	II-31A	2 Hours
	FLOOR	Area 65, Room 713.0-A29 Area 74, Room 737.0-A9	II-31A II-31A	2 Hours 2 Hours
	CEILING	Area 75, Room 782.0-A3	II-31A	2 Hours

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
782.0-A3	NORTH WALL	Area 77, Unit 2 Reactor Building	II-32A	3 Hours
	EAST WALL	Area 72, Room 729.0-A11	II-32A	2 Hours
	SOUTH WALL	Area 10, Room 772.0-A9	II-32A	2 Hours
		Area 40, Room 772.0-A10	II-32A	2 Hours
		Area 41, Room 772.0-A11	II-32A	2 Hours
	WEST WALL	Area 10, Room 757.0-A13	II-32A	2 Hours
782.0-A4	FLOOR	Area 75, Room 757.0-A16	II-31A, II-32A	2 Hours
		Area 76, Room 757.0-A15	II-31A, II-32A	3 Hours
	NORTH WALL	Area 73, Room 763.5-A2	II-32A, II-38A	3 Hours
	EAST WALL	Area 77, Unit 2 Reactor Building	II-32A	3 Hours
	WEST WALL	Area 10, Room 757.0-A13	II-32A	2 Hours
	FLOOR	Area 75, Room 757.0-A14	II-31A, II-32A	2 Hours
		Area 76, Room 757.0-A15	II-31A, II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
757.0-A14	A157	Area 10, Room 757.0-A13	II-32A	1.5 Hours*
	A166	Area 77, Unit 2 Reactor Building	II-32A	3 Hours*
	A167	Area 77, Unit 2 Reactor Building	II-32A	3 Hours*
757.0-A16	A158	Area 10, Room 757.0-A13	II-32A	1.5 Hours*

* See Note 4 on FPR Fig. II-28

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
757.0-A14	0-ISD-31-3836 47A381-433F	Area 10, Room 757.0-A13	47W920-7 47W866-10	3-Hours
	0-ISD-31-3835 47A381-446F	Area 74, Room 737.0-A9	47W920-23 47W866-10	3-Hours
757.0-A16	2-ISD-31-3884 47A381-438F	Area 75, Room 757.0-A16	47W866-11 47W920-8	3- Hours
	2-ISD-31-3885 47A381-439F	Area 10, Room 757.0-A13	47W920-8 47W866-11	3-Hours

Dampers:				
Room	Damper Mark Number	Adjacent Area/Room	Drawing Reference	Damper Rating
782.0-A3	2-ISD-31-3239 47A381-256F	Area 10, Room 757.0-A13	47W920-9 47W866-11	3-Hours
	2-ISD-31-3240 47A381-253	Area 10, Room 757.0-A13	47W920-10 47W866-11	1.5-Hours

Detection: Ionization smoke detectors are provided in all four of the rooms.

Suppression: Automatic preaction sprinkler systems are provided in all four of the rooms except for the stairwell penthouse area in Room 757.0-A16. A standpipe and hose station is available from Rooms 782.0-A3 and 757.0-A16.

Deviations: The justification of compliance with III.G.1 with a FHA for room 757.0-A14 is in Part VII, Section 2.9.11. No deviations are applicable for Rooms 757.0-A16, 783.0-A3 and - A4.

Evaluations: The feasibility and reliability evaluations for Unit 2 Operator Manual Actions are documented in Part VII, Sections 8.3.26, 53, 54, 63 and 64. No evaluations are applicable to Room 757.0-A14.

3.82.2 Fire Area 75 Safe Shutdown Analysis by Analysis Volume**3.82.2.1 AV-115**

Room No.	Description:
757.0-A16	Emergency Gas Treatment Filter Room
782.0-A3	Unit 2 CRD Equipment Room
782.0-A4	Pressurizer Heater Transformer Room 2

A fire in Analysis Volume AV-115 could potentially affect systems and components necessary to maintain the Unit 1 steam generator inventory control and containment HVAC functions and Unit 2 steam generator inventory control, long term decay heat removal, containment HVAC, reactor coolant inventory control, reactor pressure control and secondary side isolation functions.

Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Offsite power is available. The required mitigating features for Unit 1 and Unit 2 include manual operation of equipment required for safe shutdown. These features and equipment credited are identified below:

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B- B MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D- B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1

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MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-85-1A	TB	MUST BE TRIPPED	2-BKR-85-A	15
2-MTR-85-1B	TB	MUST BE TRIPPED	2-BKR-85-B	15
1-PCV-1-12	757-A2	OPEN/CLOSE	1-ISIV-1-405E2	60
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	60
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	60
2-FCV-74-2-B	2RA4	MUST OPEN	HANDWHEEL	120
2-FCV-74-2-B	772-A15	MUST OPEN	2-BKR-74-2-B	120
2-FCV-63-1-A	692-A24	CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-103	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-104	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-105	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-106	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-107	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-108	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-109	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-110	755-C12	MUST CLOSE	2-HS-1-103A OR 2-HS-1-103B	0
2-FCV-1-111	755-C12	MUST CLOSE	2-HS-1-103A OR	0

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-1-112	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-113	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-114	755-C12	MUST CLOSE	2-HS-1-103B 2-HS-1-103A OR	0
2-FCV-1-275	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-277	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-279	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-284	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-291	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-298	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-36	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-37	755-C12	MUST CLOSE	2-HS-46-9A	0
2-FCV-1-43	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-44	755-C12	MUST CLOSE	2-HS-46-36A	0
2-FCV-1-61	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-62	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-64	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-65	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-67	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-68	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-70	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-71	755-C12	MUST CLOSE	2-HS-47-24	0
2-FCV-1-75	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-77	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-79	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-84	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-91	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-1-98	755-C12	MUST CLOSE	2-XX-47-3000	0
2-FCV-3-48	755-C12	CLOSE VALVE	2-FIC-3-48	0
2-FCV-3-48A	755-C12	CLOSE VALVE	2-LIC-3-48A	0
2-FCV-3-90	755-C12	CLOSE VALVE	2-FIC-3-90	0
2-FCV-3-90A	755-C12	CLOSE VALVE	2-LIC-3-90A	0
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	11
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	12
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	12
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	12
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	12
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	12
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	12

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	12
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	12
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
2-FCV-30-15-B	755-C12	DE-ENERGIZE	2-HS-30-15-B	60
2-FCV-30-16-B	755-C12	DE-ENERGIZE	2-HS-30-16-B	60
2-FCV-30-19-B	755-C12	DE-ENERGIZE	2-HS-30-19-B	60
2-FCV-30-37-B	755-C12	DE-ENERGIZE	2-HS-30-37-B	60
2-FCV-30-50-B	755-C12	DE-ENERGIZE	2-HS-30-8-B	60
2-FCV-30-53-B	755-C12	DE-ENERGIZE	2-HS-30-9-B	60
2-FCV-30-57-B	755-C12	DE-ENERGIZE	2-HS-30-15-B	60
2-FCV-30-58-B	755-C12	DE-ENERGIZE	2-HS-30-19-B	60
2-FCV-30-8-B	755-C12	DE-ENERGIZE	2-HS-30-8-B	60
2-FCV-30-9-B	755-C12	DE-ENERGIZE	2-HS-30-9-B	60
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCO-30-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCO-30-90-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-84-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-85-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-92-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-112	120
1-TCV-67-93-A	755-C12	MUST NOT CLOSE	1-HS-32-110A-A	120
2-TCO-30-82-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCO-30-82-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCO-30-94-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCO-30-94-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-100-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-100-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-101-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-TCV-67-101-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120
2-TCV-67-108-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	120
2-TCV-67-109-B	755-C12	MUST NOT CLOSE	2-HS-32-112A	120

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.82.2.2 AV-116

Room No.	Description:
757.0-A14	Unit 2 RB Access Room

The in situ combustible loading for AV-116 consists of insulation on cables routed in two cable trays (accounts for 96% of the total combustibles in the room), small quantities of plastics associated with lighting units, control and junction boxes, and the fire hose. The total combustible loading results in a fire severity classification of Low. The lighting units, control and junction boxes are not credible ignition sources (electrical power to these devices is low voltage (120VAC) and these circuits are properly protected with fuses/breakers). The room is provided with automatic detection and suppression. NPG-SPP-18.4.7, Control of Transient Combustibles, and NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) provide assurances that transient combustibles and ignition sources (cutting, grinding, welding, etc.) will not be introduced into the room without adequate compensatory measures. Since there are no concentration of combustibles other than the cables in the trays and no credible ignition sources, it is concluded that the only damage from a postulated fire from a lighting unit, control or junction box would be to that individual device. Therefore, it is concluded that no credible fire in this room could result in damage to equipment that would require an emergency shutdown of either unit. Any postulated fire would be quickly detected by the area wide smoke detection system and the plant would quickly respond in accordance with normal plant procedure for a fire (0-AOI-30.1 - Part II, Reference 4.2.59). Since there is no impact to fire safe shutdown Operator Manual Actions (OMA's) are not required to mitigate fire in room 757.0-A14 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.83 Fire Area 76**3.83.1 Room 757.0-A15**

Description: Unit 2 RB Equipment Hatch

Fire Loading: The combustibles in the room consist of plastics associated with the lights and insulation on cables in trays. The fire severity classification is low.

Compartmentation: The room is of reinforced concrete construction with a fire resistive rating of 3-hours. During power operations the opening to Room 757.0-A13 is closed with concrete plugs that provide an equivalent fire resistive rating of 3-hours.

Barriers:				
Room	Direction	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
757.0-A15	North Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
		Area 75, Room 757.0-A14	II-31A	3 Hours
	South Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
		Area 75, Room 757.0-A16	II-31A	3 Hours
	West Wall	Area 10, Room 757.0-A13	II-31A	3 Hours
	Floor	Area 14, Room 737.0-A1	II-30A, II-31A	3 Hours
		Area 74, Room 737.0-A9	II-30A, II-31A	3 Hours
		Area 74, Room 737.0-A9	II-30A, II-31A	3 Hours
	Ceiling	Area 75, Room 782.0-A3	II-31A, II-32A	3 Hours
		Area 75, Room 782.0-A4	II-31A, II-32A	3 Hours

Doors: None.

Dampers: None.

Detection: Ionization smoke detectors are provided in the room.

Suppression: Automatic preaction sprinkler system is provided in the room except for area near blast door. Standpipe and hose stations are available from the adjacent room (757.0-A13) when the plugs are removed (i.e., during outages). This room is not accessible during power operations.

Deviations: The justification of compliance with III.G.1 with a FHA is in Part VII, Section 2.9.12.

Evaluations: The justification for the relaxation in surveillance frequency for the sprinklers, smoke detectors and penetrations seals is documented in Part VII, Section 6.1.1.

3.83.2 Fire Area 76 Safe Shutdown Analysis by Analysis Volume**3.83.2.1 AV-096**

Room No.	Description:
757.0-A15	Unit 2 RB Equipment Hatch

The in situ combustible loading for AV-96 consists of insulation on cables routed in cable trays (accounts for 99% of the total combustibles in the room) and small quantities of plastics associated with lighting units,. The total combustible loading results in a fire severity classification of Low. The lighting units are not credible ignition sources and the room is provided with automatic detection and suppression. NPG-SPP-18.4.7, Control of Transient Combustibles, and NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) provide assurances that transient combustibles and ignition sources (cutting, grinding, welding, etc.) will not be introduced into the room without adequate compensatory measures. Since there are no concentration of combustibles other than the cables in the trays and no credible ignition sources, it is concluded that the only damage from a postulated fire from a lighting unit would be to that individual device. Therefore, it is concluded that no credible fire in this room could result in damage to equipment that would require an emergency shutdown of either unit. Any postulated fire would be quickly detected by the smoke detection system and the plant would quickly respond in accordance with normal plant procedure for a fire (0-AOI-30.1 - Part II, Reference 4.2.59). Since there is no impact to fire safe shutdown (FSSD), Operator Manual Actions (OMA's) are not required to mitigate fire in room 757.0-A15 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84 FIRE AREA 77**3.84.1 Unit 2 Reactor Building Annulus**

Description: Unit 2 Annulus.

Fire Loading: The combustible loading consists of foam plastic insulation, plastics associated with electrical panels and boxes, rubber expansion joints and insulation on cables routed in trays. The fire severity classification is severe.

Compartmentation: The Annulus is separated from Primary Containment by the Steel Containment Vessel which prevents the passage of flames, smoke and hot gases, but allows heat transfer. The Annulus is separated from the Auxiliary Building fire areas by reinforced concrete that provides a minimum fire resistance of 3-hours.

Barriers:			
Room	Adjacent Area/Room	FPR Figure Reference	Regulatory Barrier Rating
Unit 2 Annulus	Area 10, Room 729.0-A9	II-38A	3 Hours
	Area 65, Room 713.0-A29	II-29A	3 Hours
	Area 70, Room 692.0-A25	II-28A	3 Hours
	Area 71, Room 713.0-A19	II-29A	3 Hours
	Area 71, Room 713.0-A21	II-29A	3 Hours
	Area 72, Room 729.0-A11	II-30A	3 Hours
	Area 72, Room 737.0-A10	II-30A	3 Hours
	Area 73, Room 729.0-A10	II-38A	3 Hours
	Area 73, Room 729.0-A13	II-38A	3 Hours
	Area 73, Room 729.5-A17	II-38A	3 Hours
	Area 73, Room 737.0-A14	II-30A	3 Hours
	Area 73, Room 729.0-A15	II-38A	3 Hours
	Area 73, Room 763.5-A2	II-38A	3 Hours
	Area 74, Room 737.0-A9 (S, M & N)	II-30A	3 Hours
	Area 75, Room 757.0-A14	II-31A	3 Hours
	Area 75, Room 757.0-A16	II-31A	3 Hours
	Area 75, Room 782.0-A3	II-32A	3 Hours
	Area 75, Room 782.0-A4	II-32A	3 Hours

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
Unit 2 Annulus	A78	Area 71, Room 713.0-A21	II-29A	3 Hours*

* See Note 4 on FPR Fig. II-28A

Dampers: None.

Detection: Photoelectric smoke detectors are provided for selected portions of the cable tray system in the Unit 2 Annulus.

Suppression: Automatic preaction sprinkler system is provided for selected portions of the cable tray system in the Unit 2 Annulus. Standpipe and hose stations are provided throughout the Annulus. .

Deviations: The justification for the radiant energy shield not meeting the ASTM E136 non-combustibility criteria is documented in Part VII, Section 2.2. The use of portable lanterns in lieu of fixed 8-hour battery powered lights inside the Reactor Building is documented in Part VII, Section 2.7.1 of the FPR.

Evaluations: The use of fire barrier wrap on the Purge Air System return and exhaust air ducts in lieu of fire damper in the openings that separate the Annulus for the Auxiliary Building is documented in Part VII, Section 3.2 of the FPR. The feasibility and reliability evaluation for Unit 2 operator manual actions is documented in Part VII, Section 8.3.7 and 64.

3.84.2 Unit 2 Reactor Building Primary Containment

Description: Primary Containment (Subdivided into 2RO-1, 2RO-2, 2RO-3, 2RO-4, 2RI-1, 2RI-2, 2RI-3, 2RI-4, 2RIR, 2RA1, 2RA2, 2RA3, 2RA4, 2RF1, 2RF2, 2RU)

Fire Loading: The combustibles loading consists of foam plastic insulation, plastic associated with electrical panels and boxes, rubber expansion joints, lube oil in pumps, motors and valves, insulation on cables in trays and wood (used only for insulation and framing of the ice condenser intermediate deck end wall doors), and glycol for the ice condenser. The fire severity for individual areas, range from a classification of insignificant to moderate.

Compartmentation: The Primary Containment is separated from the Annulus by the Steel Containment Vessel which prevents the passage of flames, smoke and hot gases, but allows radiant heat transfer.

Barriers: None.

Doors:				
Room	Door Number	Adjacent Area/Room	FPR Figure Reference	Door Rating
PRIMARY	A166	Area 75, Room 757-A14	II-31A	3 HR
CONTAINMENT	A167	Area 75, Room 757-A14	II-31A	3 HR

Dampers: None.

Detection: Ionization smoke detectors are provided in the upper and lower compartment cooler units. Heat detectors are provided over the Reactor Coolant Pumps.

Suppression: Automatic fixed water spray systems are provided for each Reactor Coolant Pump. Standpipes and hose stations are provided inside containment.

Deviations: The use of portable lanterns in lieu of fixed 8-hour battery powered lights inside the Reactor Building is documented in Part VII, Section 2.7.1 of the FPR. The allowance for minor amounts of oil that could escape the oil collection system is documented in Part VII, Section 2.8 of the FPR. The justification of compliance to III.G.A with a FHA is documented in Part VII, Section 2.9.13 thru 2.9.21.

Evaluations: None

3.84.3 Fire Area 77 Safe Shutdown Analysis By Analysis Volume**3.84.3.1 AV-117**

Room No.	Description:
2ANN	Unit 2 Annulus

A fire in Analysis Volume 117 could potentially affect systems and components necessary to maintain the Unit 2 steam generator inventory control functions and Unit 2 long term decay heat removal, containment HVAC, reactor coolant inventory control and reactor pressure control functions. Mitigating features are required to restore systems necessary for safe shutdown. Safe shutdown for Units 1 and/or 2 is achieved through the use of the equipment and associated flowpaths shown below as credited. Unit 1 major equipment required to maintain safe shutdown functions is not impacted such that shutdown can be achieved by utilizing both train A and B systems and components without mitigating actions. Offsite power is available. The required mitigating features include providing smoke detectors, automatic fire suppression, non-combustible radiant energy shields to protect redundant Unit 2 safe shutdown cables in the event of a fire and manual operations of Unit 2 equipment required for safe shutdown. These features and equipment credited are identified below. Since compliance in this area utilizes options III.G.2.d, e, and/or f, the equipment train which is affected or credited for containment cooling, primary system depressurization during cooldown and RHR cooldown is determined subsequent to firefighting activities by the location of the fire. Adequate time is available to make this determination since the earliest safe shutdown requirement for these functions is approximately 2 hours when containment cooling must be established.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

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Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFWP_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	60
2-FCV-63-118-A	2RA1	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-118-A	772-A16	MUST CLOSE	2-BKR-63-118-A	1140
2-FCV-63-67-B	772-A15	MUST CLOSE	2-BKR-63-67-B	1140
2-FCV-63-67-B	2RA4	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-80-A	772-A16	MUST CLOSE	2-BKR-63-80-A	1140
2-FCV-63-80-A	2RA3	MUST CLOSE	HANDWHEEL	1140
2-FCV-63-98-B	772-A15	MUST CLOSE	2-BKR-63-98-B	1140
2-FCV-63-98-B	2RA2	MUST CLOSE	HANDWHEEL	1140

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-MTR-68-31	755-C12	STOP PUMP	2-HS-68-31AA	0
2-MTR-68-50	755-C12	STOP PUMP	2-HS-68-50AA	0
2-MTR-68-73	755-C12	STOP PUMP	2-HS-68-73AA	0
2-MTR-68-8	755-C12	STOP PUMP	2-HS-68-8AA	0
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-112A	9
2-FCV-62-69-A	755-C12	MUST CLOSE	2-HS-32-111A-B	9
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-22	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-35	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-FCV-62-48	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-111A-B	11
2-FCV-62-9	755-C12	MUST NOT CLOSE	2-HS-32-112A	11
2-LCV-3-148	755-C12	MODULATE VALVE	2-LIC-3-148A	13
2-LCV-3-171	755-C12	MODULATE VALVE	2-LIC-3-171A	13
2-HTR-68- 341A/A1-A7	755-C12	DE-ENERGIZE PRESSURIZER HEATERS	2-HS-68-341A	25
2-HTR-68- 341D/B1-B7	755-C12	DE-ENERGIZE PRESSURIZER HEATER	2-HS-68-341D	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	35
2-FCV-30-10-A	755-C12	DE-ENERGIZE	2-HS-30-10-A	60
2-FCV-30-14-A	755-C12	DE-ENERGIZE	2-HS-30-14-A	60

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MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
2-FCV-30-15-B	755-C12	DE-ENERGIZE	2-HS-30-15-B	60
2-FCV-30-16-B	755-C12	DE-ENERGIZE	2-HS-30-16-B	60
2-FCV-30-17-A	755-C12	DE-ENERGIZE	2-HS-30-17-A	60
2-FCV-30-19-B	755-C12	DE-ENERGIZE	2-HS-30-19-B	60
2-FCV-30-20-A	755-C12	DE-ENERGIZE	2-HS-30-20-A	60
2-FCV-30-37-B	755-C12	DE-ENERGIZE	2-HS-30-37-B	60
2-FCV-30-40-A	755-C12	DE-ENERGIZE	2-HS-30-40-A	60
2-FCV-30-50-B	755-C12	DE-ENERGIZE	2-HS-30-8-B	60
2-FCV-30-51-A	755-C12	DE-ENERGIZE	2-HS-30-7-A	60
2-FCV-30-52-A	755-C12	DE-ENERGIZE	2-HS-30-10-A	60
2-FCV-30-53-B	755-C12	DE-ENERGIZE	2-HS-30-9-B	60
2-FCV-30-56-A	755-C12	DE-ENERGIZE	2-HS-30-14-A	60
2-FCV-30-57-B	755-C12	DE-ENERGIZE	2-HS-30-15-B	60
2-FCV-30-58-B	755-C12	DE-ENERGIZE	2-HS-30-19-B	60
2-FCV-30-59-A	755-C12	DE-ENERGIZE	2-HS-30-20-A	60
2-FCV-30-7-A	755-C12	DE-ENERGIZE	2-HS-30-7-A	60
2-FCV-30-8-B	755-C12	DE-ENERGIZE	2-HS-30-8-B	60
2-FCV-30-9-B	755-C12	DE-ENERGIZE	2-HS-30-9-B	60

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
2PM1071E	2-LI-68-335A-E	PZR LEVEL INDICATOR
2PM1664E	2-LI-3-93	#3SG LEVEL INDICATOR (NR)
2PM1771E	2-LI-3-106	#4SG LEVEL INDICATOR (NR)
2PM595E	2-TI-68-43	RCS LOOP 3 HOT LEG TEMPERATURE
2PM691E	2-TI-68-65	RCS LOOP 4 HOT LEG TEMPERATURE
2PM784E	2-TI-68-60	RCS LOOP 3 COLD LEG TEMPERATURE
2PM876E	2-TI-68-83	RCS LOOP 4 COLD LEG TEMPERATURE
2PM950D	2-PT-68-340-D	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2PM988E	2-PT-68-334-E	U2 PRESSURIZER PRESSURE INSTRUMENTATION LOOP
2V10113	2-XSV-32-112	UNIT 2 CONTAINMENT NON-ESSENTIAL HDR DUMP SOLENOID
2V10114B	2-FCV-32-111-B	RB TRAIN B NON-ESSENTIAL CONTROL AIR ISLN VLV
2V10118	2-XSV-32-112	UNIT 2 CONTAINMENT NON-ESSENTIAL HDR DUMP SOLENOID

3.84.3.2 AV-118A

Room No.	Description:
2RA2	Unit 2 Accumulator Room 2
2RF2	Unit 2 Fan Room 2
2RO-2	Outside Unit 2 Crane Wall (90° - 180°)
2RO-3	Outside Unit 2 Crane Wall (180° - 270°)

The in situ combustible loading for AV-118A consists of small quantities of lubricants in several valves (accounts for 89% of combustible load in 2RA2 and 39% in 2RF2) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The rooms designated 2RO-2 and 2RO-3 contain a rubberized joint sealant material used in the building joints that constitutes 90% of the combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant for each room. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open); therefore, the valve motors are not considered an ignition source. The fan motor are not considered a significant ignition source because the fan housing contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA2, 2RF2, 2RO-2 OR 2RO-3 per deviation documented in Part VII, Section 2.9.

AV-118A

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.3 AV-118B

Room No.	Description:
2RA3	Unit 2 Accumulator Room 3
2RF2	Unit 2 Fan Room 2
2RO-2	Outside Unit 2 Crane Wall (90° - 180°)
2RO-3	Outside Unit 2 Crane Wall (180° - 270°)

The in situ combustible loading for AV-118B consists of small quantities of lubricants in several valves (accounts for 88% of the combustible load in 2RA3 and 39% in 2RF2) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The rooms designated 2RO-2 and 2RO-3 contain a rubberized joint sealant material used in the building joints that constitutes 90% of their combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant for each room. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motor are not considered a significant ignition source because the fan housing contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA2, 2RF2, 2RO-2 OR 2RO-3 per deviation documented in Part VII, Section 2.9.

AV-118B

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.4

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Room No.	Description:
2RA3	Unit 2 Accumulator Room 3
2RA4	Unit 2 Accumulator Room 4
2RO-3	Outside Unit 2 Crane Wall (180° - 270°)
2RO-4	Outside Unit 2 Crane Wall (270° - 360°)

The in situ combustible loading for AV-118C consists of small quantities of lubricants in several valves (accounts for 88% of the combustible load in 2RA3 and 82% in 2RA4) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The rooms designated 2RO-3 and 2RO-4 contain a rubberized joint sealant material used in the building joints that constitutes 90% of their combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant for each room. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motor are not considered a significant ignition source because the fan housing contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA3, 2RA4, 2RO-3 OR 2RO-4 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.5 AV-118D

Room No.	Description:
2RF1	Unit 2 Fan Room 1
2RA4	Unit 2 Accumulator Room 4
2RO-1	Outside Unit 2 Crane Wall (0° - 90°)
2RO-4	Outside Unit 2 Crane Wall (270° - 360°)

The in situ combustible loading for AV-118D consists of small quantities of lubricants in several valves (accounts for 82% of the combustible load in 2RA4 and 51% in 2RF1) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The rooms designated 2RO-1 and 2RO-4 contain a rubberized joint sealant material used in the building joints that constitutes 90% of their combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant for each room. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motor are not considered a significant ignition source because the fan housing contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RF1, 2RA4, 2RO-1 OR 2RO-4 per deviation documented in Part VII, Section 2.9.

AV-118D

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.6 AV-118E

Room No.	Description:
2RA1	Unit 2 Accumulator Room 1
2RF1	Unit 2 Fan Room 1
2RO-1	Outside Unit 2 Crane Wall (0° - 90°)
2RO-4	Outside Unit 2 Crane Wall (270° - 360°)

The in situ combustible loading for AV-118E consists of small quantities of lubricants in several valves (accounts for 61% of the combustible load in 2RA1 and 51% in 2RF1) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The rooms designated 2RO-1 and 2RO-4 contain a rubberized joint sealant material used in the building joints that constitutes 90% of the calculated combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant for each room. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motors are not considered a significant ignition source because the fan housings contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA1, 2RF1, 2RO-1 OR 2RO-4 per deviation documented in Part VII, Section 2.9.

AV-118E

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.7 AV-118F

Room No.	Description:
Unit 2 Reactor Building 2RIR	Lower Containment Unit 2 Instrument Room

The in situ combustible loading for AV-118F consists of small quantities of lubricants in several small pumps (2RO-1 and -2 only) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables for these devices are routed in conduit. The rooms designated 2RO-1 and 2RO-2 contain a rubberized joint sealant material used in the building joints that constitutes 90% of their combustible load. The total combustible loading in each room (not counting the joint sealant material) results in a fire severity classification of Insignificant. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. The power supply circuits to the pump motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in room 2RIR per deviation documented in Part VII, Section 2.9.

AV-118F

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.8 AV-118G

Room No.	Description:
Unit 2 Reactor Building	Primary Containment
2RU	Upper Containment

A fire in Analysis Volume 118G would not impact major equipment required to maintain safe shutdown functions. Shutdown can be achieved by using both Train A and B systems and components without mitigating actions. Equipment credited available to achieve shutdown are identified below

AV-118G

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.9 AV-118H

Room No.	Description:
2RA2	Unit 2 Accumulator Room 2
2RF2	Unit 2 Fan Room 2
2RI-2	Inside Unit 2 Crane Wall (90° - 180°)
2RI-3	Inside Unit 2 Crane Wall (180° - 270°)

The in situ combustible loading for AV-118H consists of small quantities of lubricants in several valves and fan motors (accounts for 89% of combustible load in 2RA2 and 39% in 2RF2) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The zones designated 2RI-2 and 2RI-3 each contain a reactor coolant pump (RCP) that constitutes 98% and 97%, respectively of the combustible load and several valves. Each RCP is provided with an oil collection system that complies with Appendix R, Section III.O and is protected with an automatic suppression and detection system. The total combustible loading in rooms 2RA2 and 2RF2 results in a fire severity classification of Insignificant for each room. Zones 2RI-2 and 2RI-3 have combustible loading that results in a fire severity classification of Low when including the RCP oil, but is Insignificant not counting the oil. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motors are not considered a significant ignition source because the fan housings contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles (other than the RCP oil which is provided with adequate compensatory protection) and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA2, 2RF2, 2RI-2 OR 2RI-3 per deviation documented in Part VII, Section 2.9.

AV-118H

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.10 AV-118J

Room No.	Description:
2RA3	Unit 2 Accumulator Room 3
2RF2	Unit 2 Fan Room 2
2RI-2	Inside Unit 2 Crane Wall (90° - 180°)
2RI-3	Inside Unit 2 Crane Wall (180° - 270°)

The in situ combustible loading for AV-118J consists of small quantities of lubricants in several valves and fan motors (accounts for 88% of combustible load in 2RA3 and 39% in 2RF2) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The zones designated 2RI-2 and 2RI-3 each contain a reactor coolant pump (RCP) that constitutes 98% and 97%, respectively of the combustible load and several valves. Each RCP is provided with an oil collection system that complies with Appendix R, Section III.O and is protected with an automatic suppression and detection system. The total combustible loading in rooms 2RA3 and 2RF2 results in a fire severity classification of Insignificant for each room. Zones 2RI-2 and 2RI-3 have combustible loading that results in a fire severity classification of Low when including the RCP oil, but is Insignificant not counting the oil. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motors are not considered a significant ignition source because the fan housings contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles (other than the RCP oil which is provided with adequate compensatory protection) and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that would result in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA3, 2RF2, 2RI-2 OR 2RI-3 per deviation documented in Part VII, Section 2.9.

AV-118J

Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.11 AV-118K

Room No.	Description:
2RA4	Unit 2 Accumulator Room 4
2RF1	Unit 2 Fan Room 1
2RI-1	Inside Unit 2 Crane Wall (0° - 90°)
2RI-4	Inside Unit 2 Crane Wall (270° - 360°)

The in situ combustible loading for AV-118K consists of small quantities of lubricants in several valves and fan motors (accounts for 82% of combustible load in 2RA4 and 51% in 2RF1) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The zones designated 2RI-1 and 2RI-4 each contain a reactor coolant pump (RCP) that constitutes 99% and 98%, respectively of the combustible load and several valves. Each RCP is provided with an oil collection system that complies with Appendix R, Section III.O and is protected with an automatic suppression and detection system. The total combustible loading in rooms 2RA4 and 2RF1 results in a fire severity classification of Insignificant for each room. Zones 2RI-1 and 2RI-4 have combustible loading that results in a fire severity classification of Low when including the RCP oil, but is Insignificant not counting the oil. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motors are not considered a significant ignition source because the fan housings contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles (other than the RCP oil which is provided with adequate compensatory protection) and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA4, 2RF1, 2RI-1 OR 2RI-4 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

3.84.3.12 AV-118L

Room No.	Description:
2RA1	Unit 2 Accumulator Room 1
2RF1	Unit 2 Fan Room 1
2RI-1	Inside Unit 2 Crane Wall (0° - 90°)
2RI-4	Inside Unit 2 Crane Wall (270° - 360°)

The in situ combustible loading for AV-118L consists of small quantities of lubricants in several valves and fan motors (accounts for 61% of combustible load in 2RA1 and 51% in 2RF1) and miscellaneous plastics associated with small electrical control panels and boxes, and lighting. The cables to these devices are routed in conduit. The zones designated 2RI-1 and 2RI-4 each contain a reactor coolant pump (RCP) that constitutes 99% and 98%, respectively of the combustible load and several valves. Each RCP is provided with an oil collection system that complies with Appendix R, Section III.O and is protected with an automatic suppression and detection system. The total combustible loading in rooms 2RA1 and 2RF1 results in a fire severity classification of Low for 2RA1 and Insignificant for 2RF1. Zones 2RI-1 and 2RI-4 have combustible loading that results in a fire severity classification of Low when including the RCP oil, but is Insignificant (less than 1-minute) not counting the oil. Access to the areas inside the Unit 2 Reactor Building is strictly controlled which, in conjunction with procedure NPG-SPP-18.4.7, Control of Transient Combustibles, provides assurance that transient combustibles will not be introduced into the area without adequate compensatory measures. Cables routed in conduit and lubricants in the valves/motors are not exposed; therefore, their contribution to a postulated fire is greatly reduced. The valve motors are normally de-energized (power is only applied when an operator moves the valve from open to close (or close to open)); therefore, the valve motors are not considered an ignition source. The fan motors are not considered a significant ignition source because the fan housings contain insignificant quantities of combustible material and the power supply circuits to the fan motors are adequately protected with properly sized breakers/fuses. Procedure NPG-SPP-18.4.8, Control of Ignition Sources (Hot Work) ensures that ignition sources (e.g. cutting, welding, grinding) will not be introduced into the area without adequate compensatory measures. Since there are no concentrations of in situ combustibles (other than the RCP oil which is provided with adequate compensatory protection) and no credible ignition sources, it is concluded that there is no credible fire in the analysis volume that results in the loss of required fire safe shutdown (FSSD) components or other components that results in the necessity to shutdown either Unit 1 or Unit 2. Therefore, there is no impact to FSSD for this analysis volume. Operator Manual Actions (OMA's) are not required to mitigate fire in rooms 2RA1, 2RF1, 2RI-1 OR 2RI-4 per deviation documented in Part VII, Section 2.9.

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Power Systems Affected:

POWER SYSTEM AFFECTED	DESCRIPTION
NONE	

Power Systems Credited:

POWER SYSTEM CREDITED	DESCRIPTION
0-BD-236-1-D	125V VITAL BATTERY BOARD I
0-BD-236-2-E	125V VITAL BATTERY BOARD II
0-BD-236-3-F	125V VITAL BATTERY BOARD III
0-BD-236-4-G	125V VITAL BATTERY BOARD IV
1A(OFFSITE)	6.9KV SHUTDOWN BOARD 1A-A
1B(OFFSITE)	6.9KV SHUTDOWN BOARD 1B-B
1-BD-212-A1-A	480V SHUTDOWN BOARD 1A1-A
1-BD-212-A2-A	480V SHUTDOWN BOARD 1A2-A
1-BD-212-B1-B	480V SHUTDOWN BOARD 1B1-B
1-BD-212-B2-B	480V SHUTDOWN BOARD 1B2-B
1-BD-235-1-D	120V AC VITAL POWER BOARD 1-I
1-BD-235-2-E	120V AC VITAL POWER BOARD 1-II
1-BD-235-3-F	120V AC VITAL POWER BOARD 1-III
1-BD-235-4-G	120V AC VITAL POWER BOARD 1-IV
2A(OFFSITE)	6.9KV SHUTDOWN BOARD 2A-A
2B(OFFSITE)	6.9KV SHUTDOWN BOARD 2B-B
2-BD-212-A1-A	480V SHUTDOWN BOARD 2A1-A
2-BD-212-A2-A	480V SHUTDOWN BOARD 2A2-A
2-BD-212-B1-B	480V SHUTDOWN BOARD 2B1-B
2-BD-212-B2-B	480V SHUTDOWN BOARD 2B2-B
2-BD-235-1-D	120V AC VITAL POWER BOARD 2-I
2-BD-235-2-E	120V AC VITAL POWER BOARD 2-II
2-BD-235-3-F	120V AC VITAL POWER BOARD 2-III
2-BD-235-4-G	120V AC VITAL POWER BOARD 2-IV

Major Equipment Affected:

MAJOR EQUIPMENT AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Major Equipment Credited:

MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-31-11-B	MCR AHU B-B MOTOR	KEY 37A PATH 2
0-MTR-31-12-A	MCR AHU A-A MOTOR	KEY 37A PATH 1
0-MTR-67-28-A	ERCW PUMP MOTOR A-A	KEY 1 PATH 1
0-MTR-67-32-A	ERCW PUMP MOTOR B-A	KEY 1 PATH 1
0-MTR-67-36-A	ERCW PUMP MOTOR C-A	KEY 1 PATH 1
0-MTR-67-40-A	ERCW PUMP MOTOR D-A	KEY 1 PATH 1
0-MTR-67-47-B	ERCW PUMP MOTOR E-B	KEY 1 PATH 2
0-MTR-67-51-B	ERCW PUMP MOTOR F-B	KEY 1 PATH 2
0-MTR-67-55-B	ERCW PUMP MOTOR G-B	KEY 1 PATH 2
0-MTR-67-59-B	ERCW PUMP MOTOR H-B	KEY 1 PATH 2
0-MTR-70-51-S	CCS PUMP C-S MOTOR	KEY 1 PATH 2

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
1-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48, KEY 7
1-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
1-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
1-HTX-62-66	CVCS SEAL WATER HTX	
1-MTR-3-118-A	MDAFW PUMP 1A-A	KEY 11 PATH 1
1-MTR-3-128-B	MDAFW PUMP 1B-B	KEY 11 PATH 2
1-MTR-30-190-A	CCS/AFW PUMP SPACE COOLER 1A-A MOTOR	KEY 37O
1-MTR-30-191-B	CCS/AFW PUMP SPACE COOLER 1B-B MOTOR	KEY 37O
1-MTR-30-74-A	CONTAINMENT LOWER COMPARTMENT COOLER 1A-A MOTOR	KEY 37J
1-MTR-30-75-B	CONTAINMENT LOWER COMPARTMENT COOLER 1B-B MOTOR	KEY 37J
1-MTR-30-77-A	CONTAINMENT LOWER COMPARTMENT COOLER 1C-A MOTOR	KEY 37J
1-MTR-30-78-B	CONTAINMENT LOWER COMPARTMENT COOLER 1D-B MOTOR	KEY 37J
1-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 1D-B	KEY 37J
1-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 1A-A	KEY 37J
1-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 1C-A	KEY 37J
1-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 1B-B	KEY 37J
1-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 1B-B	KEY 1 PATH 2
1-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 1A-A	KEY 1 PATH 1
1-MTR-70-38-B	COMPONENT COOLING SYSTEM PUMP 1B-B	KEY 1 PATH 1
1-MTR-70-46-A	COMPONENT COOLING SYSTEM PUMP 1A-A	KEY 1 PATH 1
1-MTR-74-10-A	RESIDUAL HEAT REMOVAL PUMP 1A-A	KEY 31 PATH 1
1-MTR-74-20-B	RESIDUAL HEAT REMOVAL PUMP 1B-B	KEY 31 PATH 2
1-PCV-68-334-B	PZR PORV	KEY 48 (PORV)
1-PCV-68-340A-A	PZR PORV	KEY 48 (PORV)
2-FSV-68-394-A	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)
2-FSV-68-395-B	REACTOR VESSEL HEAD VENT ISOLATION VALVE	KEY 48 (HEAD VENT)

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
2-FSV-68-396-B	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-FSV-68-397-A	REACTOR VESSEL HEAD VENT THROTTLE VALVE	KEY 48 (HEAD VENT)
2-HTX-62-66	CVCS SEAL WATER HTX	
2-MTR-3-118-A	MDAFW PUMP 2A-A	KEY 11 PATH 1
2-MTR-3-128-B	MDAFW PUMP 2B-B	KEY 11 PATH 2
2-MTR-30-184-A	AFW/BA XFER PUMP SPACE COOLER 2A-A MOTOR	KEY 37O
2-MTR-30-185-B	AFW/BA XFER PUMP SPACE COOLER 2B-B MOTOR	KEY 37O
2-MTR-30-74-A	REACTOR LOWER COMPARTMENT COOLER FAN 2A-A	KEY 37J
2-MTR-30-75-B	REACTOR LOWER COMPARTMENT COOLER FAN 2B-B	KEY 37J
2-MTR-30-77-A	REACTOR LOWER COMPARTMENT COOLER FAN 2C-A	KEY 37J
2-MTR-30-78-B	REACTOR LOWER COMPARTMENT COOLER FAN 2D-B	KEY 37J
2-MTR-30-80-B	CONTROL ROD DRIVE MOTOR COOLER 2D-B	KEY 37J
2-MTR-30-83-A	CONTROL ROD DRIVE MOTOR COOLER 2A-A	KEY 37J
2-MTR-30-88-A	CONTROL ROD DRIVE MOTOR COOLER 2C-A	KEY 37J
2-MTR-30-92-B	CONTROL ROD DRIVE MOTOR COOLER 2B-B	KEY 37J
2-MTR-62-104-B	CENTRIFUGAL CHARGING PUMP 2B-B	KEY 1 PATH 2
2-MTR-62-108-A	CENTRIFUGAL CHARGING PUMP 2A-A	KEY 1 PATH 1
2-MTR-70-33-B	COMPONENT COOLING SYSTEM PUMP 2B-B	KEY 1 PATH 1
2-MTR-70-59-A	COMPONENT COOLING SYSTEM PUMP 2A-A	KEY 1 PATH 1
2-MTR-74-10-A	RHR PUMP 2A-A	KEY 31 PATH 1
2-MTR-74-20-B	RHR PUMP 2B-B	KEY 31 PATH 2
2-PCV-68-334-B	PRESSURIZER PORV	KEY 48 (PORV)
2-PCV-68-340A-A	PRESSURIZER PORV	KEY 48 (PORV)
2-SG-COOLDN-1	STEAM GENERATOR 1 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-2	STEAM GENERATOR 2 COOL DOWN	KEY 12 P 1 KEY 16 P 1
2-SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
2-SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
CCS-HX-A	COMPONENT COOLING SYSTEM HX A	KEY 1 PATH 1

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MAJOR EQUIPMENT CREDITED	DESCRIPTION	KEY – PATH NO.
CCS-HX-B	COMPONENT COOLING SYSTEM HX B	KEY 1 PATH 1
CCS-HX-C	COMPONENT COOLING SYSTEM HX C	KEY 1 PATH 2
ERCW-HDR-1A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1A	KEY 1 PATH 1
ERCW-HDR-1B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 1B	KEY 1 PATH 2
ERCW-HDR-2A	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2A	KEY 1 PATH 1
ERCW-HDR-2B	ESSENTIAL RAW COOLING WTR SUPPLY HDR 2B	KEY 1 PATH 2
SG-COOLDN-1	SG-1 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-2	SG-2 COOLDOWN COMPONENTS	KEY 12 P 1 KEY 16 P 1
SG-COOLDN-3	SG-3 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
SG-COOLDN-4	SG-4 COOLDOWN COMPONENTS	KEY 12 P 2 KEY 16 P 2
TDAFW_A-S	TURBINE-DRIVEN AFW PUMP	KEY 14
TDAFW_PUMP_2A-S	TURBINE-DRIVEN AFW PUMP	KEY 14

Fire Pumps Affected for this analysis:

FIRE PUMP AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Fire Pumps Credited for this analysis:

FIRE PUMP CREDITED	DESCRIPTION	KEY – PATH NO.
0-MTR-26-1-A	HP FIRE PUMP	KEY FP
0-MTR-26-11-B	HP FIRE PUMP	KEY FP
0-MTR-26-4-B	HP FIRE PUMP	KEY FP
0-MTR-26-9-A	HP FIRE PUMP	KEY FP
0-PMP-26-3150	DIESEL DRIVEN FIRE PUMP	KEY FP

Pressurizer Heaters Affected for this analysis:

PRESSURIZER HEATER AFFECTED	DESCRIPTION	KEY – PATH NO.
NONE		

Pressurizer Heaters Credited for this analysis:

PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
1-HTR-68-341A/A1-A7	PZR BACKUP HEATER GROUP A	KEY 28 PATH 1
1-HTR-68-341D/B1-B7	PZR BACKUP HEATER GROUP B	KEY 28 PATH 2

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PRESSURIZER HEATER CREDITED	DESCRIPTION	KEY – PATH NO.
2-HTR-68-341A/A1-A7	PRESSURIZER HEATER BACKUP GROUP 2A-A	KEY 28 PATH 1
2-HTR-68-341D/B1-B7	PRESSURIZER HEATER BACKUP GROUP 2B-B	KEY 28 PATH 2

Local Manual Operator Actions and Repairs:

LOCAL OMA/REPAIR COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Main Control Room Operator Actions:

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
NONE				

Cables Protected in This Analysis:

PROTECTED CABLE	COMPONENT(S)	DESCRIPTION(S)
NONE		

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS

End Device	Function Performed	Control Operated⁵	When Required (Minutes)
1/2-BKR-99-L116/1B-A ¹	TRIP	1/2-RT-1 (MCR)	0
1/2-FCV-1-11	CLOSE	1/2-HS-1-11A (MCR)	0
1/2-FCV-1-14-A	CLOSE	1/2-HS-1-14/182-T (MCR)	0
1/2-FCV-1-22	CLOSE	1/2-HS-1-22A (MCR)	0
1/2-FCV-1-25-B	CLOSE	1/2-HS-1-25/183-T (MCR)	0
1/2-FCV-1-29	CLOSE	1/2-HS-1-29A (MCR)	0
1/2-FCV-1-32-A	CLOSE	1/2-HS-1-32/184-T (MCR)	0
1/2-FCV-1-4	CLOSE	1/2-HS-1-4A (MCR)	0
1/2-FCV-1-7-B	CLOSE	1/2-HS-1-7/181-T (MCR)	0
1/2-FCV-3-103	CLOSE	1/2-FIC-3-103 (MCR)	0
1/2-FCV-3-103A	CLOSE	1/2-LIC-3-103A (MCR)	0
1/2-FCV-3-35	CLOSE	1/2-FIC-3-35 (MCR)	0
1/2-FCV-3-35A	CLOSE	1/2-LIC-3-35A (MCR)	0
1/2-FCV-3-48	CLOSE	1/2-FIC-3-48 (MCR)	0
1/2-FCV-3-48A	CLOSE	1/2-LIC-3-48A (MCR)	0
1/2-FCV-3-90	CLOSE	1/2-FIC-3-90 (MCR)	0
1/2-FCV-3-90A	CLOSE	1/2-LIC-3-90A (MCR)	0
1/2-PCV-1-12	CLOSE	1/2-HS-1-13 (MCR)	0
1/2-PCV-1-23	CLOSE	1/2-HS-1-24 (MCR)	0
1/2-PCV-1-30	CLOSE	1/2-HS-1-31 (MCR)	0
1/2-PCV-1-5	CLOSE	1/2-HS-1-6 (MCR)	0
1/2-PCV-68-334-B	CLOSE	1/2-HS-68-334A-B (MCR)	0
1/2-PCV-68-340A-A	CLOSE	1/2-HS-68-340AA-A (MCR)	0
1/2-MTR-62-108-A ¹	START	1/2-HS-62-108A-A (MCR)	4
1/2-FCV-62-55	CLOSE	1/2-HS-62-55A (MCR)	15
1/2-FCV-62-69-A	CLOSE	1/2-HS-62-69A-A (MCR)	15
1/2-LCV-62-135-A ¹	OPEN	1/2-HS-62-135A-A (MCR)	15
1/2-MTR-81-3	STOP	1/2-HS-81-3A (MCR)	15
1/2-MTR-81-7	STOP	1/2-HS-81-7A (MCR)	15
TDAFW_PUMP_2A-S	TRIP	2-HS-46-55A-S (MCR)	19
TDAFWP_A-S	TRIP	1-HS-46-55A-S (MCR)	19
1/2-LCV-3-156 ¹	CONTROL	1/2-LIC-3-156A (MCR)	20
1/2-LCV-3-164 ¹	CONTROL	1/2-LIC-3-164A (MCR)	20
1/2-MTR-3-118-A ¹	START	1/2-HS-3-118A-A (MCR)	20
1/2-MTR-3-128-B ¹	STOP	1/2-HS-3-128A-B (MCR)	20
1/2-FCV-62-90-A ¹	CLOSE	1/2-HS-62-90A-A (MCR)	35
1/2-FCV-30-10-A	CLOSE	1/2-HS-30-10-A (MCR)	60
1/2-FCV-30-14-A	CLOSE	1/2-HS-30-14-A (MCR)	60
1/2-FCV-30-15-B	CLOSE	1/2-HS-30-15-B (MCR)	60
1/2-FCV-30-16-B	CLOSE	1/2-HS-30-16-B (MCR)	60
1/2-FCV-30-17-A	CLOSE	1/2-HS-30-17-A (MCR)	60
1/2-FCV-30-19-B	CLOSE	1/2-HS-30-19-B (MCR)	60
1/2-FCV-30-20-A	CLOSE	1/2-HS-30-20-A (MCR)	60
1/2-FCV-30-37-B	CLOSE	1/2-HS-30-37-B (MCR)	60
1/2-FCV-30-40-A	CLOSE	1/2-HS-30-40-A (MCR)	60
1/2-FCV-30-50-B	CLOSE	1/2-HS-30-8-B (MCR)	60
1/2-FCV-30-51-A	CLOSE	1/2-HS-30-7-A (MCR)	60
1/2-FCV-30-52-A	CLOSE	1/2-HS-30-10-A (MCR)	60

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS

End Device	Function Performed	Control Operated ⁵	When Required (Minutes)
1/2-FCV-30-53-B	CLOSE	1/2-HS-30-9-B (MCR)	60
1/2-FCV-30-56-A	CLOSE	1/2-HS-30-14-A (MCR)	60
1/2-FCV-30-57-B	CLOSE	1/2-HS-30-15-B (MCR)	60
1/2-FCV-30-58-B	CLOSE	1/2-HS-30-19-B (MCR)	60
1/2-FCV-30-59-A	CLOSE	1/2-HS-30-20-A (MCR)	60
1/2-FCV-30-7-A	CLOSE	1/2-HS-30-7-A (MCR)	60
1/2-FCV-30-8-B	CLOSE	1/2-HS-30-8-B (MCR)	60
1/2-FCV-30-9-B	CLOSE	1/2-HS-30-9-B (MCR)	60
1/2-HTR-68-341A/A1-A7	DEENERGIZE	1/2-HS-68-341A (MCR)	60
1/2-HTR-68-341D/B1-B7	DEENERGIZE	1/2-HS-68-341D (MCR)	60
1/2-HTR-68-341H/C1-C6	DEENERGIZE	1/2-XS-68-341H	60
1/2-HTR-68-341F/D1-D6	DEENERGIZE	1/2-HS-68-341F (MCR)	60
1/2-ISV-62-550 ³	THROTTLE AS REQUIRED	HANDWHEEL	60
1/2-PCV-1-12 ^{1, 7}	CONTROL	1/2-HS-1-13 (MCR) 1/2-PIC-1-13A (MCR)	60
1/2-PCV-1-5 ^{1, 7}	CONTROL	1/2-HS-1-6 (MCR) 1/2-PIC-1-6A (MCR)	60
1/2-LCV-62-132-A ¹	Close	1/2-HS-62-132A-A	70
1/2-MTR-30-74-A ¹	Functional	1/2-HS-30-74A-A	120
1/2-MTR-30-77-A ¹	Functional	1/2-HS-30-77A-A	120
1/2-MTR-30-83-A ¹	Functional	1/2-HS-30-83A-A	120
1/2-MTR-30-88-A ¹	Functional	1/2-HS-30-88A-A	120
LIGHTS ⁶	DEENERGIZE	0-LAC-228-131 (BRKS 8, 9, & 10)	1440
LIGHTS ⁶	DEENERGIZE	0-LAC-228-231 (BRKS 8, 9, & 10)	1440
0-PMP-24-10 ⁴	OPEN BREAKER	0-BKR-24-10	2280
0-PMP-24-13 ⁴	OPEN BREAKER	0-BKR-24-13	2280
0-PMP-24-141 ⁴	OPEN BREAKER	0-BKR-24-141	2280
0-PMP-24-144 ⁴	OPEN BREAKER	0-BKR-24-144	2280
0-PMP-24-17 ⁴	OPEN BREAKER	0-BKR-24-17	2280
0-PMP-24-20 ⁴	OPEN BREAKER	0-BKR-24-20	2280
0-PMP-24-7 ⁴	OPEN BREAKER	0-BKR-24-7	2280
1/2-FCV-74-1-A	OPEN	1/2-BKR-74-1B-A, 1/2-XS-74-1-A, 1/2-HS-74-1C-A	2280
1/2-FCV-74-2-B	OPEN	1/2-BKR-74-2B-B, 1/2-XS-74-2-B, 1/2-HS-74-2C-B	2280
1/2-HCV-74-36	THROTTLE AS REQUIRED	HANDWHEEL	2280
1/2-HCV-74-37	THROTTLE AS REQUIRED	HANDWHEEL	2280
1/2-ISV-70-574	CLOSE	HANDWHEEL	2280
1/2-PCV-68-340A-A ^{1,2}	OPEN/CLOSE	1/2-HS-68-340AA-A (MCR)	2280

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS

- | | |
|---|--|
| 1. Configuration as shown if Train-A is chosen. May be different if Train-B is chosen. | |
| 2. At MCR Operators discretion, Reactor Vessel Head Vents may be used in lieu of this component. | |
| 3. If MCR Operator directs. | |
| 4. Turn off three Raw Cooling Water pumps to control temperature in the Intake Pumping Station Electrical Board Room. | |
| 5. Functional representation of actions that must be performed. Individual fires may require the function shown to be performed by alternative means. | |
| 6. Not applicable or required for a control building fire as the actions can only be performed in the Control Building. | |
| 7. Maintain pressurizer level by adjusting RCS cooldown rate such that RCS volume shrinkage offsets makeup through the reactor coolant pump seals. | |

PART VII - DEVIATIONS AND EVALUATIONS

1.0 Introduction

Part VII documents deviations from Watts Bar (WBN) commitments against applicable NRC regulatory criteria and guidance documents and presents engineering evaluations of the adequacy of specific fire protection features. Section 2.0 contains the justifications for deviations (in accordance with the guidance in Generic Letter (GL) 86-10 (Part II, Reference 4.1.16) from the applicable sections of 10CFR50 Appendix R (Part II, Reference 4.1.8). Section 3.0 contains the engineering evaluations on the adequacy of fire protection features developed in accordance with the guidance of Generic Letters 83-33 (Part II, Reference 4.1.15) and 86-10 (Part II, Reference 4.1.16). Section 4.0 contains the justifications for deviations from the guidance of Appendix A to BTP 9.5-1. Section 5.0 contains deviations from the requirements of NFPA codes and standards that could impact on the operational capabilities of fire protection features. NFPA Code deviations that have no impact on operational capabilities are identified in Part X. Section 6.0 contains other general engineering evaluations that pertain to the fire protection program. Section 7 contains engineering evaluations of operator manual actions performed in the room of fire origin after the fire has been extinguished. Section 8 contains the evaluations and justifications (in accordance with Regulatory Guide (RG) 1.189 and NUREG-1852 (Part II, References 4.1.45 and 4.1.44)) of the Unit 2 operator manual actions.

2.0 Deviations to 10CFR50 Appendix R

This section documents the technical justifications for deviations from the criteria of Appendix R consistent with Generic Letter 86-10 guidance. A total of nine deviations are contained in this section. The deviations documented in this section include the following:

1. Required Instrumentation for Alternate Shutdown
2. Non-combustible Radiant Energy Shields
3. Fixed Suppression Systems for Alternate Shutdown Locations (Control Building)
4. Intervening Combustible Material
5. 1-Hour Rated Part-Height Wall Separating Redundant CCS Pumps
6. Openings in Regulatory Fire Barriers
7. Portable Lanterns
8. Reactor Coolant Pump Oil Collection System
9. Fire Hazards Analysis (FHA) in lieu of 10CFR50, Appendix R, Section III.G.2 Separation

The following sections present the bases for acceptability of the deviation requests.

2.1 Required Instrumentation for Alternate Shutdown

REQUIREMENT - Section III.L.2.d of 10CFR50, Appendix R, requires the process monitoring function for alternative or dedicated shutdown to be capable of providing direct readings of the process variables necessary to perform and control a plant cool down. In Attachment 1 of Information Notice No. 84-09 dated February 13, 1984 (Part II, Reference 4.1.20), the NRC identified the instrumentation they considered necessary for alternative or dedicated shutdown.

DEVIATION - Contrary to these guidelines, the following instrumentation has not been provided (or assured) in the auxiliary control room (ACR):

1. Wide range steam generator level.
2. Tank level for the condensate storage tank (CST) and refueling water storage tank (RWST).

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3. Cold leg temperature (Tc).

This deviation applies to room(s) 757.0-A1

2.1.1 Justification for Wide Range Steam Generator Level

Narrow range steam generator level and auxiliary feedwater (AFW) flow indication to each generator is provided in the ACR. This instrumentation provides input to the automatic controls used to maintain steam generator level during plant shutdown during a fire.

Although wide range instrumentation is available in the main control room (MCR), no automatic control or safety system inputs are derived from this instrumentation. Using AFW flow indication, the operator is able to confirm adequate post trip steam generator inventory control should the level fall below the narrow range.

Narrow range level indication along with AFW flow indication, which provides primary indication of heat removal capability, is sufficient for use in safe shutdown procedures whenever the ACR is utilized.

2.1.2 Justification for CST and RWST Tank Level Indication

The CST level indication is not considered essential in the ACR due to automatic switchover capability to the essential raw cooling water (ERCW) header. During shutdown procedures, automatic switchover of the AFW pump suction from the CST to the ERCW header will be functional when control is established in the ACR.

RWST level indication is not considered essential in the ACR due to the large inventory and small demand. The RWST holds about 20 times the inventory necessary for cold shutdown and is primarily used as makeup for contraction due to cooldown over a period of hours.

2.1.3 Justification for Cold Leg Temperature (Tc)

The need for Tc in the ACR at WBN is based on the adequacy of the instrumentation and controls to safely achieve and maintain safe shutdown. The following factors are taken into consideration for this justification:

1. Unique ACR design as described in Part IV - Alternate Shutdown Capability
2. Level of control and instrumentation available in the ACR and in the adjacent shutdown board rooms
3. Westinghouse Owners Group (WOG) recommendations
4. Plant procedures and training on ACR
5. Accuracy of Steam Generator Tsat to infer Tc

The benefit of the operators ability to read Tc directly in the ACR does not offset the long term maintenance and ALARA considerations as well as the increased probability of a small break LOCA as a result of four additional penetrations to the RCS.

The ACR is designed to be the central control point when operating in the auxiliary control mode. Systems requiring frequent manipulations have the necessary controls located in the ACR along with their associated transfer switches located in the adjacent transfer switch rooms. Adequate instrumentation is provided for monitoring conditions of the plant. A detailed

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identification of the instruments and controls available in the ACR for alternative shutdown is contained in Part IV of the FPR.

The instruments and controls located in the ACR are separate, or can be electrically isolated, from the corresponding instrumentation and controls located in the MCR. Operators are periodically trained in shutdown procedures from the ACR. The instrumentation and controls are adequate and sufficiently similar to those available in the MCR to permit a safe and orderly shutdown. In addition, Sequoyah Nuclear Plant (SQN) testing has adequately demonstrated the ability to safely shutdown from the ACR.

The following indications are available for the operator in the ACR to indicate status of natural circulation cooling:

1. RCS subcooling (conversion of pressurizer pressure to T_{sat} and subtracting T-hot)
2. T-hot stable or decreasing
3. SG pressure stable or decreasing

The WOG Emergency Response Guidelines (ERG), Revision 1, Generic Issue on Natural Circulation, offers specific guidelines on operator verification of natural circulation. The primary means recommended by this section for verifying natural circulation are:

1. Verification of RCS subcooling
2. Wide Range T-hot
3. SG Pressure

The natural circulation section further states that, "Cold leg temperature (T_c) readings can be used as additional verification that heat removal through the steam generators is occurring." It should be noted that T_c is an additional verification of natural circulation cooling, not the primary means. WOG ERG's also state that, "Actual tests have shown that loop T_c 's follow almost exactly (in trends) the steam generator pressure variations, with minimal time lag." NRC issued a Safety Evaluation Report (SER) of the WOG ERG's on June 3, 1983 (Part II, Reference 4.1.14), stating that, "We have concluded that the guidelines are acceptable for implementation and will provide improved guidance for emergency operating procedure development." A supplemental SER was issued by NRC on December 26, 1985, for Revision 1 of WOG ERGs (Part II, Reference 4.1.36), and closing out open items from Rev. 0 (natural circulation was not an open item).

Steam Generator Pressure Instrumentation is adequate to infer T_c . From the data obtained during startup testing at SQN (ST-9B) and Diablo Canyon (Test Procedure 42.7), the following statistical evaluation was performed concerning the T_{sat} (obtained from S/G pressure) and T_c relationship ($T_c - T_{sat}$).

	<u>Sequoyah</u>	<u>Diablo Canyon</u>
Mean	4.33°F	4.67°F
Standard Deviation	3.29°F	1.65°F

The above temperature differences are well within the tolerance and accuracy levels of the instrumentation. The SQN cool down was terminated at approximately 465°F; however, the Diablo Canyon cool down was continued to below RHR initiation. Since both sets of data were obtained simultaneously (T_c and SG pressure), the data demonstrates the adequacy of using

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SG pressure to determine Tsat and infer Tc, and the lack of significant time lag between the two indicators.

The natural circulation test at SQN was performed from the main control room and the equipment (not controls) used during the natural circulation tests is identical to the equipment which is used in fire initiated safe shutdown from the ACR. For example, the AFW pumps, the CCPs, ERCW pumps, and CCS pumps are used for natural circulation cool down from the ACR and were also used during the MCR natural circulation tests. Therefore, the test results are applicable to shutdown from the ACR.

Tc Summary and Conclusion

After a thorough review of the issues surrounding the Tc question, the facts support that Tsat, along with other plant features as discussed, will provide for adequate assurance that the plant can achieve and maintain a safe shutdown condition. Installation of additional Tc instrumentation in the ACR (per reactor) is not justified based on the following key considerations:

1. The uniqueness of the WBN ACR design
2. The large amount of instrumentation and controls available for shutdown from the ACR
3. Experience and training in plant shutdown from the ACR
4. Instrumentation provided for verification of natural circulation is consistent with WOG ERG's
5. Adequacy of SG pressure instrumentation to infer Tc
6. Increased probability of a small break LOCA as a result of four additional penetrations to the RCS.

The evaluation described above demonstrates the adequacy of the present design's capability to provide sufficient information to the operators to safely shutdown the plant.

2.2 Non-Combustible Radiant Energy Shields

REQUIREMENT - Section III.G.2.f of 10CFR50, Appendix R states that an acceptable means of ensuring that a redundant train of the systems located inside non-inerted containment and necessary to ensure safe hot shutdown will be protected from damage from a fire is to separate the trains by a non-combustible radiant energy shield (RES).

DEVIATION - The NRC recognized standard test method for the determination of the combustibility classification for a material is ASTM E136. The radiant energy shields installed inside the Unit 1 Reactor Building at WBN is Minnesota Mining and Manufacturing (3M) M-20A (Secondary Containment - Annulus) and M-20C (Primary Containment). These materials do not meet the criteria for non-combustibility per ASTM E136.

JUSTIFICATION - Branch Technical Position (BTP) CMEB 9.5-1 (NUREG 0800) (Part II, Reference 4.1.11) provides the guidelines for the design basis of the RES in Section C.7.a(1)b. It states that redundant trains should be separated "by a noncombustible radiant energy shield having a minimum fire rating of one-half hour." In NRC Generic Letter 86-10, the NRC states, "In our opinion, any material with a ½-hour fire rating should be capable of performing the required function. The guidelines of BTP CMEB 9.5-1 relating to a fire-rated radiant energy shield are being considered in our current reviews of NTOL plants. However, to the extent that an applicant can justify that a proposed radiant energy shield can achieve an equivalent level of

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safety, we have been accepting shields that have not been tested against the acceptance criteria of ASTM E119 (Part II, Reference 4.3.1a). In our Appendix R reviews, we have accepted non-fire rated radiant energy shields that have been demonstrated by fire hazards analysis to provide an acceptable level of protection against the anticipated hazard of a localized fire within the containment."

TVA/WBN calculations (EPM-BFS-041895 [Part II, Reference 4.2.6] and EPM-BFS-053195 [Part II, Reference 4.2.8]) provide the design basis for the number of layers of M20A (Annulus) and M20C (Primary Containment) necessary to provide approximately ½-hour radiant energy shields for electrical raceways containing fire safe shutdown circuits. These calculations were based on fire tests performed by the vendor (3M) to UL Subject 1724, "Outline of Investigation for Fire Tests for Electrical Circuit Protective Systems". The fire exposure used in the tests is the Standard Time-Temperature curve from ASTM E119 (Part II, Reference 4.3.1a). It was determined that 4 layers of M20A on the raceways (conduits, junction boxes, and penetration boxes) and 2 layers on the supports and intervening items are adequate for raceways located inside the Annulus. Since the combustible loading is substantially lower inside Primary Containment, 3 layers of M20C on the raceways and 2 layers on the supports and intervening items provide an adequate RES.

ASTM E136 test reports on the M20A or M20C were not available from the vendor; therefore, TVA had a series of fire resistance tests performed on the material at an independent, nationally recognized testing laboratory (Omega Point Laboratories). The following tests were performed:

ASTM E136 Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750° C (Reference 4.3.1d)

ASTM E162 Standard Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source (Reference 4.3.1e)

ASTM E1354 Standard Test Method for Heat and Visible Smoke Release Rates for Materials and Products Using an Oxygen Consumption Calorimeter (Reference 4.3.2a)

In addition to the M20A and M20C, other common rated fire barrier materials (fire-rated gypsum and marinite boards) were included in the tests to provide reference information. The Vendor has previously performed UL 723 "Standard Tests for Surface Burning Characteristics of Building Materials" on M20A. (Note: UL 723 is equivalent to ASTM E84 "Standard Test Method for Surface Burning Characteristics of Building Materials" [Part II, Reference 4.3.1]) A detailed evaluation of these tests is documented in WBN calculation EPM-BFS-063095 (Part II, Reference 4.2.9). The results are summarized below.

ASTM E136: RESULTS

The M20 material with the exterior covering (A=Aluminum; C=Stainless Steel) failed the flaming and temperature rise criteria. The fire rated gypsum board also failed the temperature rise criteria. The fire rated marinite board passed.

ASTM E162: RESULTS

This test method is used for research and development purposes in evaluating the response of a material when exposed to a radiant heat energy source. This test has been performed to augment the UL 723 testing in determining the flame spread of the M20A and M20C when

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exposed to the radiant heat flux of a fire. This standard does not have an acceptance criterion. All of the materials exhibited very low Flame Spread Index (I_s) values. Fire rated marine board had the lowest I_s value of 0.1, followed by gypsum at 0.9 and M20 materials with values from 0.9 to 1.2. Values for I_s of materials typically range from 0 to <100.

ASTM E1354: RESULTS

ASTM E1354, Section 5 states, "This test method is used primarily to determine the heat evolved in, or contributed to, a fire involving products of the test material. Also included is a determination of the effective heat of combustion, mass loss rate, the time to sustain flaming and smoke production." In addition the Appendix states, "The rate of heat release is one of the most important variables, in many cases the single most important variable, in determining the hazard from fire."

The principle property to be determined by this test is the rate of heat released by a material. The heat flux used for the test was 75 kW/m^2 with external electric spark ignition. The time period was ten minutes. The peak Heat Release Rate (HRR) and the Total Heat Release rate (THR) for the M20A and M20C was lower than that of the fire rated gypsum and marine boards. The M20A and M20C average HRR was $<10 \text{ kW/m}^2$ and the average THR was $<5 \text{ kJ}$. The average HRR for gypsum board was 134.1 kW/m^2 with an average THR of 31.3 kJ . The average HRR for marine board was 11.6 kW/m^2 with an average THR of 31.1 kJ . This equates to a quantifiable effective heat of combustion of 4.1 MJ/kg for the gypsum board and 7.2 MJ/kg for the marine board, but no quantifiable effective heat of combustion for the M20A and M20C. The average mass loss of the material showed marine board with the lowest at 5.6% and the M20C with the highest at 15.9%. The average time to ignition was 19 seconds for the gypsum board, but the marine board, M20A and M20C did not ignite.

UL 723 (ASTM E84): RESULTS

The flame spread rating for the M20A and M20C was determined to be 3.7 with 0 fuel contributed or smoke developed.

SUMMARY

Although not passing the ASTM E136 test for combustibility, the 3M M20A and M20C have been demonstrated by testing to be able to perform as effective radiant energy shields. The material can be defined as a "Limited Combustible" in accordance with NFPA 220 "Standard on Types of Building Construction" (Part II, Reference 4.4.38). These materials as designed and installed at WBN will achieve an equivalent level of safety and adequately perform their intended function as radiant energy shields; therefore,

This deviation applies to room(s) U1 Annulus and U1 Contain.

2.3 Fixed Suppression for Alternate Shutdown Locations

REQUIREMENT - Appendix R Section III.G.3 states that alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room or zone under consideration, shall be provided:

1. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2; or

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2. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppressions systems.

In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

DEVIATION - A fire in the control building may result in abandonment of the MCR and shutting down from the ACR, which is considered alternative shutdown. The control building must therefore meet the criteria of Section III.G.3. Contrary to the criteria of Section III.G.3, fire detection and fixed fire suppression systems are not provided throughout the control building.

JUSTIFICATION - The control building is a single fire area and is separated from adjacent fire areas by reinforced concrete construction as identified in Part VI of the FPR (FPR Part VI Section 3.54). Fire detection is provided throughout the control building except for stairways C1 and C2 (all elevations), and the showers, telephone room, the space above the egg-crate ceiling in the main control room, and the space above the living area on elevation 755 (FPR Part VI Section 3.54). Unit 2 Auxiliary Instrument Room 708.0-C4 is provided with full detection but has one detector that exceeds the allowed spacing to the south wall by 3 feet. The identified locations are enclosed with 1½ or 2 hour regulatory and/or non-regulatory fire barriers. The showers, telephone room, corridor (755.0-C15) and the space above the living area contain negligible amounts of combustibles (FPR Part VI Section 3.54.20 shows Telephone Fire Loading to be “insignificant”).

Standpipe and hose stations and portable fire extinguishers are provided throughout the control building. Fixed fire suppression systems are provided throughout the control building except for the following rooms:

<u>Room Name</u>	<u>Room No.</u>	<u>Fire Severity</u>
250V Battery Board Room	692.0-C4 and C5	Low (per room)
24-48V Battery Board and Charger Room	692.0-C8	Low
Stairs	C1 and C2	Low (each stair)
Corridor	708.0-C2	Low
Shower Rooms	755.0-C7 and C8	Insignificant
Main Control Room	755.0-C12	Low
Relay Room	755.0-C13	Low
Corridor	755.0-C15	Insignificant
Telephone Room	755.0-C17	Insignificant
DPSO Shop	755.0-C20	low

The purpose of providing fire detection and fixed fire suppression in an area containing normal shutdown equipment is to limit the severity of a fire in the area such that it will not damage alternate safe shutdown capability. By design, there are no alternative shutdown cables or equipment in the control building. Therefore, the design intent has been achieved by an alternate design concept - the ACR which is installed in the auxiliary building. The limited quantity of in situ combustibles in the above listed rooms, fire compartmentation, fire detection, and fire protection features provided satisfy this purpose.

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This deviation applies to room(s) 692.0-C4, 692.0-C5, 692.0-C8, 708.0-C2, 755.0-C7, 755.0-C8, 755.0-C12, 755.0-C13, 755.0-C15, 755.0-C17, 755.0-C20, Stair C1, and Stair C2

2.4 Intervening Combustibles

REQUIREMENT - Section III.G.2.b requires separation of redundant paths of safe shutdown cables and equipment by a horizontal distance of more than 20 feet with no intervening combustibles. In addition, fire detection and an automatic fire suppression system shall be installed in the area.

DEVIATION - Safe shutdown components in the auxiliary building and Electrical Equipment room in the Intake Pumping Station (IPS) are in compliance with III.G.2.b requirements except that intervening combustibles, in the form of fluid filled transformers, insulation on cables in open ladder type cable trays and Thermo-Lag fire barrier material, are located between the redundant components.

JUSTIFICATION - The combustible loading in the areas of the auxiliary building where redundant safe shutdown components are spatially separated is primarily the insulation on the cables in the cable trays and the Thermo-Lag fire barrier material (90% to 96%). The remaining in situ combustible loading consists of lubricating oil in pumps, motors, and valves; transformer silicone liquid; plastics in electrical panels and junction boxes, etc. The combustible loading in the Electrical Equipment room in the IPS consists primarily of transformer silicone liquid (approximately 13% of the load) and cables in cable trays (approximately 83% of the load) and the remainder is due to lubricating oil in small pumps and plastics associated with electrical panels and junction boxes, etc.

The presence of these intervening combustibles is a concern for two reasons. First, they could add to the fire's thermal plume. Second, they could provide a path for the fire to propagate between redundant components. TVA has addressed these concerns by relying upon existing ceiling level sprinkler systems coupled with supplemental sprinkler protection, where required, to compensate for the intervening combustibles.

Sprinkler protection has been provided at the ceiling level in rooms containing redundant FSSD components. Due to the presence of obstructions such as HVAC ducts, cable trays, pipes, and supports, these systems have been upgraded in accordance with the applicable design criteria (Part II Reference 4.2.72). These criteria applications have resulted in the addition of a significant number of sprinkler heads to provide full coverage at the ceiling level and to compensate for large intermediate level obstructions. Thus the modified systems will release large quantities of water in well developed patterns at the ceiling during a fire, and the water will cascade down through the cable trays and intermediate obstructions. The cooling effect of this water will prevent the formation of a high temperature heat plume and will control room temperatures.

The cascading effect of the water will stop the propagation of fire along cable trays and raceways protected with Thermo-Lag between redundant components. Therefore, transient combustibles at the floor level present the only significant fire exposure to the redundant components.

To mitigate the effects of an exposure fire from transient combustibles at the floor level, TVA has ensured that floor level sprinkler coverage is provided under intermediate obstructions for up to a 30-foot wide path for spatially separated redundant FSSD components. The criteria in

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Attachment 1 are used to ensure this floor coverage. The use of the sprinklers below intermediate level obstructions to compensate for intervening combustibles has been recommended by the staff in meetings on August 29, 1984, and September 13, 1984, and in a letter from Thomas M. Novak to H. G. Parris dated November 6, 1984 (Part II, Reference 4.3.5). Similar deviation requests at Sequoyah and exemption requests at Browns Ferry have been approved.

Sprinkler systems that meet the criteria of Part II, Reference 4.2.72 provide a level of protection that adequately compensates for the presence of intervening combustibles located between spatially separated redundant FSSD components.

The post fire safe shutdown analysis credits 20 feet of horizontal separation between redundant paths in accordance with section II.G.2.b in the intake pumping station electrical equipment room and in auxiliary building rooms 692.0-A1, 713.0-A1, 737.0-A1, 737.0-A5, 737.0-A9, 772.0-A2, and 772.0-A15.

This deviation applies to room(s) IPS-711 (I101), 692.0-A1, 713.0-A1, 737.0-A1, 737.0-A5, 737.0-A9, 772.0-A2, and 772.0-A15.

2.5 Partial Fire Wall Between CCS Pumps

REQUIREMENT - 10CFR50, Appendix R, Section III.G.2.b and III.G.2.c require redundant safe shutdown components to be separated from each other by one of the following methods:

- III.G.2.b Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.
- III.G.2.c Enclosure of cables and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

DEVIATION - The redundant component cooling water system (CCS) pumps are protected by fire detectors and an automatic fire suppression system, but are separated by a part-height and part-width 1-hour fire barrier.

JUSTIFICATION - The five CCS pumps are located in the same area on elevation 713 of the auxiliary building. The two train B pumps are separated from the two train A pumps and the spare pump by a 1-hour barrier which extends 3 feet above the highest point of the pumps.

The majority (95%) of the in situ combustible loading in this area is due to the insulation on cables routed in cable trays and the Thermo-Lag fire barrier material. These cables are protected electrically with appropriately sized circuit protective devices (breakers and fuses). Therefore the probability of an internally generated cable tray fire is not considered to be a credible event. The majority of the remaining combustible loading in the immediate area is due to the approximately 6 gallons of lube oil associated with each CCS pump and approximately 45 gallons of lube oil associated with each of the two Unit 1 AFW pumps (there is approximately 12 feet separating the closest pumps – 1A-A AFW pump from 1A-A CCS pump. The fire safe shutdown analysis considered both pumps lost for a fire near them).

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The redundant circuits for the CCS pumps are separated either by 1-hour barriers or more than 20 feet. A ceiling level preaction sprinkler system is provided for general area coverage. Additional sprinkler coverage has been provided under the steel grate mezzanine over the CCS pumps. Cross-zoned ionization smoke detectors are provided to actuate the preaction suppression system and provide early warning in the event of a fire.

The barrier between the trained CCS pumps prevents radiant heat transfer from a fire involving one train of pumps from affecting the redundant pumps. The large room volume of 391,000 cubic feet and the 23-foot high ceilings will dissipate the thermal effects of a transient combustible fire.

A fire due to transient combustibles located near the edge of the fire barriers at A3/T will not pose a threat to more than one CCS pump. The 3-foot square column at this end of the barrier ensures that an exposure fire that could damage the CCS pump 1A-A will be 20 feet away from CCS pump 1B-B. The location of electrical panels and instrumentation lines at A1/T will also prevent any appreciable amounts of transient combustibles from being placed near this edge of the barrier. The mezzanine above the CCS pumps is a combustible control zone (CCZ) to limit potential transient combustibles in the area above the pumps.

The lack of combustibles and the combination of ceiling level sprinklers, plus the sprinklers located under the mezzanine, will prevent a fire due to transient combustibles located near the edge of the barrier at A1/T from posing a threat to more than one CCS pump. The NRC staff previously reviewed the fire protection features provided in the vicinity of the CCS pumps for compliance with guidelines set forth in Appendix A of BTP APCSB 9-5.1 and found those features to be adequate (see section 9.5.1.5 of the WBN Safety Evaluation Report dated June 1982). The staff also approved a similar deviation at the Sequoyah plant (see letter from B. J. Youngblood to S. A. White, dated May 29, 1986 [Part II, References 4.3.3]).

In conclusion, the fire protection features for this area provide a level of fire protection consistent with the fire hazards identified for the area. The fire protection features provide reasonable assurance that at least one train of fire safe shutdown equipment and cables will remain free of fire damage following any credible fire in this area

This deviation applies to room(s) 713.0-A1.

2.6 Openings in Fire Barriers

REQUIREMENT - Appendix R Section III.G.1 requires that one train of systems necessary for FSSD be free from fire damage. Where fire area boundaries are used to provide system separation, NRC generic letters and guidance documents require that penetrations in walls, floors, and ceilings forming part of a fire area boundary be protected with seals or closure devices having a fire resistive rating equivalent to that required of the barrier.

DEVIATION - The following deviations to these guidelines exist at WBN:

(NOTE: Some unprotected openings are the subject of deviation requests or engineering evaluations in this Part of the FPR. Where an unprotected opening is not the subject of either a deviation request or an engineering evaluation, the rooms on opposite sides of the unprotected openings were combined for purposes of the Appendix R separation analysis. The following items address those "unprotected" openings which are the subject of this deviation request.)

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1. The walls and floor of the ventilation and purge air (VPA) rooms, Rooms 737.0-A5 and 737.0-A9, are equivalent to two hour fire barriers. HVAC penetrations through these barriers to the fuel transfer valve (FTV) rooms, also known as the post accident sampling (PAS) rooms, Rooms 729.0-A8 and 729.0-A9, do not have fire dampers.
2. The walls separating the ERCW pump rooms from the traveling screen room on elevation 741 of the Intake Pumping Station (IPS) are equivalent to 3-hour fire barriers, but have unprotected scupper openings. The common walls between yard manholes have unprotected scuppers.
3. Floor slabs in the Auxiliary Building are used as separation fire barriers between elevations, but some HVAC penetrations do not have fire dampers. Stairwells and equipment hatches are provided with water curtains in lieu of rated barriers.
4. The Control Building mechanical equipment rooms on elevation 692 are separated from turbine building elevation 708 by a 3-hour fire rated floor/ceiling assembly; however, an equipment hatch in the ceiling of each mechanical equipment room is only provided with a metal hatch cover.

2.6.1 Justification for Ventilation and Purge Air Room Ventilation Penetrations

The ventilation and purge air (VPA) rooms, Room 737.0-A5 located in Fire Area 16 and Room 737.0-A9 in Fire Area 74, contains safe shutdown components. Room 737.0-A5 and Room 737.0-A9, are separated from the fuel transfer valve (FTV) rooms, also known as the post accident sampling (PAS) rooms (Rooms 729.0-A8 and -A9), and nitrogen storage room (Room 729.0-A6) in Fire Area 10 by 2-hour rated fire barriers. Three round HVAC ducts per unit (8-, 10-, and 12-inches) in the FTV/PAS room pass through the VPA room for a short distance and then reenter the FTV/PAS and nitrogen storage rooms. These ducts have no openings into the VPA rooms.

In addition, one 12-inch round duct per unit associated with the VPA system penetrates the walls separating each VPA room from the nitrogen storage room. There are no openings in these ducts between the wall and the normally closed isolation dampers FCO-31-342 and FCO-31-343. These ducts are constructed from schedule 40 carbon steel pipe, ASTM A106, grade B and are seismically supported to category I(L) requirements. As is typical of mechanical penetrations, pipe sleeves are provided where the ducts penetrate the barriers between the VPA rooms and the FTV/PAS and nitrogen storage rooms.

The annular space between the sleeves and the pipes are sealed with a fire rated seal that has a fire rating equivalent to that of the barrier. The in situ combustible loads for the rooms are as follows:

Nitrogen Storage Room (Room 729.0-A6 in Fire Area 10)	<u>Insignificant</u>
FTV/PAS Room (Room 729.0-A8 in Fire Area 10)	<u>Low</u>
FTV/PAS Room (Room 729.0-A9 in Fire Area 10)	<u>Low</u>
VPA Rooms (Room 737.0-A5 in Fire Area 16, and Unit 2 VPA Room 737.0-A9 in Fire Area 74)	<u>Low</u>

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The major source of combustibles in the VPA rooms is charcoal filters. The charcoal filters are protected with closed head sprinkler (water spray nozzles) systems that are actuated by duct mounted ionization detectors. The FTV/PAS rooms are provided with preaction sprinkler systems (except in the entrance corridors to the rooms) that are actuated by ionization smoke detectors. Each VPA room is also provided with a preaction sprinkler system that is actuated by ionization smoke detectors. The nitrogen storage room is provided with ionization smoke detectors.

The only effect of a fire in the FTV/PAS or nitrogen storage rooms which could impact on the VPA room is radiant heat due to hot gases passing through the ducts. The absence of fixed combustibles in the immediate area of the ducts, the typical mechanical penetration design which includes pipe sleeves for the ducts, and more than 20 feet of spacial separation between the ducts and the nearest safe shutdown circuit provides a high degree of assurance that this radiant heat will not be a threat to safe shutdown components located in the VPA rooms. The fire protection provided for these rooms is adequate for the hazards present and the addition of fire dampers in these ducts would not significantly enhance the fire protection in these areas.

This deviation applies to room(s) 737.0-A5, 737.0-A9, 729-A6, 729.0-A8, and 729.0-A9.

2.6.2 Justification for Scupper Openings

Scupper openings penetrate fire barriers in two locations. One is in the IPS between the ERCW pump rooms and the traveling screen room. The other is between the Train A and Train B duct banks that run from the auxiliary building to the IPS where they share a common wall in three manholes in the yard. Each is discussed in more detail below.

2.6.2.1 ERCW Pump Room Scuppers

The scupper openings in the IPS that penetrate the fire wall between the ERCW pump rooms and traveling screen room are located at the floor and provide drainage of rainwater from the ERCW pump rooms to the traveling screen wells.

The floor at elevation 741 of the IPS slopes away from the ERCW pumps toward the scuppers. A postulated oil spill will drain away from the pumps to the scuppers, pass through the scupper openings, and immediately drop through floor grating into the traveling screen well. The high flash point of the lubricating oil (432°F) makes it highly unlikely that the spilled oil would ignite.

However, if it did, the wall separating the two ERCW pump rooms from the traveling screen room will provide radiant heat protection from the fire. The roof design permits free air flow between the missile shield beams and will also allow the heat from a fire to dissipate to the outside environment and minimize the temperature rise within the room.

A fire in one ERCW pump room will not propagate through the scuppers and jeopardize a redundant train of ERCW pumps. The existing separation between redundant ERCW pumps is adequate for the hazards present. The scupper holes in the IPS have been previously reviewed and accepted by the NRC in the WBN SER dated June 1982.

This deviation applies to room(s) IPS-741 ERCW PUMP ROOM A and IPS-741 ERCW PUMP ROOM B.

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2.6.2.2 Yard Duct Bank Scuppers

The scupper openings in the common wall between duct banks in the yard are located at floor level for drainage purposes. Manholes 1A and 1B, 2A and 2B, and 3A and 3B are used to access the train A and train B duct banks that connect the auxiliary building to the IPS. The train A and train B duct banks are separated by a 12" reinforced concrete wall at each pair of manholes. One manhole in each pair (i.e., 2A or 2B) contains a sump pump. The other manhole is connected to the manhole with the sump pump by a 2 inch diameter scupper opening. There are no other openings in the common wall separating the train A and train B manholes.

The combustible material in the yard duct banks is insulation associated with cables. There are no other combustible materials or equipment (except for the sump pump) in the duct banks where they share a common wall. A postulated fire in the cable insulation of one duct bank or in the sump pump will not propagate through the scupper openings to the adjacent duct bank due to the lack of continuity of combustible materials between duct banks.

This deviation applies to room(s) Yard Ducts.

2.6.3 Justification for Auxiliary Building HVAC, Stair, Elevator and Hatch Penetrations

The auxiliary building is a multi-level structure that is subdivided into separate fire areas. Each elevation contains fire areas that are separated from adjacent elevations. Each fire area contains individual or multiple rooms. Fire barriers within the auxiliary building are minimum 2-hour fire rated and fire barriers separating the auxiliary building from adjacent buildings are 3-hour rated.

Each elevation of the auxiliary building is provided with ionization smoke detectors and, with the exception of elevation 676, automatic suppression systems. (Individual rooms without detection and/or suppression are documented in Section 3 of this Part.) The mechanical pipe penetrations and electrical penetrations are provided with appropriate penetration seals. The in situ combustible loading for the open areas (e.g. general floor areas of elevations 692, 713, 737, etc.) consists primarily of insulation on cables in the cable trays and Thermo-Lag fire barrier material (approximately 90% or greater). Flame retardant coating is applied to non-IEEE-383 cables in accordance with Design Criteria WB-DC-30-4 (Part II, Reference 4.2.29). As documented in Part III, Section 7.2, the cables are provided with appropriately sized circuit protective devices (breakers and fuses). This provides a high degree of confidence that an internally generated cable tray fire is highly improbable.

The rest of the in situ combustible loading is dispersed throughout the areas/rooms and consist of lubricating oil in valves and motors, plastics in panels and junction boxes, etc. The justifications for open stairs and hatches, undampened ducts, spare conduit sleeves, and non-rated personnel hatches in the auxiliary building are presented below.

2.6.3.1 Water Curtains for Open Stairs and Hatches

A water curtain designed in accordance with NFPA 13, section 4-4.8.2 (Part II, Reference 4.4.12) has been provided for the following openings:

1. Stairwell number 5 located near column lines A11/S below elevations 713 and 737.

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2. Stairwell number 6 located near column lines A5/S below elevations 713 and 737.
3. Stairwell number 3 located near column lines A8/U-V below elevations 713 and 737.
4. Normally closed equipment hatch located near column lines A3/S below elevation 772.
5. Normally closed equipment hatch located near column lines A13/S below elevation 772.
6. Equipment hatch openings located near column lines A8/U-W below elevations 713, 737, and 757.
7. The elevator door openings located at column lines A8/T below elevations 713, 737, and 757.

The water curtains provide an adequate level of protection to prevent a postulated fire on one elevation from propagating to another elevation through one of these openings.

This deviation applies to room(s) 713.0-A1, 737.0-A1, 757.0-A13, 772.0-A1, and 772.0-A16.

2.6.3.2 Undampened HVAC Ducts

2.6.3.2.a Constructed of Spiral Welded Pipe

Round HVAC ducts (pipes) are not provided with fire dampers where the pipe penetrates fire barriers. Such pipes penetrate the east wall of Room 676.0-A3 from an adjacent pipe chase, and through the north wall of Room 676.0-A3 to Room 676.0-A1. Neither of these walls is required for fire safe shutdown. The pipe inside the pipe chase passes up through the ceiling into Room 692.0-A1 near column line A10/S. The pipe then runs north and passes through the wall (not required for fire safe shutdown) of 692.0-A31 to the east side of the elevator shaft and passes up through the ceiling into Room 713.0-A1. The pipe continues up through the ceiling into Room 737.0-A1 in the same general location.

These ducts are constructed of either spiral welded pipe or schedule 10 pipe and are treated as normal pipe penetrations. Therefore they are provided with fire rated mechanical penetration seals and provide an adequate level of fire protection for these types of ducts.

This deviation applies to room(s) 676.0-A3, 676.0-A1, 692.0-A1, 692.0-A31, 713.0-A1, and 737.0-A1.

2.6.3.2.b Heavy Sheet Metal Ducts

Sheet metal ducts that are not provided with fire dampers are identified on the Fire Compartmentation drawings (Figures II-27A through II-46A excluding 37A). They are constructed of minimum 22 gauge sheet metal and will provide a 1-hour equivalent level of protection. The safe shutdown analysis considered these opening as unprotected and ensured that a fire on either side of the opening could not impact both paths of redundant safe shutdown components (cable or equipment). Automatic suppression and detection is provided on at least one side of the opening.

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2.6.3.3 Spare Conduit Sleeves with Both Ends Capped

Spare conduit sleeves which penetrate fire barriers are provided with approved sealant material, capped on each end with metal caps or plugs (for example Crouse-Hinds type PLG), or a combination of the two. Neither flames nor hot gases will propagate through these spare conduits sleeves and these sealing methods provide an adequate fire seal.

2.6.3.4 Non-Rated Personnel Hatches

There are specific locations where non-rated steel hatches are used in floor/ceiling assemblies to enclose personnel access routes between rooms on different elevations. The locations where these steel hatches exist are identified on the compartmentation drawings in Part II of the FPR. One such hatch provides access from Room 692.0-A31 up into a monolithic concrete filter enclosure on elevation 713 near column lines A10/S. A second location provides access into a monolithic concrete filter enclosure identified as Room 692.0-A27 from the Unit 2 Pipe Chase 676.0-A17.

Neither monolithic enclosure in which the steel hatch is located is open to the remainder of the rooms on elevations 692 and 713. The steel hatches are provided from the elevations below specifically due to the lack of access into the monolithic enclosures from elevations 692 and 713. There are no safe shutdown cables or components within the monolithic enclosures on these two elevations; therefore, even should fire spread up through the steel hatch into an enclosure, there is no impact on fire safe shutdown capability.

Summary

The above described conditions provide a level of fire protection that is adequate to ensure that safe shutdown can be achieved and that additional modifications would not significantly improve the fire protection capability of the plant.

This deviation applies to room(s) 676.0-A17, 692.0-A27, 692.0-A31, and 713.0-A1.

2.6.4 Control Building Equipment Hatches to the Turbine Building

The mechanical equipment rooms (692.0-C1 and C10) on elevation 692 of the control building are provided with equipment hatches in the ceiling separating them from elevation 708.0 of the turbine building. The equipment hatches are provided with metal covers flush with the floor that are not fire rated. Since the equipment hatches provide access from the turbine to the control building, the metal covers are vital area boundaries with access controlled and security contacts attached to the underside of the hatches. As such, the hatch covers will not be inadvertently removed.

The metal covers do not form a water-tight seal where they cover the hatch openings; however, the metal covers will limit flammable and combustible liquid spills through the hatch openings into the control building mechanical equipment rooms. Seepage could occur through the hatches around the perimeter where the covers are mounted to the floor and through the small diameter holes in the hatches which are provided to facilitate their removal.

There are no safe shutdown components in the turbine building within 20 feet of the equipment hatches; as such, fire spread up into the turbine building will not impact FSSD capability. The mechanical equipment rooms are provided with automatic detection and preaction sprinkler

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systems, including sidewall heads in the vicinity of the hatches. Detection and suppression in the mechanical equipment rooms control and/or extinguish postulated fires prior to arrival of the fire brigade

This deviation applies to room(s) 692.0-C1 and 692.0-C10.

2.7 Portable Lights for Containment, Post Fire Areas and Yard and DG Backed Lighting in Turbine Building

REQUIREMENT - Section III.J of Appendix R states, "Emergency lighting units with at least an 8-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto."

DEVIATION - Installed 8-hour battery pack emergency lighting units are not provided in either of the Containments, Turbine Building, or the Yard. Portable battery powered lights are used in lieu of installed battery pack lighting units in both Containments. Emergency diesel generator (EDG) backed standby lighting is installed and maintained for the Turbine Building. Security diesel generator backed standby lighting is installed and maintained for the Yard. The Nuclear Assistant Unit Operators (NAUOs) carry portable lighting to supplement Yard and Turbine Building diesel backed lighting systems to provide task lighting capability (e.g., breaker tripping).

2.7.1 Justification for Containment

In addition to the portable battery powered lights carried by the NAUOs, WBN has provided dedicated, hand-held portable lanterns in convenient locations that can be used for the manual actions to be performed inside Containment. Manual operator actions requiring entry into primary containment only result from fire damage to the RHR isolation valves or cables near the valves which are located inside lower containment.

Ample time is available to extinguish the fire, obtain the portable lanterns (if required), and operate the valves, because valve alignment may be performed anytime within two hours after reactor trip. Other actions identified for inside primary containment are optional. That is, closure of the cold leg accumulator valves is desirable, but not essential because reactor coolant pressure can be maintained above 150 psi. A fire affecting the RHR isolation valves could damage lighting circuits in the immediate vicinity, but does not disable all lower containment lighting because of circuit multiplicity and source diversity. Lower containment is equipped with both normal and diesel backed, standby lighting with fixtures located on three different elevations both inside and outside the crane wall. Fixtures at all elevations contribute to the general lighting level for access and egress.

The lights at each elevation are powered from two normal lighting circuits and, in general, different circuits are used at each elevation. Additionally, two standby lighting circuits, with fixtures strategically located throughout lower containment, provide adequate lighting in case of fire damage to the normal lighting cabinet. Batteries for the 8-hour emergency lighting units are not designed for the environmental conditions (e.g., high temperature and humidity) inside Containment. Due to ALARA considerations, access to the Containment during operations is very limited which means that inspection and testing of the battery units is only practical during an outage. Also, adding emergency lighting units inside Containment introduces additional material that could potentially impact the performance of the safety related equipment during accident conditions. In addition to the portable lights carried by the NAUOs, TVA has provided dedicated hand-held portable lighting units for use in Containment. The portable lanterns

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provide an acceptable source of emergency lighting capability and ensure adequate lighting for Operators to be able to perform manual actions.

This deviation applies to room(s) U1 Contain, U2 Contain, U1 Annulus, and U2 Annulus.

2.7.2 Justification Yard Area

Yard Area manual actions or manual actions for which traversing the Yard is necessary for fires in the Auxiliary Building or Control Building. The fires involving or requiring access to the Reactor Coolant Pump (RCP) trip breakers are an example. Lighting in the Yard is necessary for the manual action that trips the RCP breakers located in the breaker house in the switchyard. Tripping of the following breakers may be necessary for selected fires.

- 1-MTR-68-8 (local trip breaker 52-1A)
- 1-MTR-68-31 (local trip breaker 52-1B)
- 1-MTR-68-50 (local trip breaker 52-1C)
- 1-MTR-68-73 (local trip breaker 52-1D)
- 2-MTR-68-8 (local trip breaker 52-2A)
- 2-MTR-68-31 (local trip breaker 52-2B)
- 2-MTR-68-50 (local trip breaker 52-2C)
- 2-MTR-68-73 (local trip breaker 52-2D)

Access to these breakers is through the transformer/switchyard. Other manual actions are performed in the Diesel Generator Building and the Intake Pumping Station. The Yard is provided with normal lighting and security lighting. It is TVA's conclusion that the use of portable lanterns (in the event the normal and security lighting was lost) provides a dependable source of light and therefore meets the intended purpose of ensuring adequate lighting for the Operator to access and perform the manual action. WBN has provided dedicated, hand-held portable lanterns in convenient locations that are maintained for the manual actions to be performed inside the Yard Area.

This deviation applies to room(s) Yard.

2.7.3 Justification for Turbine Building

The Turbine Building manual operator actions (breaker manipulation) are only necessary for fire that prevents access to the reactor trip switchgear in Rooms 757.0-A10 and 782-A1 for Unit 1 and 757-A16 and 782.0-A3 for Unit 2. The normal lighting and the emergency diesel generator backed standby lighting system provides adequate lighting to access and perform these actions in the Turbine Building. The standby lighting system is powered from a diesel generator backed power supply which is judged equivalent to 8-hour battery packs. The power supply cables to the Turbine Building standby lighting panel and the feeder cables are not routed in the rooms where a fire could create the need for the Turbine Building manual actions. Therefore, the standby lighting system will be available when needed.

This deviation applies to room(s) Turbine Bldg.

2.7.4 Justification for Post-Fire Areas

For those areas in which a postulated fire occurred and a manual action is necessary to be performed after the fire has been extinguished, the Operator will use portable hand lanterns for lighting. Adequate installed emergency lighting is provided for the access routes to those areas. WBN has provided dedicated, hand-held portable lanterns in convenient locations that are maintained for the manual actions to be performed in the areas where manual action(s) must be

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performed after the fire has been extinguished. At least two diverse access routes are provided to each fire area.

It is TVA's conclusion that the above described alternatives to installing 8-hour battery pack emergency lighting and providing lighting in areas where manual actions are performed after the fire has been extinguished provides a reliable source of lighting for an Operator to perform the manual actions and therefore request approval of this deviation.

This deviation applies to room(s) Post Fire Areas (Generic OPS hand lanterns).

2.8 Reactor Coolant Pump Oil Collection System

REQUIREMENT - Section III.O of 10CFR50 Appendix R, "Oil Collection System for Reactor Coolant Pump", provides the guideline for an oil collection system for the Reactor Coolant pumps. WBN has provided an oil collection system for each reactor coolant pump which consists of splash shields, a collection basin directly below each RCP motor, and closed piping from the collection basin to the closed and vented concrete equipment drain sump. All potential leakage sites are protected by a combination of spray shields that are designed to direct the flow of oil into the collection basin in the event of a leak.

DEVIATION - The guideline of Section III.O of 10CFR50 Appendix R states in part that "Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems". The guideline as stated means that any oil leakage that is not collected and found external to the oil collection system would not meet 10CFR50 Appendix R Section III.O. This deviation is to allow for minor amounts of oil that escape the oil collection system. There is also the potential of up to seventeen gallons of lube oil collecting in the lower motor housing. This deviation does not provide for allowable leakage due to damage, disassembly, or improper maintenance of the oil collection system as designed.

JUSTIFICATION - The RCP oil collection system must function in an area with significant ventilation airflows from both the CRDM Cooling Units and the RCP motor itself. A minor leak in the lubrication system in the lower guide bearing and reservoir collects in the bottom of the lower motor support housing. This area is provided with a drain line to the oil collection system, but up to 17 gallons of oil could potentially accumulate before it begins to drain to the collection system. However, the amount of oil that could be in the housing is less than 2 gallons because the low level alarm on the lower oil reservoir is set for a loss of less than 2 gallons (Part II, Reference 4.3.8). Since the alarm response instruction includes problem investigation and online oil addition is not an accepted practice, the amount of undetected oil that may collect in the housing will be less than 2 gallons.

The high ventilation airflow between the lower guide bearing and reservoir and the bottom of the lower motor support housing can result in some of the oil becoming entrained in ventilation air, which in turn could prevent some of the leakage from ever entering the collection system. The need for ventilation around the RCP dictates that some ventilation flow areas must be present in areas around the lube oil system and the oil collection system. In designing the oil collection system, it is not feasible in all instances to prevent minor amounts of oil from becoming entrained in the ventilation air and escaping the collection system. This oil becomes a thin film on piping and supports in the vicinity of the RCPs.

A minor leak in the lubrication system in the lower guide bearing and reservoir collects in the bottom of the lower motor support housing. The lower motor support housing is provided with a

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drain pipe that will drain any accumulation of liquid (water and/or oil) over seventeen gallons from the lower support housing to the oil collection system. This ensures that postulated leakage will be contained and drained per the requirements of Appendix R, Section III.O. The combustible loading calculation considers the entire inventory of oil in each pump when determining the fire severity for each reactor building; therefore, the postulated accumulation of oil in the lower support housing has already been accounted for. Unit 1 has not experienced any accumulation of oil from any of the pumps. Section III.O states:

“Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory.”

Therefore this postulated accumulation of oil is considered to not present a hazard to fire safe shutdown and to be in compliance to the requirements of III.O for the following reasons:

- a. The oil is collected and amounts over seventeen gallons are drained to a vented closed container.
- b. Each pump is provided with automatic suppression and detection.
- c. The entire inventory of lube oil from each pump is accounted for in the combustible loading calculation and fire hazards analysis. The fire severity index is not affected.
- d. No measurable leakage has occurred in the operating life of Unit 1.
- e. The collected oil is not exposed to an ignition source.
- f. Each pump is provided with low oil level annunciation that alerts the main control room for lube oil loss of less than 2 gallons.

A modification to drain all postulated oil accumulation in the lower motor housing would not increase the safety of the plant.

Significant defense-in-depth measures exist to prevent a fire event due to a failure in the reactor coolant pump lube oil system. In the unlikely event that a fire did start, there are defense-in-depth measures to ensure that the fire is quickly identified and extinguished, and that the effect of the fire does not prevent the safe shutdown of the plant. These measures, in addition to the RCP oil collection system, include the use of suppression and detection above the RCPs, the proximity of manual hose stations, the use of mirror insulation on the RCS system piping, and the absence of ignition sources in the vicinity of the RCPs. A low oil level alarm annunciates once the oil loss reached the alarm setpoint and alert the operator to investigate the problem.

Oil used for the RCP motor bearings is Mobil SHC 824 Synthesized lubricant. This oil has a flash point of 480°F. This high flash point classifies the lubricant as a Class IIIB combustible liquid in accordance with NFPA 30 (Part II, Reference 4.4.21). The normal operating temperature of the oil is 131°F. The oil at its normal operating temperature is well below its flashpoint and does not present a hazard.

The normal reactor coolant system temperature is 588°F. The reactor coolant piping could be a potential source of heat that could volatilize the lubricant if any leakage contacted the piping. This hazard is mitigated by the mirror insulation on the pump and reactor coolant piping. The stainless steel mirror insulation is non-combustible and at normal operation, the exterior of the insulation is 142°F. The surface of the high temperature piping is well insulated with

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non-combustible, non-permeable insulation such that the surface temperature of the insulation is well below the flash point of the lubricant and is not a potential ignition source. Minor amounts of oil that escape the collection system could potentially be deposited on mirror panels in the vicinity. The amount of oil, however, that is expected to escape the collection system is minor, so only a fine film coating is deposited on the panel. The mirror insulation panels are fitted together with overlapping seams and secured in place, which minimizes the likelihood that any oil seeps through the seams between panels. In addition, since only a minor amount of oil is present on the outside of the panel, it is not expected that a significant amount of oil could run into any of the panel seams.

Fire hazards due to electrical systems both within the pump assembly itself and those which are located in areas within possible range of leakage from the oil collection system have been evaluated. To prevent damage to the motor from interior oil leaks, the stator windings are coated with an epoxy resin and the oil sources are separated from electrical components by high silicone steel sheets. Electrical cables and terminals in the vicinity of the RCP have been shielded. As such, leakage will not come in contact with any potential electrical ignition source in the area of the RCP.

In addition, each of the RCPs is protected by fixed fire suppression and detection systems. These systems provide early detection and fire control until manual suppression activities can be achieved. The RCPs are protected by a closed head preaction automatic water spray system supplied by a common header. Each pump is protected by a ring header containing eight closed head spray nozzles. The header is located approximately four feet above the top of the RCP motor. Each nozzle has a temperature rating of 500 °F. The 500 °F fusible bulb elements provide reasonable assurance that the nozzles will not operate during other design basis events, yet will open for fire conditions caused by a combustible liquid fire on the RCP.

Each of the RCPs is protected by automatic detection systems. Each RCP has four rate compensating / fixed temperature spot type thermal detectors. The detection circuits are Class A supervised. The temperature rating of the detectors is 225 °F, and the detectors are cross-zoned (two in each zone). Upon actuation of one detector in each of the zones, the detection system automatically actuates the deluge valve to fill the supply piping for the closed head water spray system. The area above the RCPs is also equipped with a hood. In the event of a fire, the hood will act as a ceiling, forcing the heat to bank down, thus reducing the response time of the detectors and fusible elements in the spray nozzles.

In conclusion, based on the above discussion, there is reasonable assurance that adequate defense-in-depth measures are in place to prevent a RCP lube oil fire, and to quickly detect and suppress a postulated fire that might occur. Therefore, the allowance for minor leakage from the oil collection system does not affect the ability to achieve and maintain safe shutdown. This deviation applies to room(s) U1 Contain and U2 Contain.

2.9.0 Fire Hazards Analysis (FHA) in Lieu of 10CFR50, Appendix R, Section III.G.2 Separation

REQUIREMENT – Section III.G.2 provides physical separation criteria applicable to fire areas where cables or equipment of redundant trains of systems necessary to achieve and maintain hot shutdown are located in the same fire area. Compliance with these criteria is one means of ensuring that one of the redundant trains is free of fire damage as required by Section III.G.1.

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DEVIATION – For the purpose of addressing operator manual actions (OMAs), electrical raceway fire barrier systems (ERFBS) and radiant energy shields (RES), the rooms listed in the following table demonstrate compliance with the intent of Section III.G.1 by a fire hazards analysis with no OMA, ERFBS or RES in lieu of the prescriptive separation criteria described in Section III.G.2.

SECTION	ROOM NUMBER
2.9.1	692.0-A29 & 692.0-A30
2.9.2	729.0-A1 & 737.0-A6
2.9.3	729.0-A2
2.9.4	729.0-A6
2.9.5	729.0-A10
2.9.6	729.0-A11 & 737.0-A10
2.9.7	729.0-A12
2.9.8	729.0-A13
2.9.9	729.0-A15 & 763.5-A2
2.9.10	757.0-A13
2.9.11	757.0-A14
2.9.12	757.0-A15
2.9.13	2RIR
2.9.14	2RA1
2.9.15	2RA2
2.9.16	2RA3
2.9.17	2RA4
2.9.18	2RF1
2.9.19	2RF2
2.9.20	2RI (2RI-1, 2, 3, 4)
2.9.21	2RO (2RO-1, 2, 3, 4)

JUSTIFICATION – A fire hazards analysis (FHA) as documented below has been performed for each of the rooms listed in the above table and is provided here for NRC review and approval. The FHA has been performed in accordance with the guidelines of GL 86-10. When a barrier is identified as a rated fire barrier, the penetrations through that barrier are rated for the barrier and are maintained by appropriate engineering design and maintenance programs (e.g. fire doors, fire dampers, and penetration seal programs [Part II, Reference 4.2.48, 4.2.44, 4.2.49, 4.2.34, 4.2.35, and 4.2.67]). The combustible loading information is derived from the Combustible Loading calculation (Part II, Reference 4.2.10) and the fire rated barriers are documented on the Fire Protection Compartmentation drawings (Part II, Reference 4.2.39).

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FHA General Information

FSSD "path" refers to a set of components that are sufficient to accomplish a fire safe shutdown function. In this deviation the word "component" is used when discussing equipment or cables. "Equipment" is used in regard to an end device such as a motor control center, valve, handswitch, etc. Cable is referring to the electrical power, control and instrumentation circuits.

Motor operated valves (MOVs) are not considered credible ignition sources because it would take multiple failures (electrical and mechanical) to result in a fire. During normal operation, the power cables to the MOVs are de-energized (they are only energized when the valve is given a signal to move). The power cable (routed in conduit) is provided with circuit protective devices (fuses/breakers) that are designed to clear a fault prior to cable insulation ignition. The motor is enclosed and the gear box on the MOV would have to fail and leak lubricating oil at the same time that a power cable to the valve was energized and failed. The lubricating oil for the valves is not exposed combustibles, but the combustible loading calculation has assumed that the oil is exposed; therefore, the combustible loading for each room is very conservative. In addition, NUREG/CR-6850 identifies that any enclosed motor, including MOV drive motors, regardless of size are not considered as ignition sources.

Flow solenoid valves (FSVs) are not considered credible ignition sources because the cables (routed in conduit) are low voltage circuits that are provided with circuit protection (fuses and/or breakers) that are designed to clear a fault prior to cable ignition. There is insignificant combustible material associated with a FSV and the worst result of a fault on these circuits is to blow a fuse or open a breaker.

Small wall mounted transformers, electrical control panels (e.g. local control panels, push button stations, open instrument panels on which are mounted transmitters, indicators, etc.) and lighting units are not considered credible ignition sources because the cables (routed in conduit) terminating on/in these small transformers, panels or lighting units are low voltage circuits that are provided with circuit protection (fuses/breakers) that are designed to clear a fault prior to cable insulation ignition. There is insignificant combustible material associated with these devices. In addition, NUREG/CR-6850 identifies that dry transformers with a rating of 45kVA or less are expected to have insufficient combustible material to produce a fire with the potential to spread beyond the bounds of the initiating component or to represent a direct threat to other plant equipment or cables. The electrical panels and lighting units are less of a hazard than the dry transformers.

Small motors of 5 hp or less are not considered credible ignition sources because there is insignificant combustible material associated with the motor. In addition some motors such as sump pump motors are normally de-energized. The power cables to the motors are properly sized and the protective devices (breaker/fuse) are designed to clear a fault before the cable reaches its auto-ignition temperature. NUREG/CR-6850 states: "Pumps with a rating of 5 hp or less are assumed to have little or no significant contribution to risk".

Radiation monitors are not considered credible ignition sources because they contain insignificant quantities of combustible material and the circuits to these devices are low voltage, routed in conduit and are protected by properly designed circuit protective devices (fuses/breakers) that will clear a circuit fault prior to the insulation on the cables reaching its auto-ignition temperature. As with a dry transformer (see above), the radiation monitors have insufficient combustible material to produce a fire with the potential to spread beyond the monitor or to represent a direct threat to other plant equipment or cables.

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The following deviation requests address the individual rooms or group of closely related rooms. Each contains four parts:

- a. Description of Condition – Describes the room(s) and its relationship to the fire area and analysis volume it is in and gives a brief description of the OMAs and/or cable protection (i.e. electrical raceway fire barrier system (ERFBS) or radiant energy shields (RES)) that would be required in order to meet Section III.G.2 if an assumed fire damaged all of the components in the room. This part describes the approach which would be required if the deviation were not approved by the NRC.
- b. Fire Hazards Analysis – This part provides the following:
 1. A description of the room size, fire barriers and other fire protection features of the room(s).
 2. Identifies the fire load and fire severity associated with the room(s) and the type of combustibles.
 3. Defines the control of transient combustibles and ignition sources.
 4. Identifies the adjacent rooms and the potential for fire propagation from one room to another.
- c. System Evaluation – The System Evaluation considers expected, realistic fire damage (based on the FHA) and its effect on FSSD components in the room(s). The three subsections are:
 1. Redundant FSSD Components in the Room – Identifies and evaluates the redundant FSSD components located in the room and justifies that no OMAs, ERFBSs or RESs must be implemented or installed since failure of redundant equipment or cables is not expected. The evaluation includes relative locations of the redundant components with respect to each other and to ignition sources and combustibles in the room(s). Additional factors providing defense-in-depth are included as appropriate.
 2. FSSD Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume – Evaluation of components in the room(s) whose redundant counterpart is located in another room within the same analysis volume. Specific consideration is given to adequacy of the barrier separating the redundant components.
 3. Other FSSD Components in the Room – Evaluates the potential impact to normal plant operation due to failure of the non-credited FSSD components in the room(s).
- d. Conclusion – The results of the FHA and system evaluation have determined that no credible fire could occur that would impact the FSSD analysis and that no OMAs or ERFBSs or RESs are necessary for the protection of the components in the room(s).

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2.9.1 Rooms 692.0-A29 and 692.0-A.30: Boric Acid Evaporator Package Rooms A and B

This deviation applies to room(s) 692.0-A29 and 692.0-A30.

2.9.1.1 Description of Condition

These two rooms are a part of fire area 1 (See Part III, Table 3-3 for room listing) and they are analyzed in analysis volume AV-005. Fire area 1 is considered a III.G.2 area; however, rooms 692.0-A29 and 692.0-A30 do not contain redundant shutdown paths, or any FSSD equipment. The only FSSD components located in rooms 692.0-A29 and 692.0-A30 are cables routed in conduits.

Physical separation in accordance with III.G.2 cannot be achieved in AV-005. An FSSD analysis which assumes failure of all equipment and cables in the rooms would result in OMAs being credited in lieu of III.G.2 physical separation for these two rooms. Therefore, the following OMAs are implemented to achieve fire safe shutdown:

- a. Unit 1 – Stop primary makeup water pump within 15 minutes by tripping the breaker on the MCC.
- b. Unit 2 – Stop both primary makeup water pumps within 15 minutes by tripping the breaker on the MCC.
- c. Unit 2 – Bypass normal makeup control valve and throttle RCP seal injection flow within 75 minutes by operation of manual valves.
- d. Unit 2 – Monitor RWST level from gage on side of tank.

2.9.1.2 Fire Hazards Analysis

2.9.1.2.a Room Description

The Boric Acid Evaporator Package Room B (692.0-A29) and Room A (692.0-A30) are of reinforced concrete construction (walls, floors and ceiling thicknesses from 12 to 36-inches). The ceilings and part of the floors with a room below have a fire resistance rating of 2 hours and the walls separating the rooms from the Control Building have a fire resistance rating of 3 hours. The walls separating these rooms from adjacent rooms on 692.0 are minimum 24-inches thick reinforced concrete, but are not assigned a fire resistive rating because electrical and mechanical openings in these barriers are not provided with fire rated seals/closures. The doors into the rooms are heavy duty hollow metal doors that are similar to fire rated doors. The rooms have a floor area of 888-ft² (692.0-A29) and 850-ft² (692.0-A30) and a nominal ceiling height of 19-feet. Rooms 692.0-A29 and 692.0-A30 are designated as Combustible Control Zones (CCZs) (see Part II section 5.0 for definition of a CCZ).

2.9.1.2.b Fire Load

The fire severity classification due to the combustible loading in the room is insignificant. The minor amount of combustible material is due to a quart of lube oil for each pump associated with each Evaporator Package and plastics associated with a small wall mounted dry type transformer, junction boxes and light covers in each room. The Evaporator Packages are not in

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use and the pumps are not powered; therefore, they are not an ignition source. Cables in the room are routed in conduits and are not considered to be ignition sources.

The small wall mounted dry type transformer, junction boxes and lights are not considered to be ignition sources (see Justification in 2.9.0 above). It is concluded that the insignificant quantity of in situ combustibles and no ignition sources combined with the strict control of transient combustibles assures that no credible fire in 692.0-29 or 692.0-A30 could occur and propagate into an adjacent room.

2.9.1.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room. Rooms 692.0-A29 and 692.0-A30 are CCZs (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the rooms is not controlled; however, the lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.1.2.d Adjacent Rooms

The room below (676.0-A17) is provided with a fire detection system and contains insignificant quantities of in situ combustible. It is separated from rooms 692.0-A29 and 692.0-A30 by a 2 hour fire rated barrier. No credible fire in 676.0-A17 could propagate into 692.0-A29 or 692.0-A30.

Adjacent room 692.0-A1 is provided with fire detection and automatic suppression systems and is separated from the two rooms by at least 24-inch thick reinforced concrete walls that are not assigned a fire resistance rating because of electrical and mechanical opening not being provided with fire rated seals/closures. Over 97% of the combustible loading in 692.0-A1 is due to insulation on cables routed in cable trays. The combination of automatic suppression in 692.0-A1 and the concrete walls that separate 692.0-A1 from 692.0-A29 or 692.0-A30 provide assurance that no credible fire in 692.0-A1 could propagate into 692.0-A29 or 692.0-A30.

The wall between room 692.0-A27 and adjacent room 692.0-A29 is a 36-inch thick reinforced concrete barrier but is not assigned a fire rating. Room 692.0-A27 contains the concentrate filter (a high radiation area) and does not contain any in situ combustibles or ignition sources. There is no credible fire in 692.0-A27 that could propagate through the wall into 692.0-A29.

The wall between 692.0-A30 and 692.0-A31 is a 36-inch thick reinforced concrete wall that is assigned a 2 hour fire resistive rating. However, the wall is not credited for FSSD. Room 692.0-A31 is provided with a fire detection system and has low in situ combustible loading. The only significant penetration through this wall is an HVAC duct and it is provided with a fire damper. There is no credible fire in Room 692.0-A31 that could propagate through this wall separating room 692.0-A30 from 692.0-A31.

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Adjacent room 713.0-A1 is separated from 692.0-A29 and 692.0-A30 by a 2 hour rated concrete floor. Part of 713.0-A1 containing the Boric Acid Tanks are above 692.0-A30 and this area does not have automatic suppression (See Part VII, section 3.1). The rest of the area of 713.0-A1 above 692.0-A29 and 692.0-A30 is protected with automatic suppression. Over 98% of the combustible load in 713.0-A1 is due to the insulation on cables routed in cable trays. It is concluded that the combination of 2 hour rated fire barrier and suppression on 713.0-A1 assures that no credible fire on 713.0-A1 could propagate into 692.0-A29 or 692.0-A30.

TVA concludes that, based on the above information, no credible fire could propagate from a room adjacent to 692.0-A29 or 692.0-A30 nor could a credible fire propagate from 692.0-A29 or 692.0-A30 into an adjacent room.

2.9.1.3 System Evaluation

2.9.1.3.a Redundant FSSD Components in the Room

None.

2.9.1.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

The cables whose failure could necessitate the OMAs listed in 2.9.1.1.a, .b and .c are located in adjacent room 692-A1B which is part of AV-005. Based on the insignificant combustible materials and no ignition sources, no credible fire could propagate from 692.0-A29 or 692.0-A30 into 692.0-A1B and damage cables in 692.0-A1B that would necessitate the performance of OMAs.

2.9.1.3.c Other FSSD Components in the Room

Rooms 692.0-A29 or 692.0-A30 contains cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., cables not credited for a fire in Rooms 692.0-A29 or 692.0-A30). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Charging flow transmitter cables
- Turbine driven auxiliary feedwater pump governor valve and speed control valve cables
- Containment differential pressure transmitter channel G cable
- Refueling water storage tank level transmitter channel D cable
- Steam line pressure transmitter channel E cables
- Reactor building sump level transmitter channel G cable
- Steam generator #2 level transmitter cable
- Containment spray valve cables
- Steam generator #1 auxiliary feedwater inlet flow transmitter cable

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2.9.1.4 Conclusion

Since there is insignificant threat from transient combustibles or in situ combustible material and no credible ignition sources; it is concluded that no cables routed in conduit could be damaged by any credible fire in either room and therefore, the performance of OMAs is not necessary. In addition, the redundant cables are routed in another room (692.0-A1B) which is provided with automatic suppression and detection. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2

2.9.2 Rooms 729.0-A1 and 737.0-A6 – Unit 1 South Main Steam Valve Room and Air Lock

This deviation applies to room(s) 729.0-A1 and 737.0-A6.

2.9.2.1 Description of Condition

These two rooms make up fire area 12 which is analysis volume 34 (AV-034) in the FSSD analysis (see Part III, Table 3-3 for room listing). The fire area is considered a III.G.2 area because components related to both redundant shutdown paths are located in 729-A1.

The redundant components are not cables or equipment that must operate for FSSD, but rather control air users connected to the Train A and the Train B auxiliary control air system (ACAS) headers. The FSSD analysis generally assumes that fire damage to one ACAS air user could depressurize the header (Train A or Train B). If all the ACAS air users located in this area were assumed to fail due to postulated fire damage; both trains of the ACAS are assumed failed. Since the ACAS is common to both units, both units are affected.

Physical separation in accordance with III.G.2 cannot be achieved in this area. An FSSD analysis assuming failure of all equipment and cables in the room would result in an OMA being credited in lieu of III.G.2 physical separation. Therefore, the following OMA is implemented to achieve fire safe shutdown:

- a. Unit 1 and Unit 2 - Control pressure in two steam generators within 60 minutes by operation of SG PORV via local nitrogen control station.

2.9.2.2 Fire Hazard Analysis

2.9.2.2.a Room Description

Room 729.0-A1 is the Unit 1 South Main Steam Valve room and room 737.0-A6 is the entrance to the valve room from the Auxiliary Building. The walls and floor of 729.0-A1 are of reinforced concrete construction and have fire resistive ratings of 2-hours for the walls and floor that separate the valve room from adjacent areas of the Auxiliary Building and fire resistive rating of 3-hours for the wall separating it from the Unit 1 Reactor Building. The walls separating 729.0-A1 from the Yard are 36-inch thick reinforced concrete but are not assigned a fire resistive rating. There are two access paths into the valve room. One is from the Auxiliary Building into the labyrinth (the two doors in the labyrinth from the Auxiliary Building and into the valve room are interlocked such that only one door can be opened at a time). The other path is from the Yard. Access to the valve room is limited due to the hazardous environmental

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conditions in the room (high humidity, high temperature, and presence of high energy lines (main steam and feedwater)).

2.9.2.2.b Fire Load

The in situ combustible loading for 729.0-A1 and 737.0-A6 is insignificant. The in situ combustibles in 729.0-A1 consist of small quantities of lubricant in each valve and small quantities of miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes and lighting units. The in situ combustibles in 737.0-A6 are the light covers. The credible ignition sources in 729.0-A1 are the radiation monitors and the valve motors. None of these devices are considered to be significant ignition sources due to the small quantity of in situ combustible material associated with them and the circuit protection (properly sized and coordinated fuses/breakers) that is designed to clear an electrical fault before the cable insulation reaches ignition temperature.

2.9.2.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room. Room 729.0-A1 and 737.0-A6 are CCZs (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is limited due to the hazardous conditions in 729.0-A1. The lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.2.2.d Adjacent Rooms

There is no threat of a fire in an adjacent room in the Auxiliary Building propagating into 729.0-A1 or 737.0-A6 due to the combination of fire rated barriers and automatic fire suppression and detection in those rooms. The thick reinforced concrete walls separating 729.0-A1 from the Yard would prevent a fire in the Yard from propagating into the room. The door in this wall is located in a labyrinth which would shield the door from a transient fire in the Yard. In addition, main feedwater and steam lines which run alongside the wall prevent any significant transient combustibles from being in the vicinity of the wall, labyrinth and door. The 3 hour fire rated concrete wall separating the Unit 1 Reactor Building from 729.0-A1 and 737.0-A6 would prevent a fire in the Unit 1 Reactor Building propagating into the rooms.

TVA concludes, based on the above information that no credible fire could propagate from an adjacent room into room 729.0-A1 and 737.0-A6 or from 729.0-A1 or 737.0-A6 into an adjacent room.

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2.9.2.3 System Evaluation

2.9.2.3.a Redundant FSSD Components in the Room

There are no redundant cables for FSSD equipment in 729.0-A1 or 737.0-A6 and 737.0-A6 does not contain any FSSD components. The only redundant FSSD equipment in room 729.0-A1 are train A and train B air endusers connected to the redundant ACAS headers. To achieve safe shutdown without OMAs at least one ACAS header must be functional to supply Unit 1 and Unit 2 air users in other plant locations. As described in calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User" (Part II, reference 4.2.4), the ACAS is a safety system and uses welded stainless steel piping and fittings; however, some of the air user devices may be susceptible to fire damage based on their physical construction and/or material make up (e.g., pressure regulators, diaphragms, controllers, etc.).

The ACAS air users in 729.0-A1 are two level control valves (LCVs) and two power operated relief valves (PORVs) associated with the steam generators #1 and #4. Their redundant counterparts are not in 729.0-A1. The FSSD analysis does not credit these steam generators nor the air supply to these valves to achieve safe shutdown with a fire in this room. However, at least one train of ACAS is needed to operate equipment located elsewhere in the plant. One LCV and one PORV are connected to each train of the ACAS. The LCVs are in parallel horizontal piping runs three feet on center at elevation 748 (19 feet above the floor). The PORVs are in parallel horizontal piping runs 19'-2" on center at elevation 758 (29 feet above the floor).

As described in the FHA (2.9.2.2) the absence of ignition sources and insignificant in situ combustibles is sufficient to conclude that a credible fire could not damage air users connected to both ACAS headers. The existence of transient combustibles is reduced because this room is rarely entered during operations due to the high temperature and humidity in the main steam valve vaults. For additional defense-in-depth this room is maintained as a CCZ. A very large amount of transient combustibles and an ignition source would have to be brought into the valve vault to produce a fire that could damage the level control valves located a minimum of 19 feet above the floor in a room with a 55 foot high ceiling.

Based on the above information, it is concluded that no credible fire in 729.0-A1 could occur and the implementation of the OMA identified in 2.9.2.1 is not necessary.

2.9.2.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

Rooms 729.0-A1 and 737.0-A6 are the only rooms in AV-034 (fire area 12). The barriers that separate rooms 729.0-A1 and 737.0-A6 from adjacent rooms in the Auxiliary Building are 2 hour fire rated barriers and from the Unit 2 Reactor Building is a 3 hour fire rated barrier. The only non-fire rated barrier is the outside wall that separates 729.0-A1 from the Yard and there are no redundant FSSD equipment or cables in the Yard near this wall (see 2.9.2.2 above).

2.9.2.3.c Other FSSD Components in the Room

Room 729.0-A1 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A1). The cables are routed in conduit. Although no fire induced failures are

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expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables are detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Steam line warming valves and associated cables (Valves are normally closed with power removed during normal operation.)
- Steam generator blowdown outboard containment isolation valve cables
- Main steam isolation valves and cables for steam generators #1 and #4
- Steam generators #1 and #4 main feedwater isolation MOVs and bypass line isolation valves and associated cables
- Steam generators #1 and #4 power operated relief valves and one train of control solenoids and associated cables
- Turbine driven auxiliary feedwater pump steam supply MOV cables
- Turbine driven auxiliary feedwater pump level control valves and cables for steam generators #1 and #4
- Pressurizer heater backup group 1B cables

2.9.2.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no significant ignition sources; therefore, there is no fire hazard in 729.0-A1 or 737.0-A6 that could cause loss of ACAS pressure and necessitate any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.3 Room 729.0-A2 – Unit 1 North Main Steam Valve Room

This deviation applies to room(s) 729.0-A2.

2.9.3.1 Description of Condition

Room 729-A2 is part of fire area 13 and is analysis volume 35A (AV-035A) in the FSSD analysis (see Part III, Table 3-3 for room listing). Fire area 13 is considered a III.G.2 area because it contains components related to both redundant safe shutdown paths. Electrical Raceway Fire Barrier Systems (ERFBS) are credited to protect two Unit 1 cables and a FSSD analysis assuming failure of all equipment and cables in the room concludes that OMAs are necessary in lieu of III.G.2 physical separation.

The redundant components are not cables or equipment that must operate for FSSD, but rather control air users connected to the Train A and the Train B auxiliary control air system (ACAS) headers. The FSSD analysis generally assumes that fire damage to one ACAS air user could depressurize the header (Train A or Train B). If all the ACAS air users located in this area were assumed to fail due to postulated fire damage; both trains of the ACAS are assumed failed. Since the ACAS is common to both units, both units are affected.

Physical separation in accordance with III.G.2 cannot be achieved in this area. An FSSD analysis which assumes failure of all equipment and cables in this room results in an OMA being credited in lieu of III.G.2 physical separation. Therefore, the following OMA is implemented to achieve fire safe shutdown:

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- a. Unit 1 and Unit 2 - Control pressure in two steam generators within 60 minutes by operation of SG PORV via local nitrogen control station.

2.9.3.2 Fire Hazard Analysis

2.9.3.2.a Room Description

Room 729.0-A2 is the Unit 1 North Main Steam Valve room. The walls of 729.0-A2 are of reinforced concrete construction and have fire resistive ratings of 3 hours that separate the valve room from adjacent areas of the Auxiliary Building and fire resistive rating of 3 hours for the wall separating it from the Unit 1 Reactor Building. The walls separating 729.0-A2 from the Yard are 36-inch thick reinforced concrete but are not assigned a fire resistive rating. Two doors are located in these walls. One door is located in a labyrinth which would shield the door from a transient fire in the Yard. The other door is located in a labyrinth and behind the main feedwater and steam lines which run alongside the wall and prevent any significant transient combustibles in the Yard from being in the vicinity of the labyrinth and door.

2.9.3.2.b Fire Load

The in situ combustible loading for room 729.0-A2 is insignificant. The in situ combustibles in 729.0-A2 consist of small quantities of lubricant in each valve and small quantities of miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes and lighting units. The radiation monitors and the valve motors are not considered to be ignition sources due to the small quantity of in situ combustible material associated with them and the circuit protection (properly sized and coordinated fuses/breakers) for each (see Justification in 2.9.0). There are no credible ignition sources in the room.

2.9.3.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A2 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is limited due to the hazardous conditions in 729.0-A2. The lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.3.2.d Adjacent Rooms

There is no threat of a fire in an adjacent room in the Auxiliary Building propagating into 729.0-A2 due to the 3 hour fire rated barriers and insignificant quantities of in situ combustibles in the adjacent rooms.

The Unit 1 Reactor Building is separated from 729.0-A2 by the 3 hour fire rated 36 inch thick reinforced concrete wall; therefore, there is no threat of a fire in the Unit 1 Reactor Building propagating into 729.0-A2.

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The Yard area adjacent to the exterior walls of 729.0-A2 is maintained free of any significant combustibles. Two doors provide access from the Yard into 729.0-A2 and they are located in walls on opposite sides of 729.0-2. The door on the west side is back in a labyrinth and is behind the main feedwater and steam lines. The door on the east side is back in a labyrinth. No significant quantities of either in situ or transient combustibles are in the vicinity of either of the doors. There is no credible fire in the Yard near these walls that could propagate into 729.0-A2.

TVA concludes, based on the above information, that no credible fire could propagate from an adjacent room into 729.0-A2 nor from 729.0-A2 into an adjacent room.

2.9.3.3 System Evaluation

2.9.3.3.a Redundant FSSD Components in the Room

Cables for the train A and train B solenoid valves associated with the SG #2 and SG #3 power operated relief valves (PORVs) are routed in conduit through 729.0-A2. The cables for one train for each SG are protected with 3-hour rated ERFBS to ensure PORV closure capability. Even though there is no credible fire that necessitates cable protection, it continues to be credited. The only redundant FSSD equipment in the room are train A and train B air users connected to the redundant ACAS headers. To achieve safe shutdown without OMAs, at least one ACAS header must be functional to supply Unit 1 and Unit 2 air users in other plant locations. As described in calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User" (Part II, reference 4.2.4), the ACAS is a safety system and uses welded stainless steel piping and fittings; however some of the air user devices may be susceptible to fire damage based on their physical construction and/or material make up (e.g., pressure regulators, diaphragms, controllers, etc.).

The ACAS air users in 729.0-A2 are two power operated relief valves (PORVs) associated with the steam generators #2 and #3. The FSSD analysis does not credit these steam generators nor the air supply to these valves to achieve safe shutdown with a fire in this room. However, at least one train of ACAS is needed to operate equipment located elsewhere in the plant. One PORV is connected to each train of the ACAS. The PORVs are in parallel horizontal piping runs 19'-2" on center at elevation 758 (29 feet above the floor). As described in the 2.9.3.2 the absence of ignition sources and insignificant in situ combustibles is sufficient to conclude that a credible fire could not damage air users connected to both ACAS headers. For additional defense-in-depth this room is maintained as a CCZ. The existence of transient combustibles is further reduced because this room is rarely entered during operations due to the high temperature and humidity in the main steam valve vaults. A very large amount of transient combustibles and an ignition source would have to be brought into the valve vault to produce a fire that could damage the level control valves located a minimum of 19 feet above the floor in a room with a 53 foot high ceiling.

Based on the above information, it is concluded that the OMA identified in 2.9.3.1 is not necessary.

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2.9.3.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

Room 729.0-A2 is the only room in AV-035A (fire area 13). The barriers that separate room 729.0-A2 from adjacent rooms in the Auxiliary Building and from the Unit 1 Reactor Building are 3 hour fire rated barriers. The only non-fire rated barrier is the outside wall that separates 729.0-A2 from the Yard and there are no redundant FSSD equipment or cables in the Yard near this wall (see 2.9.3.2 above).

2.9.3.3.c Other FSSD Components in the Room

Room 729.0-A2 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A2). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Steam line warming valves and associated cables (Valves are normally closed with power removed during normal operation.)
- Main steam isolation valves and cables for steam generators #2 and #3
- Steam generators #2 and #3 main feedwater isolation MOVs and bypass line isolation valves and associated cables
- Steam generators #2 and #3 power operated relief valves and one train of control solenoids and associated cables
- Steam line pressure transmitter cable

2.9.3.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no significant ignition sources; therefore, there is no fire hazard in 729.0-A2 that could cause loss of ACAS pressure and necessitate any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance with III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.4 Room 729.0-A6 – Nitrogen Storage Area

This deviation applies to room(s) 729.0-A6.

2.9.4.1 Description of Condition

This room is a part of fire area 10 (See Part III Table 3-3) and is analyzed in analysis volume AV-032. Fire area 10 is considered a III.G.2 area because it contains components related to both redundant shutdown paths. Room 729.0-A6 does not contain any FSSD equipment but does contain cables to redundant safe shutdown equipment.

Physical separation in accordance with III.G.2 cannot be achieved in this analysis volume. An FSSD analysis which assumes failure of all equipment and cables in the room results in OMAs

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being credited in lieu of III.G.2 physical separation. Therefore, the following OMAs are implemented to achieve fire safe shutdown for a fire in Room 729.0-A6:

- a. Unit 1 – Operate steam generators #1 and #2 power operated relief valves to control secondary pressure within 60 minutes at local nitrogen control panels.
- b. Unit 1 & 2 – Provide alternate 480VAC power to battery charger and inverter for channel 3-F within 120 minutes.
- c. Unit 2 - Operate steam generator #3 and #4 power operated relief valve to control secondary pressure within 60 minutes at local nitrogen control panel.
- d. Unit 1&2 – Backwash and rotate essential raw cooling water strainers within 720 minutes to ensure strainer operation.

2.9.4.2 Fire Hazards Analysis

2.9.4.2.a Room Description

Room 729.0-A6, Nitrogen Storage Area, is part of Fire Area 10 and is of reinforced concrete construction. The ceiling separating 692.0-A14 from 729.0-A6 is a 2 hour fire rated barrier. The walls separating 729.0-A6 from 729.0-A14 and 729.0-A15 are 3 hour fire rated barriers; from the New Fuel Storage Vault, Spent Fuel Pit and Fuel Transfer Canal are 2 hour fire rated barriers; and the ceiling which separates 729.0-A6 from 757.0-A13 is a 2 hour fire rated barrier. The walls separating 729.0-A6 from 728.0-A7, 729.0-A5, A8 and A9 are not assigned a fire rating but are of reinforced concrete construction and the doors are heavy duty hollow-metal doors. The room has a floor area of 1,623 ft² and a ceiling height of 26-feet. Room 729.0-A6 is designated as a CCZ (see Part II, section 5.0).

2.9.4.2.b Fire Load

The in situ combustible load results in a fire severity classification of insignificant. The combustible loading for the room consists of the charcoal filters within the air filter units, various plastics associated with a small control panel, lighting units, junction boxes and instruments, and class A combustibles (plastic and paper) in the Post Accident Sampling cabinet. The small control panel, lighting units and junction boxes are not credible ignition sources (see Justification in 2.9.0).

There are two air filter units located in the room. The units contain charcoal filters which are the major equipment in the room and the only significant fire hazard. These filters are protected by dedicated closed nozzle fixed pipe water spray systems as defined in section 3.1.3.3 of N3-26-4002 (Part II, reference 4.2.72). The two air filter units are normally shutdown and are not an ignition source. They are in operation when they are being tested and if there is a Post Accident Sampling event. In either case, personnel at the units take immediate appropriate action to initiate suppression and secure the units.

The room is provided with a smoke detection system, but does not have an automatic suppression system for the room. The installed fire detection system would detect a fire in its insipient stage and alert the Main Control Room staff. The site fire brigade would quickly respond and have portable extinguishers and a standpipe and hose station readily available to extinguish any expected fire.

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2.9.4.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A6 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is via security control doors from 729.0-A5. The lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.4.2.d Adjacent Rooms

Room 692.0-A14 is separated from 729.0-A6 by a 2 hour fire rated ceiling, except for the open stairs. Room 692.0-A14 has an insignificant combustible load and is provided with automatic suppression and detection. This room does not contain an ignition source. The room contains the Cask Decontamination Collector Tank and is not a normally accessed room.

Adjacent rooms 729.0-A14 and 729.0-A15 are separated from 729.0-A6 by reinforced concrete walls that are 3 hour fire rated barriers. The in situ combustible load in 729.0-A14 is low. The in situ combustible load in 729.0-A15 is low. Both rooms are provided with smoke detection. No credible fire in 729.0-A14 or 729.0-A15 could propagate through the 3 hour fire rated walls into 729.0-A6.

Rooms 729.0-A8 and 729.0-A9 are the Unit 1 and Unit 2 Post Accident Sampling rooms and separated from 729.0-A6 by concrete walls that are 2 hour fire rated barriers. The in situ combustible load in 729.0-A8 is low and there are no ignition sources in the rooms. Both rooms are provided with smoke detectors. The in situ combustible load in 729.0-A9 is low. Access to these rooms is from 729.0-A6. No credible fire in 729.0-A8 or 729.0-A9 could propagate through the 2 hour fire barriers into 729.0-A6.

Room 728.0-A7 is separated from 729.0-A6 by 24 inch thick reinforced concrete walls/ceiling that are not assigned a fire rating. The in situ combustible load in 728.0-A7 is insignificant and there are no ignition sources in the room. This room is the Cask Decontamination Room and its only access is from 729.0-A6. No credible fire in 728.0-A7 could propagate into 729.0-A6.

Room 757.0-A13 (includes the New Fuel Storage Vault 741.5) is separated from 729.0-A6 by a reinforced concrete floor with a 2 hour fire rating. The in situ combustible load in 741.5 and 757.0-A13 is insignificant. No credible fire could propagate from 741.5 or 757.0-A13 into 729.0-A6.

TVA concludes that based on the above information, that no credible fire could propagate from an adjacent room into room 729.0-A6 or from 729.0-A6 into an adjacent room.

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2.9.4.3 System Evaluation

2.9.4.3.a Redundant FSSD Components in the Room

There is no FSSD equipment located in this room, but there are some cables as described below.

Cables for Unit 2 steam generator #2 and #3 PORVs to control secondary pressure are routed in conduits and junction boxes that are embedded in the concrete wall with only the face of the junction boxes exposed in room 729.0-A6. The junction boxes are located more than 25-feet horizontally from the only ignition source (charcoal filters inside the metal housing of Air Cleanup Unit A) in the room. The charcoal filters are provided with a closed head water suppression system to handle a fire initiated in the charcoal. There is no credible ignition source that could cause damage to these circuits. Therefore, the OMA (2.9.4.1.c) to locally operate the steam generator PORVs is not necessary.

Cables for the solenoid valves for Unit 2 steam generator #2 and #3 redundant bypass line feedwater isolation and control valves and the main feed water line isolation and control valves are routed in conduits and junction boxes that are embedded in the concrete wall with only the face of the junction boxes exposed in room 729.0-A6. The junction boxes are located more than 25-feet horizontally from the only ignition source (charcoal filters inside the metal housing of Air Cleanup Unit A) in the room. The charcoal filters are provided with a closed head water suppression system to handle a fire initiated in the charcoal. There is no credible ignition source that could cause damage to these circuits.

Cable for the Unit 1 steam generator #2 and #3 PORV to control secondary pressure is routed in exposed conduits and a junction box in room 729.0-A6. The conduits and junction box are located more than 25-feet horizontally from the only ignition source (charcoal filters inside the metal housing of Air Cleanup Unit A) in the room. The charcoal filters are provided with a closed head water suppression system to handle a fire initiated in the charcoal. There is no credible ignition source that could cause damage to this circuit. Therefore, the OMA (2.9.4.1.a) to locally operate the steam generator #2 PORV is not necessary.

As defense-in-depth it is noted that these units are seldom used and locally operated, any fire is identified by the operator in its early stages and extinguished. Additionally, the room is designated as a combustible control zone to ensure no combustible material or ignition sources are inadvertently left in the area.

Based on the small combustible loading and limited ignition sources, horizontal separation, and minimal cable exposure, it is concluded that there is no credible ignition source that could cause damage to these circuits. Therefore, the OMAs (2.9.4.1.a and .c) to locally operate the steam generator PORVs is not necessary.

2.9.4.3.b FSSD Components with Redundant FSSD Components in an adjacent Room within the same Analysis Volume

Cables whose failure could necessitate the OMAs listed in 2.9.4.1.a through .d are not in room 729.0-A6. They are located in other rooms (729.0-A8, 757.0-A13, and 772.0-A9) within AV-032. As described in 2.9.4.2, there is no credible fire that could propagate from 729.0-A6 to another room within AV-032 to damage these cables. Therefore the OMAs listed in 2.9.4.1.a through d are not necessary.

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2.9.4.3.c Other FSSD Components in the Room

Room 729.0-A6 contains cables associated with Unit 1 and Unit 2 FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A6). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Unit 1 steam generator #2 and #3 main feedwater isolation valve cables
- Unit 1 steam generator #2 and #3 power operated relief valve (PORV) control and pressure transmitter auxiliary cables
- Unit 1 steam generator #3 PORV control cable
- Unit 2 steam generator #2 and #3 steam line warming valve cables (Valves are normally closed with power removed during normal operation.)
- Unit 2 steam generator #2 and #3 main steam isolation valve solenoid valve cables

2.9.4.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no credible ignition sources, ample horizontal separation, and no impact to FSSD; therefore, there is no fire hazard in 729.0-A6 that necessitates any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.5 Room 729.0-A10 – Unit 2 North Main Steam Valve Rm

This deviation applies to room(s) 729.0-A10.

2.9.5.1 Description of Condition

Room 729.0-A10 is part of fire area 73 and is analysis volume 112A (AV-112A) in the FSSD analysis (see Part III, Table 3-3 for room listing). Fire area 73 is considered a III.G.2 area because it contains components related to both redundant shutdown paths.

The redundant components are not cables or equipment that must operate for FSSD, but rather control air users connected to the Train A and the Train B auxiliary control air system (ACAS) headers. The FSSD analysis generally assumes that fire damage to one ACAS air user could depressurize the header (Train A or Train B). If all the ACAS air users located in this area were assumed to fail due to postulated fire damage; both trains of the ACAS are assumed failed. Since the ACAS is common to both units, both units are affected.

Physical separation in accordance with III.G.2 cannot be achieved in this area. An FSSD analysis which assumes failure of all equipment and cables in the room would result in OMAs being credited in lieu of III.G.2 physical separation. Therefore, the following OMA is implemented to achieve fire safe shutdown:

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- a. Unit 1 and Unit 2 - Control pressure in two steam generators within 60 minutes by operation of SG PORV via local nitrogen control station.

2.9.5.2 Fire Hazard Analysis

2.9.5.2.a Room Description

Room 729.0-A10 is the Unit 2 North Main Steam Valve room. The walls of 729.0-A10 are of reinforced concrete construction and have fire resistive ratings of 3-hours that separate the valve room from adjacent areas of the Auxiliary Building and fire resistive rating of 3-hours for the wall separating it from the Unit 2 Reactor Building. The walls separating 729.0-A10 from the Yard are 36-inch thick reinforced concrete but are not assigned a fire resistive rating. Two doors are located in these walls. One door is located in a labyrinth which would shield the door from a transient fire in the Yard. The other door is located in a labyrinth and behind the main feedwater and steam lines which run alongside the wall and prevent any significant transient combustibles in the Yard from being in the vicinity of the labyrinth and door. The concrete walls and fire rated barriers surrounding 729.0-A10 will prevent any credible fire from propagating into an adjoining room or the Yard 729.0-A10.

2.9.5.2.b Fire Load

The in situ combustible loading for 729.0-A10 is insignificant. The in situ combustibles in 729.0-A10 consist of small quantities of lubricant in each valve and small quantities of miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes, and lighting units. The radiation monitors and the valve motors are not considered to be significant ignition sources due to the small quantity of in situ combustible material associated with them and the circuit protection (properly sized and coordinated fuses/breakers) for each (see Justification in 2.9.0 above).

2.9.5.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A10 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is limited due to the hazardous conditions in 729.0-A10. The lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.5.2.d Adjacent Rooms

There is no threat of a fire in an adjacent room in the Auxiliary Building propagating into 729.0-A10 due to the 3 hour fire rated barriers and insignificant quantities of in situ combustibles in the adjacent rooms.

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The Unit 2 Reactor Building is separated from 729.0-A10 by the 3 hour fire rated 36 inch thick reinforced concrete wall.

The Yard area adjacent to the exterior walls of 729.0-A10 is maintained free of any significant combustibles. There are two doors located in walls on opposite sides of 729.0-A10. The door on the east side is back in a labyrinth and is behind the main feedwater and steam lines. The door on the west side is back in a labyrinth. No significant quantities of either in situ or transient combustibles are in the vicinity of either of the doors.

TVA concludes, based on the above information, that no credible fire could propagate from an adjacent room into room 729.0-A10 or from 729.0-A10 into an adjacent room.

2.9.5.3 System Evaluation

2.9.5.3.a Redundant FSSD Components in the Room

There are no redundant cables for FSSD equipment in the room. The only redundant FSSD equipment in the room are train A and train B air users connected to the redundant ACAS headers. To achieve safe shutdown without OMAs at least one ACAS header must be functional to supply Unit 1 and Unit 2 air users in other plant locations. As described in calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User" (Part II, reference 4.2.4), the ACAS is a safety system and uses welded stainless steel piping and fittings; however some of the air user devices may be susceptible to fire damage based on their physical construction and/or material make up (e.g., pressure regulators, diaphragms, controllers, etc.).

The ACAS air users in 729.0-A10 are two power operated relief valves (PORVs) associated with the steam generators #2 and #3. The FSSD analysis does not credit these steam generators nor the air supply to these valves to achieve safe shutdown with a fire in this room. However, at least one train of ACAS is needed to operate equipment located elsewhere in the plant. One PORV is connected to each train of the ACAS. The PORVs are in parallel horizontal piping runs 19'-2" on center at elevation 758 (29 feet above the floor). As described in the FHA (2.9.5.2) the absence of ignition sources and insignificant in situ combustibles is sufficient to conclude that a credible fire could not damage air users connected to both ACAS headers. For additional defense-in-depth this room is maintained as a CCZ. The existence of transient combustibles is further reduced because this room is rarely entered during operations due to the high temperature and humidity in the main steam valve vaults. A very large amount of transient combustibles and an ignition source would have to be brought into the valve vault to produce a fire that could damage the PORVs located a minimum of 29 feet above the floor in a room with a 53 foot high ceiling.

Based on the above information, it is concluded that the OMA identified in 2.9.5.1 is not necessary.

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2.9.5.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

Room 729.0-A10 is the only room in AV-112A (fire area 73). The barriers that separate room 729.0-A10 from adjacent rooms in the Auxiliary Building and from the Unit 2 Reactor Building are 3 hour fire rated barriers. The only non-fire rated barrier is the outside wall that separates 729.0-A10 from the Yard and there are no redundant FSSD equipment or cables in the Yard near this wall (see 2.9.5.2 above).

2.9.5.3.c Other FSSD Components in the Room

Room 729.0-A10 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A10). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Steam line warming valves and associated cables (Valves are normally closed with power removed during normal operation.)
- Main steam isolation valves and cables for steam generators #2 and #3
- Steam generators #2 and #3 main feedwater isolation MOVs and bypass line isolation valves and associated cables
- Steam generators #2 and #3 power operated relief valves and one train of control solenoids and associated cables
- Steam line pressure transmitter (channel E) cable

2.9.5.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no significant ignition sources; therefore, there is no fire hazard in 729.0-A10 that could cause loss of ACAS pressure and necessitate any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance with III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.6 Rooms 729.0-A11 and 737.0-A10 – Unit 2 South Main Steam Valve Rm and Air Lock

This deviation applies to room(s) 729.0-A11 and 737.0-A10.

2.9.6.1 Description of Condition

These two rooms make up fire area 72 which is analysis volume 113 (AV-113) in the FSSD analysis (see Part III, Table 3-3 for room listing). The fire area is considered a III.G.2 area because it contains components related to both redundant shutdown paths.

The redundant components are not cables or equipment that must operate for FSSD, but rather control air users connected to the Train A and the Train B auxiliary control air system (ACAS) headers. The FSSD analysis generally assumes that fire damage to one ACAS air user could

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depressurize the header (Train A or Train B). If all the ACAS air users located in this area were assumed to fail due to postulated fire damage; both trains of the ACAS are assumed failed. Since the ACAS is common to both units, both units are affected.

Physical separation in accordance with III.G.2 cannot be achieved in this area. An FSSD analysis which assumes failure of all equipment and cables in the room would result in OMA's being credited in lieu of III.G.2 physical separation. Therefore, the following OMA is implemented to achieve fire safe shutdown:

- a. Unit 1 and Unit 2 - Control pressure in two steam generators within 60 minutes by operation of SG PORV via local nitrogen control station.

2.9.6.2 Fire Hazard Analysis

2.9.6.2.a Room Description

Room 729.0-A11 is the Unit 2 South Main Steam Valve room and room 737.0-A10 is the entrance labyrinth into the valve room from the Auxiliary Building. The walls and floor of 729.0-A11 are of reinforced concrete construction and have fire resistive ratings of 2 hours for the walls and floor that separate the valve room from adjacent areas of the Auxiliary Building and fire resistive rating of 3 hours for the wall separating it from the Unit 2 Reactor Building. The walls separating 729.0-A11 from the Yard are 36-inch thick reinforced concrete but are not assigned a fire resistive rating. The walls, floor and ceiling of room 737.0-A10 are of reinforced concrete construction and have fire resistive ratings of 2 hours for those barriers separating it from adjacent rooms in the Auxiliary Building and 3 hours from the Unit 2 Reactor Building. There are two access paths into the valve room. One is from the Auxiliary Building into the labyrinth (the two doors in the labyrinth from the Auxiliary Building and into the valve room are interlocked such that only one door can be opened at a time). The other path is from the Yard. Access to the valve room is limited due to the hazardous environmental conditions in the room (high humidity, high temperature, and presence of high energy lines (main steam and feedwater)).

2.9.6.2.b Fire Load

The in situ combustible loading index for 729.0-A11 and 737.0-A10 is insignificant. The in situ combustibles in 729.0-A11 consist of small quantities of lubricant in each valve and small quantities of miscellaneous plastics associated with area radiation monitors, small electrical control panels and boxes and lighting units. The electrical cables are routed in conduits. The in situ combustibles in 737.0-A10 are the light covers. There are no credible ignition sources in the rooms (see Justification in 2.9.0).

2.9.6.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A11 and 737.0-A10 are CCZs (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is limited due to the hazardous conditions in 729.0-A11. The lack of significant concentrations of in situ

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combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.6.2.d Adjacent Rooms

The adjacent rooms in the Auxiliary Building are provided with automatic suppression and detection. The combination of automatic suppression and detection and the 2-hour fire rated barriers ensures that no credible fire in any of these adjacent rooms will propagate into 729.0-A11 or 737.0-A10. The thick reinforced concrete walls separating 729.0-A11 from the Yard would prevent a fire in the Yard from propagating into the room. The door in this wall is located in a labyrinth which would shield the door from a transient fire in the Yard. In addition, main feedwater and steam lines which run alongside the wall prevent any significant transient combustibles from being in the vicinity of the wall, labyrinth and door. The 3 hour fire rated concrete wall separating the Unit 2 Reactor Building from 729.0-A11 and 737.0-A10 would prevent a fire in the Unit 2 Reactor Building propagating into the rooms.

TVA concludes, based on the above information that no credible fire could propagate from an adjacent room into room 729.0-A11 and 737.0-A10 or from 729.0-A11 or 737.0-A10 into an adjacent room.

2.9.6.3 System Evaluation

2.9.6.3.a Redundant FSSD Components in the Room

There are no redundant cables for FSSD equipment in the rooms. The only redundant FSSD equipment in the rooms are train A and train B air users connected to the redundant ACAS headers. To achieve safe shutdown without OMAs at least one ACAS header must be functional to supply Unit 1 and Unit 2 air users in other plant locations. As described in calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User" (Part II, reference 4.2.4), the ACAS is a safety system and uses welded stainless steel piping and fittings; however some of the air user devices may be susceptible to fire damage based on their physical construction and/or material make up (e.g., pressure regulators, diaphragms, controllers, etc.).

The ACAS air users in 729.0-A11 are two level control valves (LCVs) and two power operated relief valves (PORVs) associated with the steam generators #1 and #4. The FSSD analysis does not credit these steam generators nor the air supply to these valves to achieve safe shutdown with a fire in this room. However, at least one train of ACAS is needed to operate equipment located elsewhere in the plant. One LCV and one PORV are connected to each train of the ACAS. The LCVs are in parallel horizontal piping runs three feet on center at elevation 748 (19 feet above the floor). The PORVs are in parallel horizontal piping runs 19'-2" on center at elevation 758 (29 feet above the floor).

As described in the FHA (2.9.6.2) the absence of ignition sources and insignificant in situ combustibles is sufficient to conclude that a credible fire could not damage air users connected to both ACAS headers. For additional defense-in-depth this room is maintained as a CCZ. The existence of transient combustibles is further reduced because this room is rarely entered during operations due to the high temperature and humidity in the main steam valve vaults. A very large amount of transient combustibles and an ignition source would have to be brought

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into the valve vault to produce a fire that could damage the level control valves located a minimum of 19 feet above the floor in a room with a 55 foot high ceiling.

Based on the above information, it is concluded that the OMA identified in 2.9.6.1 is not necessary.

2.9.6.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

Rooms 729.0-A11 and 737.0-A10 are the only rooms in AV-113 (fire area 72). The barriers that separate rooms 729.0-A11 and 737.0-A10 from adjacent rooms in the Auxiliary Building are 2 hour fire rated barriers and from the Unit 2 Reactor Building is a 3 hour fire rated barrier. The only non-fire rated barrier is the outside wall that separates 729.0-A11 from the Yard and there is no redundant FSSD equipment or cables in the Yard near this wall (see 2.9.6.2 above).

2.9.6.3.c Other FSSD Components in the Room

Room 729.0-A11 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A11). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Steam line warming valves and associated cables (Valves are normally closed with power removed during normal operation.)
- Steam generator blowdown outboard containment isolation valve cables
- Main steam isolation valves and cables for steam generators #1 and #4
- Steam generators #1 and #4 main feedwater isolation MOVs and bypass line isolation valves and associated cables
- Steam generators #1 and #4 power operated relief valves and one train of control solenoids and associated cables
- Turbine driven auxiliary feedwater pump steam supply MOV cables
- Turbine driven auxiliary feedwater pump level control valves and cables for steam generators #1 and #4
- Reactor building lower compartment cooler and control rod drive cooler cables
- Containment pressure transmitter channel E cable
- Emergency raw cooling water discharge MOV cables for component cooling system heat exchanger
- Charging pump 2A room cooler cables
- Steam generator #2 level transmitter cable
- Charging header flow transmitter cable
- Non-essential control air isolation and vent valves

2.9.6.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no significant ignition sources; therefore, there is no fire hazard in 729.0-A11 or 737.0-A10 that could cause loss of ACAS pressure and necessitate any OMAs. TVA concludes that the intent

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of III.G.1 is ensured and requests approval of this deviation demonstrating compliance with III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.7 Room 729.0-A12 – Unit 1 Steam Valve Instrument Room A

This deviation applies to room(s) 729.0-A12.

2.9.7.1 Description of Condition

Room 729.0-A12 is a part of fire area 13 and is in analysis volume AV-035 (see Part III, Table 3-3 for room listing). The fire area is considered a III.G.2 area because it contains Unit 1 components related to both redundant shutdown paths. The following OMA was previously identified for this room based on the assumption that all of the cables and equipment in AV-035 are damaged by a postulated fire:

- a. Unit 1 – Operate steam generator #2 power operated relief valve (PORV) to control secondary pressure within 60 minutes at local nitrogen control panel.

In addition an embedded junction box whose cover plate is exposed in the room was previously protected with a 3-hour fire rated ERFBS (Thermo-Lag) to prevent postulated fire damage to the cables routed through the embedded box.

2.9.7.2 Fire Hazards Analysis

2.9.7.2.a Room Description

Room 729.0-A12 is the Unit 1 Steam Valve Instrument Room A and is of reinforced concrete construction which is 12 to 48 inches thick and has fire resistance rating of 3-hours for the barriers that separate the room from room 729.0-A2 and the Unit 1 Reactor Building. The wall separating 729.0-A12 from 729.5-A16 is not assigned a fire rating, but is a 12-inch thick reinforced concrete wall. Room 729.0-A12 has a floor area of 74-ft² and a ceiling height of 8-feet.

2.9.7.2.b Fire Load

The in situ combustible loading in the room is classified as low and is due to miscellaneous plastics inside electrical control panels and junction boxes, lights, and Thermo-Lag fire wrap on an embedded junction box cover. There are no credible ignition sources in the room. No credible fire in 729.0-A12 could propagate into an adjacent room.

2.9.7.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A12 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from the Yard into room 729.5-A16 and then into 729.0-A12. The lack of in situ combustible material and ignition sources and the

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controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.7.2.d Adjacent Rooms

Room 729.0-A2 is separated from 729.0-A12 by 3 hour fire rated reinforced concrete walls and ceiling. The in situ combustible loading in 729.0-A2 is insignificant; therefore, no credible fire in 729.0-A2 could propagate into 729.0-A12.

The Unit 1 Reactor Building Annulus is separated from 729.0-A12 by a 36 inch thick, reinforced concrete wall that is 3 hour fire rated. The in situ combustible load in the Unit 1 Annulus is severe, but insulation on cables in trays accounts for over 98% of the combustible load. Automatic suppression and detection are provided for selected cable tray separation in the Annulus. No credible fire in the Annulus could propagate into 729.0-A12.

Room 729.5-A16 is separated from 729.0-A12 by a 12 inch thick reinforced concrete wall, but electrical and mechanical openings in the wall are not provided with fire rated seals/closures. The in situ combustible loading in 729.5-A16 is insignificant and consists of a pint of lubricant in a small pump (less than 5 HP) and plastics associated with junction boxes, lighting and a telephone. There are no ignition sources in the room. It is concluded that no credible fire in 729.5-A16 that could propagate into 729.0-A12.

TVA concludes, based on the above information, that no credible fire could propagate from an adjacent room into room 729.0-A12 nor from 729.0-A12 into an adjacent room.

2.9.7.3 System Evaluation

2.9.7.3.a Redundant FSSD Components in the Room

Two Unit 1 steam generator pressure control valve solenoid valves (one per train) connected to the ACAS headers in this room are not air users but control the air flow to the air users that are located in another room. Typical control air users (e.g. air operated valves) have a flexible diaphragm or bellows that could rupture if overheated in a significant fire and cause an air leak assumed equal to the input line size. A fire of greater intensity than the in situ combustibles may damage solenoid valve o-rings or seals and even then the leakage rate is much less than a typical air user. Due to the lack of in situ combustibles and no credible ignition sources (See 2.9.7.2) in the room, it is concluded that there is no credible fire in 729.0-A12 that could cause failure of either solenoid valve or of the ACAS headers. The limited leakage associated with failure of either of these solenoid valves would not depressurize its train air header. Additional defense-in-depth is the ACAS is a safety system and utilizes welded stainless steel piping and fittings as described in calculation EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User" (Part II, reference 4.2.4). Also the air operated components are supplied from the normal control air system whose compressors are located in the Turbine Building. This is a large capacity system and the failure of an individual end user would not impact the function of the system. In addition to the normal air compressors, the train A & B compressors provide backup support to ensure minimum system pressure is maintained. Therefore, the OMA listed in 2.9.7.1 is not necessary.

Unit 1 steam generator #3 PORV has a train A and a train B solenoid valve. Energizing either solenoid ensures PORV closure. The train B solenoid valve is located in room 729.0-A12. The

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cable for the redundant train A solenoid valve is routed in embedded conduits and through the embedded junction box with an exposed cover plate. The junction box is more than five feet (horizontal distance) from the train B solenoid. Due to the lack of in situ combustibles and no credible ignition sources (See 2.9.7.2) in the room, it is concluded that there is no credible fire in 729.0-A12 that would damage both the train A solenoid cable and the train B solenoid or its cables; therefore, there is no need for the previously applied Thermo-Lag protection over the exposed junction box cover plate identified in 2.9.7.1.

2.9.7.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

There are no redundant components in adjacent rooms within AV-035. The in situ combustible load in the adjacent room 729.5-A16 is insignificant and the potential for spread of a fire from 729.5-A16 into 729.0-A12 is not considered to be credible.

2.9.7.3.c Other FSSD Components in the Room

Room 729.0-A12 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A12). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables are detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Unit 1 steam generator #3 steam line warming valve cable
- Unit 1 steam generator #2 & #3 feedwater isolation valve cables
- Unit 1 steam generator #2 & #3 PORV control cables
- Unit 1 steam generator #2 & #3 auxiliary pressure indicator and auxiliary PORV control cables
- Unit 1 steam generator #2 & #3 main steam header pressure indicator and safety injection (SI) low steam line 2 & 3 pressure (LSP2 & LSP3) cables

2.9.7.4 Conclusion

Since there is insignificant threat from transient combustibles or in situ combustible material and no credible ignition sources; it is concluded that no credible fire in 729.0-A12 could damage cables routed in the conduits or junction boxes nor the solenoid valves; therefore, no OMAs or fire wrap on the junction box cover are necessary. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.8 Room 729.0-A13 – Unit 2 Steam Valve Instrument Room B

This deviation applies to room(s) 729.0-A13

2.9.8.1 Description of Condition

Room 729.0-A13 is a part of fire area 73 and is in analysis volume 112 (AV-112) in the FSSD analysis (see Part III, Table 3-3 for room listing). Fire area 73 is considered a III.G.2 area because it contains Unit 2 components related to both shutdown paths.

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Physical separation in accordance with III.G.2 cannot be achieved in this room. An FSSD analysis that assumes failure of all cables and equipment in AV-112 would result in the following OMAs and installation of electrical raceway fire barrier systems:

- a. Unit 1 – Operate steam generators 1 & 2 power operated relief valves (PORV) to control secondary pressure within 60 minutes at local nitrogen control panels.
- b. Unit 2 - Operate steam generators 1 & 2 power operated relief valves to control secondary pressure within 60 minutes at local nitrogen control panel.
- c. An embedded junction box whose cover plate is exposed in the room was previously identified to be protected with a 3-hour fire rated cover (Thermo-Lag).

2.9.8.2 Fire Hazards Analysis

2.9.8.2.a Room Description

Room 729.0-A13 is the Unit 2 Steam Valve Instrument Room B and is of reinforced concrete construction which is 12 to 48 inches thick and has fire resistance rating of 3-hours for the barriers that separate the room from room 729.0-A10 and the Unit 2 Reactor Building. The wall separating 729.0-A13 from 729.5-A17 is not assigned a fire rating, but is a 12-inch thick reinforced concrete wall. Room 729.0-A13 has a floor area of 74-ft² and a ceiling height of 8-feet.

2.9.8.2.b Fire Load

The in situ combustible loading in the room is classified as insignificant and is due to miscellaneous plastics associated with small electrical control panels and lights. There are no credible ignition sources in the room. No credible fire in 729.0-A13 could propagate into an adjacent room.

2.9.8.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A13 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from the Yard into room 729.5-A16 and then into 729.0-A12. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.8.2.d Adjacent Rooms

Room 729.0-A10 is separated from 729.0-A13 by 12 to 36 inch thick reinforced concrete that is 3 hour fire rated barriers. The in situ combustible load in 729.0-A10 is insignificant and there

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are no credible ignition sources in the room. No credible fire could propagate from 729.0-A10 into 729.0-A13 or from 729.0-A13 into 729.0-A10.

Room 729.5-A17 is separated from 729.0-A13 by a 12 inch thick reinforced concrete wall that is not assigned a fire rating. The in situ combustible load in 729.5-A17 is insignificant and there are no credible ignition sources in the room. No credible fire in 729.5-A17 could propagate from 729.5-A17 into 729.0-A13 or from 729.0-A13 into 729.5-A17.

The Unit 2 Reactor Building Annulus is separated from 729.0-A13 by a 36 inch thick reinforced concrete wall that has a minimum 3 hour fire rating. No credible fire in the Unit 2 Annulus could propagate into 729.0-A13 or from 729.0-A13 into the Annulus.

2.9.8.3 System Evaluation

2.9.8.3.a Redundant FSSD Components in the Room

The two Unit 2 steam generator power operated relief valve (PORV) solenoid valves (one per train) connected to the ACAS headers in this room are not air users, but control the air flow to the air users that are located in another room. Typical control air users (e.g. air operated valves) have a flexible diaphragm or bellows that could rupture if exposed to a significant fire. The failure of a diaphragm or bellows is assumed to result in an air leak equal to the input line size. The insignificant quantity of in situ combustibles and lack of an ignition source would not produce a fire that could damage the solenoid valves. Even assuming a fire could damage the o-rings or seals in the solenoids, the leakage from that type of failure would not result in a depressurization of the auxiliary control air system. Due to the lack of in situ combustibles and no credible ignition sources (See 2.9.8.2) in the room, it is concluded that there is no credible fire in 729.0-A13 that could cause failure of either solenoid valve nor of the ACAS headers. As additional defense-in-depth, the air operated components are supplied from the normal control air system whose compressors are located in the Turbine Building. This is a large capacity system and the failure of an individual end user would not impact the function of the system. In addition to the normal air compressors, the train A & B auxiliary control air system (ACAS) headers are also backed up by the auxiliary air compressors located on the Refueling Floor. Each of these compressors is available as backup support to ensure minimum system pressure is maintained on each header (see EDQ0009992013000202, "Appendix R - Auxiliary Control Air System (ACAS) End User," Part II, reference 4.2.4). Therefore, it is concluded that the OMA listed in 2.9.8.1 is not necessary.

Unit 2 steam generator #3 PORV has a train A and a train B solenoid valve. Energizing either solenoid ensures PORV closure. The train B solenoid valve is located in room 729.0-A13 and the redundant train A solenoid valve cable is routed through embedded conduits and an embedded junction box. The junction box cover plate is exposed in 729-A13. The junction box and the train B solenoid valve (and cables) are separated horizontally by at least 5 feet. Due to the lack of in situ combustibles and no credible ignition sources (See 2.9.8.2) in the room, it is concluded that there is no credible fire in 729.0-A13 that could damage both of these components; therefore, there is no need for ERFBS (Thermo-Lag) protection on the junction box cover.

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2.9.8.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

There are no redundant components in adjacent rooms within AV-112. The insignificant in situ combustible loads and lack of ignition sources in 729.0-A13 and the adjacent rooms of the Auxiliary Building (see 2.9.8.2 above) ensures that no credible fire in 729.0-A13 could propagate into an adjacent room or from an adjacent room into 729.0-A13. Therefore, it is not necessary to implement an OMA, install an ERFBS, or enter the FSSD procedure.

2.9.8.3.c Other FSSD Components in the Room

Room 729.0-A13 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 729.0-A13). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the room, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of FSSD equipment or cables are detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Unit 2 steam generator #2 & #3 steam line warming valve cable
- Unit 2 steam generator #2 & #3 feedwater isolation valve and bypass cables
- Unit 2 steam generator #2 & #3 main steam isolation valve (MSIV) solenoid cables
- Unit 2 steam generator #2 & #3 PORV valve and cables
- Unit 2 main steam line pressure indicator and safety injection (SI) low steam line 2 & 3 pressure cables (Channel F).

2.9.8.4 Conclusion

Since there is insignificant threat from transient combustibles or in situ combustible material and no credible ignition sources; it is concluded that no credible fire in 729.0-A13 could damage cables routed in the conduits or junction boxes nor the solenoid valves; therefore, no OMAs or fire wrap on the junction box cover are necessary. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.9 Room 729.0-A15 and 763.5-A2 – Unit 2 Additional Equipment Building

This deviation applies to room(s) 729.0-A15 and 763.5-A2.

2.9.9.1 Description of Condition

Rooms 729.0-A15 and 763.5-A2 are part of fire area 73 and are analyzed in analysis volume AV-112 (see Part III, Table 3-3 for room listing). Fire area 73 is considered a III.G.2 area; however, 729.0-A15 and 763.5-A2 contains cables associated with both redundant shutdown paths. There is no FSSD equipment located in the Unit 2 Additional Equipment Building, but there are cables routed in conduit that are FSSD circuits. A FSSD analysis assuming failure of all cables and equipment in all of the rooms in AV-112 would result in the following OMAs and electrical raceway fire barrier system (ERFBS) applications:

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- a. Unit 1 – Operate steam generators 1 & 2 power operated relief valves to control secondary pressure within 60 minutes at local nitrogen control panels.
- b. Unit 2 – Operate steam generators 3 & 4 power operated relief valves (PORV) to control secondary pressure within 60 minutes at local nitrogen control panels.
- c. Three-hour ERFBS cable protection to ensure closure of Unit 2 SG #2 and SG #3 PORVs.
- d. Three-hour ERFBS cable protection to ensure isolation of main feed water line and bypass feed water line.

2.9.9.2 Fire Hazards Analysis

2.9.9.2.a Room Description

The Unit 2 Additional Equipment Building consists of the bottom floor (room 729.0-A15) and a partial floor/mezzanine (763.5-A2) of reinforced concrete construction. The floor is at grade level and is constructed of reinforced concrete. The ceiling is the roof of the building and is of reinforced concrete construction. The walls that separate the Unit 2 Additional Equipment Building from adjacent rooms in the Auxiliary Building 729.0-A6, 729.0-A9, 737.0-A9, 757.0-A13, 757.0-A14, 782.0-A4 and the Unit 2 Reactor Building are 3-hour fire rated reinforced concrete (24 to 36 inches thick) barriers. The wall separating the Unit 2 Additional Equipment Building from 729.5-A17 is 12-inch thick reinforced concrete, but is not assigned as a rated fire barrier due to some unsealed conduits that penetrate the wall. The Unit 2 Additional Equipment Building has a floor area of 1,378 square feet (the mezzanine 763.5-A2 has a floor area of 344 square feet) is open from the floor (elevation 729.0) to the ceiling (elevation 773.25). The room is provided with a smoke detection system. No credible fire could go undetected and propagate into an adjacent room or to the Yard.

2.9.9.2.b Fire Load

The in situ combustible loading is classified as low and consists of a small quantity of lubricant for two sump pumps; small amounts of plastic associated with two electrical control panels; lighting and hoses (FLEX components stored in metal enclosures and are 90% of the combustible load). The two sump pumps are not considered to be ignition sources (see 2.9.0 above). The only conduits routed near the pumps are associated with the pumps. The lack of exposed combustibles and ignition sources ensures no credible fire could occur that would damage FSSD cables routed in conduits through the room or propagate from the room into an adjacent room.

2.9.9.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 729.0-A15 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from the Yard. Room

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729.0-A15 is not in a normal access path and entry to the room is not part of normal operations. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire that could damage FSSD component would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.9.2.d Adjacent Rooms

The walls that separate the Unit 2 Additional Equipment Building from adjacent rooms 729.0-A6, 729.0-A9, 737.0-A9, 757.0-A13, 757.0-A14, 782.0-A4 in the Auxiliary Building and the Unit 2 Reactor Building are 3-hour fire rated barriers. Three of the Auxiliary Building rooms have insignificant combustible loading, two have low combustible loading and one has a moderate combustible loading. They all have a smoke detection system and the three with combustible loading greater than 5 minutes are provided with an automatic suppression system. This ensures that no credible fire in these rooms could propagate into 729.0-A15.

The Unit 2 Annulus is also separated from 729.0-A15 by a 36 inch thick reinforced concrete wall that has a minimum 3 hour fire rating. In addition automatic suppression and detection is provided in the Unit 2 Annulus for selected cable tray protection. The conclusion is that no credible fire could propagate from the Unit 2 Annulus into 729.0-A15.

Room 729.5-A17 is separated from 729.0-A15 by a 12 inch thick reinforced concrete wall that does not have an assigned fire rating due to some conduits that are not provided with fire rated penetration seals. The in situ combustible load in 729.5-A17 is insignificant and the room is not susceptible to transient combustibles; therefore, no credible fire could occur that could propagate into 729.0-A15.

The Yard is separated from 729.0-A15 by a minimum 12-inch thick reinforced concrete wall that is not assigned a fire rating. The lack of in situ and transient combustibles near this wall provides assurance that no credible fire could occur that could propagate into 729.0-A15.

TVA concludes, based on the above, there is no credible fire that could occur that could propagate from 729.0-A15 into an adjacent room or from an adjacent room into 729.0-A15.

2.9.9.3 System Evaluation

2.9.9.3.a Redundant FSSD Components in the Room

There are two conduits (one Train A and one Train B) in room 729.0-A15 which contain cables for Steam Generator #2 and #3 Main Steam Isolation Valves (MSIVs). The cables in these conduits are normally energized and de-energizing either train will close the MSIV. There are no circuits in these conduits other than the MSIV solenoid valve circuits; therefore, fire damage could not create a hot short to energize the solenoid valves. As defense-in-depth main steam isolation can be achieved by closing the steam load valves (located in the turbine building) from the main control room.

Cables for SG #2 and SG #3 main feed water isolation valves (MOVs) are routed in conduit through this room. Cables for the train A and train B solenoid valve circuits for main feed water flow control valves (air operated) for these two steam generators are also routed in conduit through this room. For FSSD main feed water flow to the steam generators is terminated by closing either the isolation MOV or the air operated flow control valve. De-energizing either the

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train A or the train B solenoid valve circuit will close the flow control valve. If both solenoid valves (train A and train B) are energized, the control valve is closed from the main control room by manual operation of the flow indicating controller. Fire damage to the main feed water flow control and isolation valve circuits cannot prevent termination of main feed water flow.

Main feed water bypass line isolation valve circuit cables (both train A and Train B) for SG #2 and SG #3 are routed in conduits in the Unit 2 Additional Equipment Building. If either train is de-energized the isolation valve will close. Concurrent cable to cable hot shorts in both trains would have to occur to prevent isolation valve closure. The small bypass lines are used during startup and shutdown to maintain the desired low flow rates. During normal power operation the bypass line control valves are nearly closed and admit only enough flow to keep the pipes warm. Even if the bypass line isolation valves could fail to close, the control valve can be fully closed by manual operation of the flow controller in the main control room. Therefore the cable protection ERFBS listed in 2.9.9.1.e is not necessary.

2.9.9.3.b Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

The OMAs listed in 2.9.9.1 are all due to the assumed loss of ACAS header pressure resulting from postulated fire damage to ACAS air users located in room 729.0-A13 which is part of analysis volume AV-112. A fire in the Unit 2 Additional Equipment Building (729.0-A15 and 763.5-A2) could not affect the air users in 729.0-A13 because to do so the fire would have to propagate into and across 729.5-A17 and then into 729.0-A13 (a horizontal distance greater than 9 feet). The in situ combustible loading in the Unit 2 Additional Equipment Building is low and 729.5-A17 is insignificant; therefore, there is no credible fire in the Unit 2 Additional Equipment Building that could result in damage to ACAS air users in 729.0-A13. Therefore, the OMAs listed in 2.9.9.1 are not necessary.

Closure of a steam generator PORV is ensured by energizing one of two opposite train solenoid valves. Cables for one of the two solenoid valves for SG #2 PORV and for SG #3 PORV are located in the Unit 2 Additional Equipment Building, and cables for the redundant (opposite train) solenoid valves are located in 729.0-A13. Energizing either solenoid (train A or train B) will close the PORV. As described above and in 2.9.9.2, a fire originating in the Unit 2 Additional Equipment Building could not propagate through two walls and across 729.5-A17 and damage cables routed in conduit in 729.0-A13. Therefore, fire damage cannot prevent closure of the PORVs and the ERFBS listed in 2.9.9.1.d is not necessary.

2.9.9.3.c Other FSSD Components in the Room

Rooms 729.0-A15 and 763.5-A2 contain FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Rooms 729.0-A15 or 763.5-A2). The cables are routed in conduit. Although no fire induced failures are expected due to the low fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this function is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

2.9.9.4 Conclusion

Since there is insignificant threat from transient combustibles or in situ combustible material and no credible ignition sources; it is concluded that no cables routed in the conduits could be

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damaged by any credible fire in the Unit 2 Additional Equipment Building; therefore, no OMAs or fire wrap on the conduits are necessary. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.10 Room 757.0-A13 – Refueling Floor and New Fuel Storage Vault

This deviation applies to room(s) 757.0-A13.

2.9.10.1 Description of Condition

This room is part of fire area 10 (See Part III, Table 3-3 for room listing) and is analyzed in analysis volume 32 (AV-032) along with several other rooms. Fire area 10 is considered a III.G.2 area because it contains components associated with both shutdown paths. If all equipment and cables located in this analysis volume were assumed to fail due to postulated fire damage; both trains of the ACAS are assumed failed. The 480vac shutdown boards 2A1 and 2A2 are unavailable. Therefore, the following OMAs are implemented to achieve fire safe shutdown:

- a. Unit 1 and Unit 2 -- Control pressure in two steam generators within 60 minutes by operation of SG PORV via local nitrogen control station.
- b. Transfer normal battery charger for 125vdc vital battery board 3-F to its alternate 480vac supply within 120 minutes.
- c. Unit 1 and Unit 2 – Locally rotate and backwash ERCW strainer within 720 minutes.

2.9.10.2 Fire Hazard Analysis

2.9.10.2.a Room Description

Room 757.0-A13 is the Refueling Floor and also contains the New Fuel Storage Vault. The New Fuel Storage Vault is accessed through the floor of 757.0-A13 and is constructed of minimum 18-inch thick reinforced concrete. The opening in the floor to the New Fuel Storage Vault is normally closed with a steel hatch cover. There is also a non-fire rated steel hatch cover protecting the opening in the floor to room 728.0-A7. Room 757.0-A13 is of 24 to 36-inch thick reinforced concrete construction with 2 or 3 hour fire resistance rating. These concrete walls, floor and ceiling separates 757.0-A13 from adjacent rooms in the Auxiliary Building (except rooms 728.0-A7 and 772.0-A9) by either 2 or 3 hour fire barriers. The wall between 757.0-A13 and 772.0-A9 is 18-inch thick reinforced concrete, but is not a rated fire barrier. The adjacent rooms are provided with automatic suppression and detection except the heat exchanger rooms which have insignificant in situ combustible loading and room 729.0-A6 (see 2.9.4 above).

2.9.10.2.b Fire Load

The in situ combustible loading in the New Fuel Storage Vault is negligible and in room 757.0-A13 is classified as Insignificant. The in situ combustibles consist of hydraulic fluid associated with the crane and hoists, plastics associated with various electrical and control panels, small dry type transformers and lights, etc. The credible ignition sources are the two auxiliary air compressor units and the 125-ton crane. The wall mounted area heaters,

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transformers, electrical control panels, hoists and junction boxes are not considered to be significant ignition sources (see FHA General Information 2.9.0 above) because there is negligible combustible material associated with them and the power cables associated with them are protected by properly sized circuit protection (breakers/fuses). Their failure would not damage any other component.

2.9.10.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. The area around and between the auxiliary air compressors are CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the area or hot work performed in the area.

The 125-ton crane is only an ignition source when it is in use; therefore, if a fire occurs in the crane, it is immediately detected by personnel and extinguished before it could damage any other equipment in the immediate vicinity. There is no impact to FSSD.

If either of the two auxiliary air compressor units (A or B) fail and initiate a fire, the fire only damages the failed air compressor unit. The two auxiliary air compressor units are separated by more than 20 feet with no intervening combustibles. There are no other safe shutdown equipment or other plant equipment located close enough to either compressor unit that could be damaged.

2.9.10.2.d Adjacent Rooms

Rooms 713.0-A11, 713.0-A12, 713.0-A15 and 713.0-A16 are separated from 757.0-A13 by 2 hour fire rated ceilings except for the unrated concrete plugs that are in the openings that allow for pulling the heat exchangers. These four rooms contain heat exchangers, 713.0-A11 and 713.0-A2 have insignificant in situ combustible load, and 713.0-A15 and 713.0-A16 have low in situ combustible load. All four rooms have no ignition sources.

Room 729.0-A5 is the receiving bay for new fuel and is separated from 757.0-A13 by a 2 hour fire rated reinforced concrete ceiling, except for the steel hatch covers which are not rated. The in situ combustible load in 729.0-A5 is low and the room is provided with automatic suppression and detection. The only time there is significant transient combustible material or ignition source in the room is during fuel receipt and the area is manned at that time.

Room 728.0-A7 is the Cask Decontamination room and is separate from 757.0-A13 by a 2 hour fire rated ceiling, except for the opening that is closed with a non-fire rated steel hatch cover. The in situ combustible load in 728.0-A7 is insignificant and is due to the small quantity of lube oil associated with two small motors (less than 5 HP), two small control boxes and a rubber water hose associated with the decontamination spray unit. The only time the hatch is open is during cask transfer activities and personnel are present.

Rooms 729.0-A14, 729.0-A15, 763.5-A1 and 763.5-A2 are separated from 757.0-A13 by 3 hour rated reinforced concrete walls. These rooms are provided with smoke detection.

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Room 737.0-A1 is separated from 757.0-A13 by a 2 hour fire rated reinforced concrete ceiling, except for the equipment hatch and stair #3 which are provided with a water curtain (see Part VII, section 2.6). Room 737.0-A1 is provided with automatic suppression and detection.

Rooms 737.0-A7 and 737.0-A8 are separated from 757.0-A13 by 2 hour fire rated reinforced concrete ceilings. The in situ combustible load in each of these rooms is low.

Room 772.0-A9 is separated from 757.0-A13 by a non-fire rated reinforced concrete wall. The in situ combustible load in the room is low and over 99% of the combustible material is due to insulation on cables in trays. There are no ignition sources in the room. The room is provided with automatic suppression and detection.

The remaining rooms adjacent to 757.0-A13 are separated from 757.0-A13 by 2 hour and 3 hour fire rated reinforced concrete walls. All of these rooms are provided with automatic suppression and detection.

The lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 757.0-A13 into an adjacent room nor from an adjacent room into 757.0-A13.

2.9.10.3 System Evaluation

2.9.10.3.a Redundant FSSD Components in the Room

The redundant FSSD components in this room are the Auxiliary Control Air System (ACAS) compressor units (train A and train B) and their associated cables. The power and control cable are routed in conduits that are embedded in the floor until they turn up at the compressors. The compressor units are separated horizontally by more than 20 feet and there are no intervening combustibles between them and the area between them is a CCZ. Considering the insignificant quantity of combustible material associated with the oil-less compressor units, even if a compressor fails and causes a fire, it would only damage that compressor. A failure of one compressor unit could disable the compressor itself and possibly de-energize a nearby solenoid thereby closing the pressure regulating valve between the station control air system (normal supply to ACAS) and one train of the ACAS. The worst case effect is the loss of supply pressure to one train of ACAS. The other train of ACAS is not affected and is available and sufficient for a FSSD. Each train of ACAS header pressure is indicated in the main control room and decreasing pressure is alarmed. Based on at least one train of ACAS being available the OMA identified in 2.9.10.2.a is not needed.

There are also two train A conduits containing the power feeds to the unit 2 train A 480VAC shutdown board transformers in the room. Cables for the redundant Unit 2 Train B power system are not located in 757.0-A13 or any of the AV-032 rooms, but failure of these Unit 2 Train A power system cables would disable the train A ACAS compressor. Therefore, they are functionally redundant to the train B ACAS compressors. The two conduits run vertically near the south wall of the room and are separated from the train B compressor by more than 20 feet horizontally and would not be affected by an assumed ACAS train B compressor fire. Since there are no other ignition sources in the room, there could be no fire damage to the power feeder cables for 480vac shutdown board transformers 2A1 and 2A2. Therefore the battery charger for 125vdc battery board 3-F would not have to be transferred to its alternate source. Additionally, power is available for ERCW strainer rotation and backwash. The implementation

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of OMAs (2.9.10.1.b & .c) resulting from the postulated loss of 480vac shutdown boards 2A1 and 2A2 is not necessary.

As additional defense-in-depth the floor area between the ACAS compressor units is designated as a CCZ to ensure that no transient combustible material is inadvertently left there.

2.9.10.3.b Components with Redundant FSSD Equipment or Cables in an Adjacent Room within the Same Analysis Volume

None.

2.9.10.3.c Other FSSD Components in the Room

Room 757.0-A13 contains cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 757.0-A13). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Unit 1 cables for pressurizer heater backup group B
- Unit 1 cable for Channel D source range neutron monitoring
- Unit 2 cables for steam generator #2 and #3 main feedwater and bypass valves
- Unit 2 cables for steam generators #2 and #3 steam line warming valves
- Unit 2 steam generators #2 and #3 MSIV solenoid valve cables

2.9.10.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material except for a possible loss of one train of the ACAS. Loss of one train of ACAS would not prevent FSSD since FSSD only relies on one train of ACAS. Therefore, there is no fire hazard in 757.0-A13 or the New Fuel Storage Vault that necessitates any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.11 Room 757.0-A14 – Unit 2 RB Access Room

This deviation applies to room(s) 575.0-A14.

2.9.11.1 Description of Condition

Room 757.0-A14 is a part of fire area 75 and is analyzed in analysis volume AV-116 (see Part III, Table 3-3 for room listing). Fire area 75 is considered a III.G.2 area because it contains equipment and/or cables associated with both redundant safe shutdown paths. There is no FSSD equipment in this room, but there are cables for redundant shutdown equipment. A FSSD analysis based on the assumption that all of the cables and equipment in AV-116 could

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be damaged would result in crediting the following OMAs in lieu of physical separation in accordance with III.G.2:

- a. Unit 2 - Reduce RCP seals injection flow within 60 minutes by operation of a manual valve.
- b. Unit 2 - Control pressure in steam generator #3 within 60 minutes by operation of steam generator #3 PORV via local nitrogen control station.

2.9.11.2 Fire Hazards Analysis

2.9.11.2.a Room Description

Room 757.0-A14 is the Unit 2 RB Access Room and is constructed of 12 to 36-inch thick reinforced concrete with a minimum fire resistance rating of 2 to 3-hours. The floor that separates room 757.0-A14 from 737.0-A9 is a 2-hour rated barrier. The ceiling that separates room 757.0-A14 from 782.0-A4 is a 2-hour rated barrier. The wall that separates room 757.0-A14 from 757.0-A13 is a 2-hour rated barrier. The walls that separate room 757.0-A14 from 757.0-A15 and the Unit 2 Reactor Building are 3-hour barriers. The room has a floor area of 540 square feet and a ceiling height of 23 feet. Room 757.0-A14 is provided with automatic fire suppression and detection and the rooms adjacent to 757.0-A14 are provided with automatic suppression and detection except for room 757.0-A13 (see 2.9.10 above). The fire rated barriers surrounding room 757.0-A14 will prevent any credible fire in 757.0-A14 from propagating into an adjoining room.

2.9.11.2.b Fire Load

The in situ combustible loading in 757.0-A14 is classified as low and consists of insulation on cables routed in trays (96% of the in situ combustible load), small quantities of plastics associated with small electrical control and junction boxes and lighting and the fire hose attached to the standpipe. Cables routed in the trays are provided with properly sized and coordinated circuit protection (breakers/fuses); therefore, they are not considered to be credible ignition sources. The circuits for small electrical boxes and the lighting are adequately protected with circuit protection (properly sized and coordinated fuses/breakers) that would preclude them from faulting and creating a fire. Therefore, they are not considered to present a fire hazard to any other components in the room.

2.9.11.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 757.0-A14 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from the Refueling Floor (757.0-A13). The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination with the automatic suppression and detection in the room provides assurance that no credible exposure fire would occur. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

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2.9.11.2.d Adjacent Rooms

Room 737.0-A9 is separated from 757.0-A14 by a reinforced concrete floor that has a 2 hour fire rating. The fire severity of the in situ combustible load in 737.0-A9 is low. Room 737.0-A9 is provided with automatic suppression and detection. No credible fire could occur in 737.0-A9 and propagate into 757.0-A14.

The Unit 2 Additional Equipment Building (729.0-A15 and 763.5-A2) is separated from 757.0-A14 by a reinforced concrete wall that has a fire rating of 3 hours. The in situ combustible loading in the Unit 2 Additional Equipment Building is low. The room is provided with a smoke detection system. No credible fire could occur in the Unit 2 Additional Equipment Building and propagate into 757.0-A14.

The Refueling Floor (741.5 and 757.0-A13) is separated from 757.0-A14 by a reinforced concrete wall that has a fire rating of 2 hours. The fire severity of the in situ combustible load in the Refueling Floor is insignificant. No credible fire could occur in the Refueling Floor that could propagate into 757.0-A14.

Room 757.0-A15 is separated from 757.0-A14 by a reinforced concrete wall that has a fire rating of 3 hours. The fire severity of the in situ combustible load (of which 99% is due to insulation on cables routed in trays near the ceiling) is low. Room 757.0-A15 is provided with automatic suppression and detection. No credible fire in 757.0-A15 could occur and propagate into 757.0-A14.

Room 782.0-A4 is separated from 757.0-A14 by a reinforced concrete floor that has a fire rating of 2 hours. The in situ combustible loading (insulation on cables in trays accounts for over 57% of the in situ combustibles) in 782.0-A4 is moderate. The room is provided with automatic suppression and detection. No credible fire in 782.0-A4 could occur and propagate into 757.0-A14.

The Unit 2 Annulus is separated from 757.0-A14 by a reinforced concrete wall that has a fire rating of 3 hours. The in situ combustible loading (insulation on cables in trays accounts for over 98% of the in situ combustibles) in the Unit 2 Annulus is severe. Automatic suppression and detection is provided for separation of redundant cables in the Unit 2 Annulus. No credible fire in the Unit 2 Annulus could occur and propagate into 757.0-A14.

TVA concludes that due to the combination of fire rated barriers, lack of in situ combustibles or ignition sources, and some of the rooms with automatic suppression, no credible fire could occur that would propagate from an adjacent room into 757.0-A14 or from 757.0-A14 into an adjacent room.

2.9.11.3 System Evaluation

2.9.11.3.a Redundant FSSD Components in the Room

There are conduits (train A and train B) in 757.0-A14 containing cables for SG #2 and SG #3 Main Steam Isolation Valves (MSIVs). These cables are normally energized and de-energizing either train will close the MSIV. The only fire damage failure mode that could prevent MSIV closure is sustained concurrent cable to cable hot shorts in both trains. Considering that there are no ignition sources in the room and practically no combustibles, other than cable insulation

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in trays, such a failure mode is not considered credible. As defense-in-depth these cables have thermoset insulation making cable to cable hot shorts even less credible. Finally, main steam isolation can be achieved by closing the steam load valves (located in the turbine building) from the main control room.

An instrument cable for the control circuit of the valve that controls charging flow (RCP seal water injection) is routed through 757.0-A14 in a conduit located near the ceiling. If a fire could occur, it is detected by the ionization smoke detection system and the automatic sprinkler actuation prevents damage to the cable routed in conduit. For a fire to damage cables routed in conduit near the ceiling of this room, it is large enough to raise the temperature of the hot gas layer at the ceiling enough to damage the insulation on the cables routed in conduit. The sprinkler heads are located at the ceiling above the conduits. The activation temperature of the automatic sprinklers (212°F) in the room is well below the damage temperature (400°F) of the cable insulation; therefore, the sprinklers are activated and prevent damage to the cables routed in conduit. As described in section 2.9.11.2, there is no credible ignition sources and insignificant combustible loading in the room; therefore, it is concluded that no credible fire in this room could damage this circuit and necessitate the OMA listed in 2.9.11.1.a. As defense-in-depth even if a failure of this control circuit resulted in a spurious operation of the valve, the Main Control Room (MCR) staff is alerted to a change in pressurizer level and either select a different pressurizer level input for the valve control system or operate the valve controller in manual.

The FSSD analysis relies on two of the four steam generators and SG #3 and SG #4 are credited for FSSD in room 757.0-A14. A control cable for a solenoid valve for SG #3 power operated relief valve (PORV) is routed in a conduit through 757.0-A14. SG #4 is not affected as no SG #4 cables are in this room. The solenoid valve is normally de-energized to permit modulation of the PORV. Energizing the solenoid closes the PORV. A cable to cable hot short within the conduit is necessary to energize the solenoid. As stated above, there are no credible ignition sources and insignificant combustible loading in the room and it is provided with automatic suppression and detection which would actuate long before a postulated fire could damage the cable insulation. Defense-in-depth is provided in that the cable has thermoset insulation making a cable to cable hot short even less credible. Additionally, the conduit is 21 feet above the floor so an inconceivable quantity of transient combustibles is necessary to establish a floor based fire capable of damaging the cable of concern. It is concluded that no credible fire in this room could damage this circuit and necessitate the OMA listed in 2.9.11.1.b.

Cables for SG #2 and SG #3 main feed water isolation valves (MOVs) are routed in conduit through this room. Cables for the train A and train B solenoid valve circuits for main feed water flow control valves (air operated) for these two steam generators are also routed in conduit through this room. For FSSD main feed water flow to the steam generators is terminated by closing either the isolation MOV or the air operated flow control valve. De-energizing either the train A or the train B solenoid valve circuit will close the flow control valve. If both solenoid valves (train A and train B) are energized, the control valve is closed from the main control room by manual operation of the flow indicating controller. Fire damage to the main feed water flow control and isolation valve circuits cannot prevent termination of main feed water flow.

Main feed water bypass line isolation valve circuit cables (both train A and Train B) for SG #2 and SG #3 are routed in conduits in this room. If either train is de-energized the isolation valve will close. Concurrent cable to cable hot shorts in both trains would have to occur to prevent isolation valve closure. The small bypass lines are used during startup and shutdown to maintain the desired low flow rates. During normal power operation the bypass line control

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valves are nearly closed and admit only enough flow to keep the pipes warm. Even if the bypass line isolation valves could fail to close, the control valve can be fully closed by manual operation of the flow controller in the main control room.

2.9.11.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

There are no adjacent rooms within analysis volume AV-116; only room 757-A14 is in the analysis volume.

2.9.11.3.c – Other FSSD Components in the Room

Room 757.0-A14 contains cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 757.0-A14). The cables are routed in conduit and in trays. Although no fire induced failures are expected due to the insignificant fire hazard in the room, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables are detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Steam generator #2 and #3 steam line warming valve cables
- Steam line and pressurizer pressure transmitter channel D cables
- Reactor building sump level channel D cables
- RCS multi-channel process monitoring system Loops 1 and 2 hot and cold leg temperature channel D cables
- Containment isolation phase B pressure instrumentation channel D cable

2.9.11.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no credible ignition sources, and no impact to FSSD; therefore, there is no fire hazard in 757.0-A14 that necessitates any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.12 Room 757.0-A15 – Unit 2 RB Equipment Hatch

This deviation applies to room(s) 757.0-A15.

2.9.12.1 Description of Condition

Room 757.0-A15 is fire area 76 which is analyzed in analysis volume AV-096 (see Part III, Table 3-3 for room listing). The fire area is considered a III.G.2 area. Although there is no FSSD equipment located in this room there are cables for redundant FSSD equipment. A FSSD analysis based on the assumption that all cables in the room fail, credits the following OMAs in lieu of physical separation in accordance with III.G.2:

- a. Unit 2 - Limit RCP seals injection flow within 60 minutes by operation of a manual valve.
- b. Unit 2 - Control pressure in steam generator #3 within 60 minutes by operation of steam generator PORV via local nitrogen control station.

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2.9.12.2 Fire Hazards Analysis

2.9.12.2.a Room Description

Room 757.0-A15 is the Unit 2 RB Equipment Hatch and is constructed of 24 to 36-inch thick reinforced concrete and the barriers have a minimum fire resistance rating of 3-hours. The room has a floor area of 673 square feet and a ceiling height of 22 feet. Full coverage automatic fire detection and suppression are provided in the room. The equipment hatch doors that separate the Unit 2 Reactor Building from 757.0-A15 are not fire rated doors; however, they are of heavy metal construction which is more than adequate to prevent any credible fire from propagating from one side of the door to another. The fire rated barriers surrounding room 757.0-A15 will prevent any credible fire in 757.0-A15 from propagating into an adjoining room.

2.9.12.2.b Fire Load

The in situ combustible loading in the 757.0-A15 is classified as low and consists of insulation on cables routed in trays (99% of the in situ combustible load) and a small amount of plastic associated with lighting. Cables routed in the trays are provided with properly sized and coordinated circuit protection (breakers/fuses); therefore, they are not considered ignition sources. The lighting (six lights) units in the room are not considered ignition sources (lights are not energized during normal plant operation). The circuits for these devices are adequately protected with circuit protection (properly sized and coordinated fuses/breakers) that would preclude them from faulting and creating a fire. Therefore, there are no credible ignition sources in the room (see Justification 2.9.0 above).

2.9.12.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 757.0-A15 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from the Refueling Floor (757.0-A13), but only during an outage. There is no access to the room during operation of Unit 2. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination with the automatic suppression and detection in the room provides assurance that no credible exposure fire would occur that could damage FSSD circuits. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.12.2.d Adjacent Rooms

Room 737.0-A9 is separated from 757.0-A15 by a reinforced concrete floor that has a 3 hour fire rating. The fire severity of the in situ combustible load in 737.0-A9 is low. Room 737.0-A9 is provided with automatic suppression and detection. No credible fire could occur in 737.0-A9 and propagate into 757.0-A15.

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The Refueling Floor (757.0-A13) is separated from 757.0-A15 by reinforced concrete walls and ceiling that have a fire rating of 3 hours. The fire severity of the in situ combustible load in the Refueling Floor is insignificant. No credible fire could occur in the Refueling Floor that could propagate into 757.0-A15.

Room 757.0-A14 is separated from 757.0-A15 by a reinforced concrete wall that has a fire rating of 3 hours. The fire severity of the in situ combustible load (of which 96% is due to insulation on cables routed in trays near the ceiling) is low. Room 757.0-A14 is provided with automatic suppression and detection. No credible fire in 757.0-A14 could occur that would propagate into 757.0-A15.

Room 757.0-A16 is separated from 757.0-A15 by a reinforced concrete wall that has a fire rating of 3 hours. The fire severity of the in situ combustible load (of which 99% is due to insulation on cables routed in trays near the ceiling) is moderate. Room 757.0-A16 is provided with automatic suppression and detection. No credible fire in 757.0-A16 could occur that would propagate into 757.0-A15.

Room 782.0-A3 is separated from 757.0-A14 by a reinforced concrete floor that has a fire rating of 3 hours. The in situ combustible loading (insulation on cables in trays accounts for over 92% of the in situ combustibles) in 782.0-A3 is moderate. The room is provided with automatic suppression and detection. No credible fire in 782.0-A3 could occur that would propagate into 757.0-A15.

The Unit 2 Annulus is separated from 757.0-A15 by the heavy equipment doors. The in situ combustible loading in the Unit 2 Annulus is severe; however, insulation on cables in trays accounts for over 98% of the in situ combustibles. The remaining combustibles are dispersed throughout the Annulus and there are no credible ignition sources. Automatic suppression and detection is provided for separation of redundant cables in the Unit 2 Annulus. No credible fire in the Unit 2 Annulus could occur that would propagate into 757.0-A15.

2.9.12.3 System Evaluation

2.9.12.3.a Redundant FSSD Components in the Room

There are conduits (train A and train B) in 757.0-A15 containing cables for SG #2 and SG #3 Main Steam Isolation Valves (MSIVs). These cables are normally energized and de-energizing either train will close the MSIV. The only fire damage failure mode that could prevent MSIV closure is sustained concurrent cable to cable hot shorts in both trains. Considering that there are no ignition sources in the room and practically no combustibles, other than cable insulation in trays, such a failure mode is not considered credible. As defense-in-depth these cables have thermoset insulation making cable to cable hot shorts even less credible. Finally, main steam isolation can be achieved by closing the steam load valves (located in the turbine building) from the main control room.

An instrument cable for the control circuit of the valve that controls charging flow (RCP seal water injection) is routed through 757-A15 in a conduit located near the ceiling. If a fire could occur, it is detected by the ionization smoke detection system and the automatic sprinkler actuation prevents damage to the cable routed in conduit. For a fire to damage cables routed in conduit near the ceiling of this room, it is large enough to raise the temperature of the hot gas layer at the ceiling and damage the insulation on the cables routed in conduit. The sprinkler heads are located at the ceiling above the conduits. The activation temperature of the

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automatic sprinklers (212°F) in the room is well below the damage temperature (400°F) of the cable insulation; therefore, the sprinklers are activated and prevent damage to the cables routed in conduit. As described in section 2.9.12.2, there is no credible ignition sources and practically no combustible loading in the room (excluding insulation on cables in trays which are either IEEE-323 qualified or covered with fire retardant); therefore, it is concluded that no credible fire in this room could damage this circuit and necessitate the OMA listed in 2.9.12.1.a. Even if a failure of this control circuit resulted in a spurious operation of the valve, the MCR staff is alerted to a change in pressurizer level and either select a different pressurizer level input for the valve control system or operate the controller in manual mode.

Only two of four steam generators are necessary for FSSD and SG #3 and SG #4 are credited for FSSD in room 757.0-A15, but a control cable for a solenoid valve for SG #3 power operated relief valve (PORV) is routed in a conduit through 757.0-A15. SG #4 is not affected as no SG #4 cables are in this room. The solenoid valve is normally de-energized to permit modulation of the PORV. Energizing the solenoid closes the PORV. A cable to cable hot short within the conduit is necessary to energize the solenoid. As stated above, there is no credible ignition source and practically no combustible loading in the room and it is provided with automatic suppression and detection; therefore, it is concluded that no credible fire in this room could damage this circuit and necessitate the OMA listed in 2.9.12.1.b. As defense-in-depth the cables have thermoset insulation which make a cable to cable hot short even less credible. Additionally, with the conduit over 20 feet above the floor, an inconceivable quantity of transient combustibles and an ignition source is necessary to establish a floor based fire capable of damaging the cable of concern.

Cables for SG #2 and SG #3 main feed water isolation valves (MOVs) are routed in conduit through this room. Cables for the train A and train B solenoid valve circuits for main feed water flow control valves (air operated) for these two steam generators are also routed in conduit through this room. For FSSD main feed water flow to the steam generators is terminated by closing either the isolation MOV or the air operated flow control valve. De-energizing either the train A or the train B solenoid valve circuit will close the flow control valve. If both solenoid valves (train A and train B) are energized, the control valve is closed from the main control room by manual operation of the flow indicating controller. Fire damage to the main feed water flow control and isolation valve circuits cannot prevent termination of main feed water flow.

Main feed water bypass line isolation valve circuit cables (both train A and Train B) for SG #2 and SG #3 are routed in conduits in this room. If either train is de-energized the isolation valve will close. Concurrent cable to cable hot shorts in both trains would have to occur to prevent isolation valve closure. The small bypass lines are used during startup and shutdown when low flow rates are desired. During normal power operation the bypass line control valves are nearly closed and admit only enough flow to keep the pipes warm. Even if the bypass line isolation valves could fail to close, the control valve can be fully closed by manual operation of the flow controller in the main control room.

2.9.12.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

There are no adjacent rooms within analysis volume AV-096; only room 757-A15 is in the analysis volume.

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2.9.12.3.c Other FSSD Components in the Room

Room 757-A15 contains cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 757.0-A15). The cables are routed in conduit and in trays. Although no fire induced failures are expected due to the insignificant fire hazard in the room, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Steam generator #2 and #3 steam line warming valve cables
- Steam line and pressurizer pressure transmitter channel D cables
- Reactor building sump level channel D cables
- RCS multi-channel process monitoring system Loops 1 and 2 hot and cold leg temperature channel D cables
- Containment isolation phase B pressure instrumentation channel D cable
- Steam generator #2 narrow range level indication cable
- Pressurizer spray valve cables
- Control rod drive cooler and reactor building lower compartment cooler temperature control valve cables

2.9.12.4 Conclusion

There is insignificant threat from transient combustibles or in situ combustible material, no credible ignition sources, and no impact to FSSD; therefore, there is no fire hazard in 757.0-A15 that necessitates any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.13 Room 2RIR Unit 2 Reactor Instrument Room

This deviation applies to room(s) 2RIR Contain.

2.9.13.1 Description of Condition

Room 2RIR is part of fire area 77 and is analysis volume 118F (AV-118F) in the FSSD analysis (see Part III, Table 3-3 for room listing). Fire area 77 is considered a III.G.2 area because it contains components related to both redundant safe shutdown paths. Room 2RIR contains components related to both redundant safe shutdown paths.

Physical separation in accordance with III.G.2 cannot be achieved in this room. An FSSD analysis assuming failure of all equipment and cables in the room would result in OMAs being credited in lieu of III.G.2 physical separation. Therefore, the following OMAs are implemented to achieve fire safe shutdown:

- a. Reduce RCP seal injection flow rate within 60 minutes by operation of a manual valve in 713.0-A1B.
- b. Protecting a pressurizer level transmitter sense line and a conduit containing level transmitter cables with radiant energy shields to achieve III.G.2 separation.

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2.9.13.2 Fire Hazard Analysis

2.9.13.2.a Room Description

The Unit 2 Reactor Building Instrument Room (2RIR) is separated from adjacent areas of the Unit 2 Reactor Building by non-fire rated (barriers contain electrical and mechanic openings that are not provided with fire rated seals/closures) reinforced concrete barriers that are 24 to 36-inches thick and from the Unit 2 Annulus by the steel containment shield. Entry to the room is thru an opening in the 24-inch thick concrete floor via a ladder from 2RO-1 below and the Personnel Air Lock to the Auxiliary Building. The room has a floor area of 480-ft² and a ceiling height of 26-feet. Entry into the Reactor Building is strictly controlled.

2.9.13.2.b Fire Load

The combustible loading is classified as Insignificant and is due to small quantities of lubricating oil in control valves and plastics associated with small control panels and two I&C cabinets, a telephone and junction boxes. The electrical cables associated with these devices are low voltage/amp power or control circuits and are routed in conduit. Each circuit is adequately protected with properly sized and coordinated circuit protection (fuse/breaker) that will clear a cable fault prior to the cable insulation reaching auto-ignition. None of these combustible materials are associated with a credible ignition source. There are no credible ignition sources in the room. The lack of in situ combustibles and ignition sources combined with the barriers enclosing the room ensures that no credible fire could occur and propagate from 2RIR into an adjacent room in the Unit 2 Reactor Building.

2.9.13.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms. Compensatory measures must be implemented when transient combustibles or ignition sources are located in a room. Room 2RIR is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could damage FSSD circuits. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.13.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RIR by the steel containment shield and the Personnel Air Lock. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection in this area. The steel containment shield and the Air Lock in combination with the automatic suppression and detection provide assurance that no credible fire in the Unit 2 Annulus could propagate into 2RIR.

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Room 2RO-1 is separated from 2RIR by 24 inch thick non-fire rated reinforced concrete ceiling. The in situ combustible load in 2RO-1 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. An opening in the floor of 2RIR provides access for personnel to the ladder to 2RO-1. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate into 2RIR via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate from 2RO-1 into 2RIR through these penetrations.

Part of room 2RO-2 extends 10 feet up into 2RIR and is separated from 2RIR by 36 inch thick non-fire rated reinforced concrete ceiling and walls. Conduit, instrumentation lines and mechanical piping penetrate the walls and ceiling and are not provided with fire rated penetration seals. Access from the lower part of 2RO-2 into this room is via a ladder and a personnel opening. The remaining part of 2RO-2 is separated from 2RIR by a 24 inch thick reinforced concrete ceiling. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in lower part of 2RO-2 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The in situ combustible load in upper part of 2RO-2 is insignificant. The lack of ignition sources and exposed in situ combustibles provides assurance that no credible fire in 2RO-1 could propagate into 2RIR through these penetrations.

Room 2RA1 is separated from 2RIR by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA1 is low and is due to small quantities of lubricant in valves (61% of the load), expansion joint material (32% of the load) and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA1 could propagate into 2RIR through the unprotected penetrations.

Room 2RA2 is separated from 2RIR by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA2 is low and is due to small quantities of lubricant in valves (89% of the load), and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 could propagate into 2RIR through the unprotected penetrations.

Room 2RI-1 is separated from 2RIR by a 36 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-1 is low of which 99% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with a oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire would be contained to the RCP. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-1 could propagate into 2RIR through the unprotected penetrations.

Room 2RI-2 is separated from 2RIR by a 36 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not

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provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-2 is low of which 98% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with a oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire would be contained to the RCP. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-2 could propagate into 2RIR through the unprotected penetrations.

Room 2RU is separated from 2RIR by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RIR through the unprotected penetrations.

The types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RIR into an adjacent room nor from an adjacent room into 2RIR.

2.9.13.3 System Evaluation

2.9.13.3.a Redundant FSSD Components in the Room

Room 2RIR contains three Pressurizer pressure transmitters (2-PT-68-323-F, -334-E, & -340-D) of which two must be operable to prevent a spurious safety injection (SI) signal. There are three Pressurizer level transmitters (2-LT-68-320-F, -335-E, & -339-D) of which one must be available. These six transmitters are located on panels 2-L-659, 660, & 661. Panels 659 and 660 are located on the same side of the Seal Table but are separated by more than 20-feet horizontally and a part of the Personnel Air Lock. Panels 661 and 660 are mounted on the concrete walls on opposite sides of the Seal Table; therefore the concrete Seal Table provides separation between the panels. Cables associated with these devices are routed in conduits and are separated from each other by at least 2 feet horizontally; there are no ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in both conduits. Sense lines associated with these devices are also located in 2RIR. The sense lines are separated from each other by at least 3-feet horizontally. Due to the lack of ignition sources and insignificant quantities of combustible material; it is concluded that no credible fire in 2RIR could result in damage to either the sense lines or the cables in conduits. Therefore, there is no need to add radiant energy shielding for a sense line or conduit to obtain III.G.2.f separation from the other sense lines and conduits.

Two Pressurizer level transmitters (2-LT-68-320-F & -339-D) provide input to the charging flow control valve (2-FCV-62-93) control system. The transmitters are located in room 2RIR and horizontally separated by more than 20 feet as discussed above. The transmitter cables are routed in conduits and are separated from each other by at least 3 feet horizontally; there are no ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in both conduits. Sense lines associated with these devices are also located in 2RIR. The sense lines are separated from each other by at least 3-feet horizontally. Due to the lack of ignition sources and insignificant quantities of combustible material; it is concluded that no credible fire in 2RIR could result in

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damage to either the sense lines or the cables in conduits. Failure of either or both of these cables could cause the charging flow control valve to open. However, for additional defense-in-depth the operator can control the charging flow control valve flow from the main control room even if one or both of the level circuits fail. Therefore, the OMA listed in 2.9.13.1.b is not necessary.

Cables for both train A and train B containment isolation valve circuits are located in 2RIR and they are horizontally separated by more than 20 feet.

Cables for the pressurizer spray valve and the train A and B pressurizer PORV block valves are routed through 2RIR in dedicated conduits. A cable-to-cable hot short is the only failure mode that could operate these valves. For defense-in-depth the dedicated conduits contain no hot short sources (energized cables) which ensures that the valves could not spuriously operate even if there could be cable fire damage. The train B PORV is credited for RCS pressure control and its cables and other credited FSSD equipment and cables are not located in 2RIR.

During FSSD, the RCP seal water injection flow regulating valve utilizes control air for operation. Control air is supplied from the large capacity compressors located in the Turbine Building. Failure of a few air users would not impact the function of the system. As described in section 2.9.13.2, there are no credible ignition sources and the insignificant amount of combustible material in the room could not generate a fire sufficient to damage any air users in 2RIR. As additional defense-in-depth, even if the air users could be fire damaged, the control air header containment isolation valve can be closed from the main control room to isolate the air leak and ensure functionality of the control air system in the auxiliary building. Therefore it is concluded that the control air will remain available and the OMA listed in 2.9.13.1.a is not necessary.

Access to the reactor building is rigorously controlled which limits the possibility of transient combustibles being brought into 2RIR.

2.9.13.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

Room 2RIR is the only room in analysis volume AV-118F. As discussed in 2.9.13.2, the lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire could propagate from or into an adjacent room.

2.9.13.3.c Other FSSD Components in the Room

Room 2RIR contains FSSD cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RIR). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables would be detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Reactor coolant pump #1 seal return flow control valve cable
- Reactor building sump level transmitter channel G cable
- Excess letdown flow control valve E/P module cable
- Pressurizer heater backup Group 2A-A & 2B-B cables

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- Steam generator #2 and #3 level transmitter cables
- Steam generator #3 level transmitter (auxiliary control) cable
- Pressurizer level transmitter (auxiliary control) cables
- Pressurizer pressure transmitter cables
- Lower containment vent cooler supply valve cables
- Reactor coolant system hot leg temperature auxiliary cables

2.9.13.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, no credible ignition sources and no impact to FSSD; therefore, there is no fire hazard in 2RIR that necessitates any OMAs or radiant energy shields. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.14 Room 2RA1 – Unit 2 Accumulator Room 1

This deviation applies to room(s) 2RA1 Contain.

2.9.14.1 Description of Condition

Room 2RA1 is a part of fire area 77 and is analyzed in analysis volumes AV-118E and AV-118L (see Part III, Table 3-3 for room listing). Fire area 77 is considered III.G.2 area, but room 2RA1 does not contain components for both redundant safe shutdown paths. Based on an FSSD analysis which assumes the failure of all cables and equipment in this room, radiant energy shields would need to be installed or OMAs performed.

2.9.14.2 Fire Hazards Analysis

2.9.14.2.a Room Description

Room 2RA1 is the Unit 2 Accumulator Room 1 and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-1 below. The room has a floor area of 225-ft² and a ceiling height of 26-feet.

2.9.14.2.b – Fire Load

The combustible loading is classified as low and is due to the small quantities of lubricating oil in control valves (accounts for 61% of combustible load), expansion joint material (accounts for 32% of combustible load) in the expansion joints and these combustibles are not exposed except for the edge of the joint material. The plastics associated with a small control panel, telephone and junction boxes account for the remaining combustibles and its resultant fire severity is less than 1 minute. The electrical cables associated with these devices are low voltage power or control circuits and are routed in conduit. Each circuit is adequately protected with properly sized and coordinated circuit protection (fuse/breaker) that will clear a cable fault prior to the cable insulation reaching auto-ignition. None of these combustible materials are associated with a credible ignition source. There are no credible ignition sources in the room (see Justification in 2.9.0 above). The major piece of equipment in the room is the Accumulator

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Tank #1. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The steel containment vessel and suppression and detection in the Unit 2 Annulus would prevent a credible fire in the Annulus from propagating into 2RA1. Due to the lack of combustibles and ignition sources in adjacent rooms, it is concluded they do not present a fire hazard to components located in 2RA1 nor does 2RA1 present a fire hazard to adjacent rooms.

2.9.14.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RA1. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RA1 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-1 via a ladder. When Unit 2 is operating, access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination provides assurance that no credible exposure fire would occur in 2RA1 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.14.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RA1 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RA1 or from 2RA1 into the annulus.

Room 2RO-1 is separated from 2RA1 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-1 up to a hatch for entry into 2RA1. The in situ combustible load in 2RO-1 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate into 2RA1 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate from 2RO-1 into 2RA1 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-1 could propagate into 2RA1 or from 2RA1 into 2RO-1.

The Reactor Instrument Room 2RIR is separated from 2RA1 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are

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not provided with fire rated penetration seals. The in situ combustible load in 2RIR is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RIR is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RIR that could propagate into 2RA1 or from 2RA1 into 2RIR.

The Unit 2 Fan Room 1 (2RF1) is separated from 2RA1 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF1 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RF1 is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF1 that could propagate into 2RA1 or from 2RA1 into 2RF1.

Room 2RU is separated from 2RA1 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RA1 or from 2RA1 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RA1 into an adjacent room or from an adjacent room into 2RA1.

2.9.14.3 System Evaluation

2.9.14.3.a Redundant FSSD Components in the Room

Reactor coolant pump (RCP) #1 seal return flow control valve cable is routed in conduit in room 2RA1. The valve is normally open and fails open on loss of power or air. There are no ignition sources and insignificant quantities of combustible material below the penetration or near the vertical conduit that could create a fire of sufficient magnitude to damage the cable or penetration. There are no other energized 125vdc cables in the conduit that could provide a hot short source to energize the valve even if there could be fire damage to the cables. If the valve does fail closed, the operator would close the RB non-essential control air header valve from the main control room thereby isolating control air which would open the valve.

2.9.14.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

Train A lower compartment purge isolation valve and its cables (routed in conduits) are in room 2RA1. Cables for the redundant lower compartment purge isolation valve are routed in conduits in room 2RF1. Room 2RA1 is separated from 2RF1 by a 24 inch thick reinforced concrete wall (see 2.9.14.2). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RF1 could propagate into 2RA1.

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A cable for train A block valve (associated with the pressurizer train A PORV) is routed in conduit in room 2RA1. A redundant RCS pressure control path pressurizer train B PORV cable is routed in conduit through adjacent rooms 2RF1 and 2RI-1. The rooms are separated from each other by 24 – 48 inch thick walls (see 2.9.14.2). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RF1 and 2RI-1 could propagate into 2RA1.

Cables for a lower containment vent cooler D (LCC-D) temperature control valve (TCV) is routed in conduit in 2RA1. Cables for redundant lower containment vent cooler A & C and control rod drive vent cooler A & C TCVs are routed in conduits in 2RF1, 2RI-1, and 2RO-1. The rooms are separated from each other by 24 – 48 inch thick walls (see 2.9.14.2). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RF1, 2RI-1, and 2RO-1 could propagate into 2RA1.

2.9.14.3.c Other FSSD Components in the Room

Room 2RA1 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RA1). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables would be detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Instrument purge isolation valve cables
- Safety injection system accumulator tank #1 flow isolation valve cable
- Containment sump level transmitter channel G cable
- Steam generator #2 & #3 level transmitter cables
- Motor driven auxiliary feedwater steam generator #1 & #3 level transmitter cables
- Turbine driven auxiliary feedwater steam generator #2 & 4 level transmitter cables
- Pressurizer level transmitter cable
- Pressurizer pressure transmitter cable
- Reactor coolant system loop hot leg temperature (control power auxiliary) cable

2.9.14.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, it is concluded that no cables routed in the conduits could be damaged by any credible fire in room 2RA1. In addition, hot shutdown OMAs are not necessary. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

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2.9.15 Room 2RA2 – Unit 2 Accumulator Room 2

This deviation applies to room(s) 2RA2 Contain

2.9.15.1 Description of Condition

Room 2RA2 is a part of fire area 77 and is analyzed in analysis volumes AV-118A and AV-118H (see Part III, Table 3-3 for room listing). Fire area 77 is considered III.G.2 area, but room 2RA2 does not contain both redundant safe shutdown paths. If all equipment and cables located in analysis volumes AV-118A and AV-118H were assumed to fail due to postulated fire damage, fire safe shutdown would rely on:

- a. OMA to reduce RCP seal injection flow rate within 60 minutes by operation of a manual valve on 713-A1B.
- b. Radiant energy shielding to protect a conduit containing pressurizer pressure transmitter cables.

2.9.15.2 Fire Hazard Analysis

2.9.15.2.a Room Description

Room 2RA2 is the Unit 2 Accumulator Room 2 and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-2 below. The room has a floor area of 225-ft² and a ceiling height of 26-feet.

2.9.15.2.b Fire Load

The combustible loading is classified as low and is due to the small quantities of lubricating oil in control valves (accounts for 88% of combustible load), and small quantities of plastics associated with a small control panel, telephone and junction boxes account for the remaining combustibles. The electrical cables associated with these devices are low voltage power or control circuits and are routed in conduit. Each circuit is adequately protected with properly sized and coordinated circuit protection (fuse/breaker) that will clear a cable fault prior to the cable insulation reaching auto-ignition. None of these combustible materials are associated with a credible ignition source. There are no credible ignition sources in the room (see Justification in 2.9.0 above). The major piece of equipment in the room is the Accumulator Tank #2. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The steel containment vessel and suppression and detection in the Unit 2 Annulus would prevent a credible fire in the Annulus from propagating into 2RA2. Due to the lack of combustibles and ignition sources in adjacent rooms, it is concluded they do not present a fire hazard to components located in 2RA2 nor does 2RA2 present a fire hazard to adjacent rooms.

2.9.15.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant

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quantities of combustible material or ignition sources into 2RA1. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RA2 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-2 via a ladder. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination provides assurance that no credible exposure fire would occur in 2RA2 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.15.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RA2 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RA2 or from 2RA2 into the annulus.

Room 2RO-2 is separated from 2RA2 by 24 inch thick non-fire rated reinforced concrete ceiling and a wall. There is a ladder from 2RO-2 up to a hatch for entry into 2RA2. The in situ combustible load in 2RO-2 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-2 could propagate into 2RA2 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and wall but are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-2 could propagate from 2RO-2 into 2RA2 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-2 could propagate into 2RA2 or from 2RA2 into 2RO-2.

The Reactor Instrument Room 2RIR is separated from 2RA2 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RIR is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RIR is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RIR that could propagate into 2RA2 or from 2RA2 into 2RIR.

The Unit 2 Fan Room 2 (2RF2) is separated from 2RA2 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF2 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the

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access to 2RF2 is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF2 that could propagate into 2RA2 or from 2RA2 into 2RF2.

Room 2RI-2 is separated from 2RA2 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-1 is low of which 99% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire would be contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles will not be introduced into 2RI-2. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-2 could propagate into 2RA2 or from 2RA2 into 2RI-2.

Room 2RU is separated from 2RA2 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RA2 or from 2RA2 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that would necessitate an OMA or could propagate from 2RA2 into an adjacent room or from an adjacent room into 2RA2.

2.9.15.3 System Failure Evaluation

2.9.15.3.a Redundant FSSD Components in the Room

Cables for the excess letdown isolation valve and the flow modulating valve are both routed in conduit through 2RA2. The flow modulating valve is normally closed and fails closed on loss of air or signal. The only credible failure that could open the valve would be a cable to cable hot short (plus-to-plus and minus-to-minus without grounding) between two twisted shielded instrument cables. Such a fault is not credible considering the limited combustibles and lack of ignition sources in 2RA2. As additional defense-in-depth, there are no other cables in the conduit with the flow modulating valve signal cable (no hot short source).

Two Pressurizer level transmitters (2-LT-68-320-F & -339-D) provide input to the charging flow control valve (2-FCV-62-93) control system. The transmitter cables are routed in conduits in room 2RA2 and are separated from each other by at least 3 feet horizontally; there are no ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in both conduits. Failure of either or both of these cables could cause the charging flow control valve to open. However, for additional defense-in-depth the operator can control the charging flow control valve flow from the main control room even if one or both of the level circuits fail. Therefore, OMA 2.9.15.1.a is not necessary.

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Two pressurizer pressure transmitter cables (channel D and F) are routed in separate conduits of which one must be operable to prevent a spurious safety injection (SI) signal. The transmitter cables are routed in conduits in room 2RA2 and are separated from each other by at least 3 feet horizontally; there are no ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in both conduits. For additional defense-in-depth these cables have thermoset insulation making open circuit or wire-to-wire short failure modes even more incredible. Therefore, there is no need to provide a radiant energy shield for one of the conduits and OMA 2.9.15.1.a is not necessary.

2.9.15.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

One of the narrow range level indicators for steam generators for #2 and #3 has cables routed in room 2RA2. The redundant safe shutdown steam generators narrow range level indicators cables are routed in adjacent rooms 2RF2 and 2RI-2. The rooms are separated from each other by a 24 - 48 inch thick wall (see 2.9.15.2 above). The lack of in situ combustibles and lack of credible ignition sources in the rooms provides assurance that no credible fire could damage level indicator cables for both redundant safe shutdown paths.

The motor driven auxiliary feedwater steam generator #3 level control valve transmitter cable is routed in room 2RA2. The redundant safe shutdown auxiliary feedwater steam generators #1 and #2 level control valve transmitter cables are routed in adjacent room 2RF2. The redundant safe shutdown auxiliary feedwater steam generator #1 level control valve transmitter cable is also routed in adjacent room 2RI-2 which is in AV-118H. Room's 2RI-2, 2RF2 and 2RA2 are separated from each other by 24 - 48 inch thick walls (see 2.9.15.2 above). The lack of in situ combustibles and credible ignition sources in the rooms provides assurance that no credible fire could damage cables of both redundant safe shutdown paths.

The reactor coolant loop 3 normal letdown flow valve cables are routed in room 2RA2. The redundant valve cables are routed in adjacent room 2RI-2 which is in AV-118H. The rooms are separated from each other by a 48 inch thick wall (see 2.9.15.2 above). The lack of in situ combustibles and credible ignition sources in both rooms provides assurance that no credible fire could damage cables of both redundant safe shutdown paths.

The train B pressurizer power operated relief valve (PORV) block valve used for reactor coolant pressure control has a cable routed in room 2RA2. The redundant safe shutdown pressure control path train A pressurizer PORV cable is routed in adjacent room 2RI-2 which is in AV-118H. The rooms are separated from each other by a 48 inch thick wall (see 2.9.15.2 above). The lack of in situ combustibles and credible ignition sources in both rooms provides assurance that no credible fire could damage cables for both redundant safe shutdown paths.

The lower containment vent cooler D supply valve cables are routed in room 2RA2. The redundant safe shutdown lower compartment coolers (LCC) are located in other rooms within the analysis volume. The rooms are separated from each other by 24 - 48 inch thick walls (see 2.9.15.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 could propagate to the other rooms or from the adjacent rooms into 2RA2. The lack of in situ combustibles and credible ignition sources in each room provides assurance that no credible fire could damage components for both redundant safe shutdown paths.

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2.9.15.3.c Other FSSD Components in the Room

Room 2RA2 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RA2). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables would be detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Instrument room purge isolation valves cables
- Reactor coolant system aux spray valve cables
- Safety Injection system accumulator tank #2 flow isolation valve cables
- Steam Generator #3 narrow range level auxiliary cables
- Pressurizer level indicator auxiliary cables
- Turbine driven auxiliary feedwater pump steam generator #2 level transmitter cables
- Pressurizer pressure instrument loop cables

2.9.15.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, there is no fire hazard in 2RA2 that either warrants protecting conduits or junction boxes with radiant energy shields or necessitates any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.16 Room 2RA3 - Unit 2 Accumulator Room 3

This deviation applies to room(s) 2RA3 Contain.

2.9.16.1 Description of Condition

Room 2RA3 is a part of fire area 77 and is analyzed in analysis volumes AV-118B, AV-118C and AV-118J (see Part III, Table 3-3 for room listing). Fire area 77 is considered III.G.2 area, but room 2RA3 does not contain both redundant safe shutdown paths. The analysis volumes contain auxiliary control air system (ACAS) air users, but none of the air users are located in 2RA3.

Physical separation in accordance with III.G.2 cannot be achieved in these analysis volumes. An FSSD analysis for this room assuming failure of all equipment and cables in the room would result in OMAs being credited in lieu of III.G.2 physical separation. Therefore, the following OMAs would be implemented to achieve fire safe shutdown:

- a. Unit 2 – Open lower containment vent cooler valve within 120 minutes by opening breaker in the 125vdc board room.
- b. Unit 2 – Open residual heat removal (RHR) system isolation by-pass valve within 240 minutes to establish RHR flow path.

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2.9.16.2 Fire Hazards Analysis

2.9.16.2.a Room Description

Room 2RA3 is the Unit 2 Accumulator Room 3 and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-3 below. The room has a floor area of 348-ft² and a ceiling height of 26-feet.

2.9.16.2.b Fire Load

The combustible loading is classified as low and is due to the small quantities of lubricating oil in control valves (accounts for 88% of combustible load), and small quantities of plastics associated with a small control panel, telephone and junction boxes account for the remaining combustibles. The electrical cables associated with these devices are low voltage power or control circuits and are routed in conduit. Each circuit is adequately protected with properly sized and coordinated circuit protection (fuse/breaker) that will clear a cable fault prior to the cable insulation reaching auto-ignition. None of these combustible materials are associated with a credible ignition source. There are no credible ignition sources in the room (see Justification in 2.9.0 above). The major piece of equipment in the room is the Accumulator Tank #3. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The steel containment vessel and suppression and detection in the Unit 2 Annulus would prevent a credible fire in the Annulus from propagating into 2RA3. Due to the lack of combustibles and ignition sources in 2RA3, it is concluded there is no fire hazard to components located in 2RA3 nor does 2RA3 present a fire hazard to adjacent rooms.

2.9.16.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RA1. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RA3 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-3 via a ladder. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur in 2RA3 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.16.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RA3 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays.

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The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RA3 or from 2RA3 into the annulus.

Room 2RO-3 is separated from 2RA3 by 24 inch thick non-fire rated reinforced concrete ceiling and a wall. There is a ladder from 2RO-3 up to a hatch for entry into 2RA3. The in situ combustible load in 2RO-3 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-3 could propagate into 2RA3 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor, but are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-3 could propagate from 2RO-3 into 2RA3 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-3 could propagate into 2RA3 or from 2RA3 into 2RO-3.

The Unit 2 Fan Room 2 (2RF2) is separated from 2RA3 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF2 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to reactor building is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF2 that could propagate into 2RA3 or from 2RA3 into 2RF2.

Room 2RI-3 is separated from 2RA3 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-3 is moderate of which 99% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire would be contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles will not be introduced into 2RI-3. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-3 could propagate into 2RA3 or from 2RA3 into 2RI-3.

Room 2RU is separated from 2RA3 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RA3 or from 2RA3 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible

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exposure fire would occur that could propagate from 2RA3 into an adjacent room or from an adjacent room into 2RA3.

2.9.16.3 System Evaluation

2.9.16.3.a Redundant FSSD Components in the Room

Reactor coolant pump (RCP) #3 seal return flow control valve cable is routed in conduit in room 2RA3. The valve is normally open and fails open on loss of power or air. Since there is insignificant in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could fail this valve circuit. The only other cable in the conduit is normally de-energized and would not provide a hot short source to energize the valve even if there could be fire damage to the cable. For additional defense-in-depth, if the valve does fail close the operator will close the control air header valve from the main control room thereby isolating control air which will open the valve.

2.9.16.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

The FSSD analysis assumed failure of all FSSD components in the analysis volume. The control circuits for lower compartment coolers (LCC) valves were assumed to fail and cause the valves to close. The circuits for the LCC valves are not routed through 2RA3. They are located in other rooms within the analysis volume. The rooms are separated from each other by 24 – 48 inch thick walls (see 2.9.16.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA3 could propagate to the other rooms or from the adjacent rooms into 2RA3 (see 2.9.16.2). Therefore, the OMA listed in 2.9.16.1.a is not necessary.

The FSSD analysis assumed failure of all FSSD components in the analysis volume. The RHR system isolation valve and its by-pass valve and their associated control circuits are redundant and one must be operational. The RHR valves are not located in nor are their circuits routed through 2RA3. They are located in other rooms within the analysis volume. The rooms are separated from each other by 24 – 48 inch thick walls (see 2.9.16.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RF2, 2RI-3 and 2RO-3 could propagate into 2RA3 or from 2RA3 into 2RF2, 2RI-3 or 2RO-3 (see 2.9.16.2). Therefore, OMA 2.9.16.1.b is not necessary.

2.9.16.3.c Other FSSD Components in the Room

Room 2RA3 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RA3). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Lower compartment and upper compartment purge isolation valve cables
- Safety injection system accumulator tank #3 flow isolation valve cables
- Containment Air Return Fan cable

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2.9.16.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, no fire hazards exist in the room that would necessitate an OMA or protection of an electrical raceway with radiant energy shields. Since there is no fire hazard in 2RA3 that could cause loss of ACAS pressure or necessitate the OMAs listed in 2.9.16.1. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.17 Room 2RA4 - Unit 2 Accumulator Room 4

This deviation applies to room(s) 2RA4 Contain.

2.9.17.1 Description of Condition

This room is a part of fire area 77 (see Part III, Table 3-3 for room listing) and is analyzed in analysis volumes AV-118C, AV-118D, and AV-118K. Fire area 77 is considered a III.G.2 area. Room 2RA4 contains redundant safe shutdown valves and auxiliary control air system (ACAS) train B air users.

Physical separation in accordance with III.G.2 cannot be achieved in these analysis volumes. An FSSD analysis assuming failure of all cables and equipment in this room would result in OMAs being credited in lieu of III.G.2 physical separation. Therefore, the following OMAs would be implemented to achieve fire safe shutdown:

- a. Unit 2 – Open lower containment vent cooler valves within 120 minutes by opening breaker in the board room.
- b. Unit 2 – Open residual heat removal (RHR) system isolation by-pass valve within 240 minutes to establish RHR flow path.

2.9.17.2 Fire Hazards Analysis

2.9.17.2.a Room Description

Room 2RA4 is the Unit 2 Accumulator Room 4 and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-4 below. The room has a floor area of 489-ft² and a ceiling height of 26-feet.

2.9.17.2.b Fire Load

The combustible loading is classified as low and is due to the small quantities of lubricating oil in control valves (accounts for 90% of combustible load). The plastics associated with a small control panel, telephone and junction boxes account for the remaining combustibles and its resultant fire severity is less than 1 minute. The electrical cables associated with these devices are low voltage power or control circuits and are routed in conduit. Each circuit is adequately protected with properly sized and coordinated circuit protection (fuse/breaker) that will clear a

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cable fault prior to the cable insulation reaching auto-ignition. None of these combustible materials are associated with a credible ignition source. There are no credible ignition sources in the room (see Justification in 2.9.0 above). The major piece of equipment in the room is the Accumulator Tank #4. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The steel containment vessel and suppression and detection in the Unit 2 Annulus would prevent a credible fire in the Annulus from propagating into 2RA4. Due to the lack of combustibles and ignition sources in adjacent rooms, it is concluded they do not present a fire hazard to components located in 2RA4 nor does 2RA4 present a fire hazard to adjacent rooms.

2.9.17.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RA4. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RA4 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-4 via a ladder. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination provides assurance that no credible exposure fire would occur in 2RA4 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.17.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RA4 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RA4 or from 2RA4 into the annulus.

Room 2RO-4 is separated from 2RA4 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-4 up to a hatch for entry into 2RA4. The in situ combustible load in 2RO-4 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-4 could propagate into 2RA4 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-4 could propagate from 2RO-4 into 2RA4 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-4 could propagate into 2RA4 or from 2RA4 into 2RO-4.

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The Unit 2 Fan Room 1 (2RF1) is separated from 2RA4 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF1 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RF1 is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF1 that could propagate into 2RA4 or from 2RA4 into 2RF1.

Room 2RI-4 is separated from 2RA4 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-4 is low of which over 97% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire is contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles is not introduced into 2RI-4. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-4 could propagate into 2RA4 or from 2RA4 into 2RI-4.

Room 2RU is separated from 2RA4 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RA4 or from 2RA4 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RA4 into an adjacent room nor from an adjacent room into 2RA4. TVA further concludes that the implementation of OMAs is not necessary.

2.9.17.3 System Evaluation

2.9.17.3.a Redundant FSSD Components in the Room

RHR system isolation valve 2-FCV-74-2-B and its by-pass valve 2-FCV-74-8-A are redundant safe shutdown valves and one must be operational for cold shutdown. The valves and their cables are at least 2 feet apart (horizontally) and have their power removed (breaker open). These valves are MOVs with their associated cables routed in dedicated conduit except one conduit that contains two other MOV power cables. The MOV power cables are not energized; therefore, even if there could be a fire that could damage the circuits in the conduit, no hot short is possible to cause spurious operation of the valves. There are no credible ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables. Based on 2.9.0 above these valves are not considered credible ignition sources and there are no in situ combustibles or ignition sources between the valves. Since there is very low in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could fail both of these

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valves or their cables. Therefore, the OMA identified in 2.9.17.1.b is not necessary for a fire in 2RA4.

The FSSD analysis generally assumes that fire damage to one ACAS air user could depressurize the header (Train A or Train B). If auxiliary control air system (ACAS) train B air users located in this area were assumed to fail due to postulated fire damage; ACAS train B is assumed failed. Six air operated valves located in room 2RA4 are connected to the ACAS train B header. The valves are located at least 20 feet above the floor and there are no credible ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the valves. Loss of control air to the train B components would cause them to fail to their desired FSSD position. For additional defense-in-depth there is no redundant ACAS train A air users located in 2RA4 thus plant safe shutdown capability is ensured. It is concluded that there is no credible fire in 2RA4 that could cause failure of the train B air operated valves and depressurize the ACAS train B header.

2.9.17.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

If the FSSD analysis assumed failure of all FSSD components in the analysis volume, the control circuits for lower compartment cooler (LCC) temperature control valves are assumed to fail and cause the valves to close. The circuits for the LCC valves are not routed through 2RA4. They are located in adjacent rooms 2RF1, 2RI-1, 2RI-4 within analysis volumes AV-118D and AV-118K. Therefore, the OMA listed in 2.9.17.1.a is not necessary for a fire in room 2RA4.

Lower and upper compartment purge isolation valves and associated cables are routed in conduits in room 2RA4. The redundant lower compartment purge isolation valve cables are routed in conduits in room 2RF1 and the annulus. Room 2RA4 is separated from 2RF1 by a 24 inch thick reinforced concrete wall (see 2.9.17.2 above). The lack of ignition sources and no concentrations of in situ combustibles provide assurance that no credible fire in 2RF1 could propagate into 2RA4 or from 2RA4 into 2RF1 (see 2.9.17.2).

2.9.17.3.c Other FSSD Components in the Room

Room 2RA4 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RA4). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Lower and upper compartment purge isolation valve cables
- Residual heat removal system supply test line valve cables
- Safety Injection system accumulator tank #4 flow isolation valve cables
- Containment sump level transmitter channel F cable
- Reactor coolant pump thermal barrier return containment isolation valve cable
- Source range detector and indicator cable
- Reactor coolant system loops hot leg temperature auxiliary cables
- Unit 2 containment non-essential header dump solenoid valve cables
- Containment Air Return Fan cable

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2.9.17.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, there is no fire hazard in 2RA4 that could cause loss of ACAS pressure and necessitate any OMAs. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.18 Room 2RF1 – Unit 2 Reactor Building Fan Room 1

This deviation applies to room(s) 2RF1 Contain.

2.9.18.1 Description of Condition

Room 2RF1 is a part of fire area 77 (see Part III, Table 3-3 for room listing) and is analyzed in analysis volumes AV-118D, AV-118E, AV-118K, and AV-118L. Fire area 77 is considered a III.G.2 area because it contains components related to both redundant shutdown paths.

Physical separation in accordance with III.G.2 cannot be achieved in these analysis volumes. An FSSD analysis assuming failure of all cables and equipment in this room would result in the following OMAs being credited in lieu of III.G.2 physical separation and radiant energy shields.

- a. Unit 2 – Open lower containment vent cooler valves within 120 minutes by opening breaker in the board room.
- b. Unit 2 – Open residual heat removal (RHR) system isolation by-pass valve within 240 minutes to establish RHR flow path.
- c. Radiant energy shielding to protect train A head vent valves cables and penetration 27.
- d. Radiant energy shielding to protect RHR isolation and bypass valve cables at penetrations 6 and 9.

2.9.18.2 Fire Hazards Analysis

2.9.18.2.a Room Description

The Unit 2 Reactor Building Fan Room 1 is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-1 and 2RO-4 below. The room has a floor area of 719-ft² and a ceiling height of 26-feet.

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2.9.18.2.b Fire Load

The combustible loading is classified as insignificant and is due to small quantities of lubricant within control valves (accounts for 51% of combustible load) and small quantities of plastics associated with small control panels, a telephone and junction boxes. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The Unit 2 Annulus is provided with a suppression and detection system for cable separation that would prevent a fire in the Annulus from propagating into 2RF1. The dispersed location of the insignificant quantities of in situ combustible material and the lack of credible ignition sources (see 2.9.0 above) result in no credible fire occurring that could propagate from 2RF1 into an adjacent room. Therefore no credible fire in 2RF1 presents a hazard to components located in 2RF1 or to an adjacent room.

2.9.18.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RF1. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RF1 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-1 and 2RO-4 via a ladder. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur in 2RF1 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.18.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RF1 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RF1 or from 2RF1 into the annulus.

Room 2RA1 is separated from 2RF1 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA1 is low and is due to small quantities of lubricant in valves (61% of the load), expansion joint material (32% of the load) and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA1 could propagate into 2RF1 through the unprotected penetrations.

Room 2RA4 is separated from 2RF1 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire

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rated penetration seals. The in situ combustible load in 2RA4 is low and is due to small quantities of lubricant in valves (90% of the load) and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA4 could propagate into 2RF1 through the unprotected penetrations.

Room 2RI-1 is separated from 2RF1 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-1 is low of which over 99% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire is contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles is not introduced into 2RI-1. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-1 could propagate into 2RF1 or from 2RF1 into 2RI-1.

Room 2RI-4 is separated from 2RF1 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-4 is low of which over 97% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire is contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles is not introduced into 2RI-4. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-4 could propagate into 2RF1 or from 2RF1 into 2RI-4.

Room 2RO-1 is separated from 2RF1 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-1 up to a hatch for entry into 2RF1. The in situ combustible load in 2RO-1 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate into 2RF1 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-1 could propagate from 2RO-1 into 2RF1 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-1 could propagate into 2RF1 or from 2RF1 into 2RO-1.

Room 2RO-4 is separated from 2RF1 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-4 up to a hatch for entry into 2RF1. The in situ combustible load in 2RO-4 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-4 could propagate into 2RF1 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-4 could propagate from 2RO-4 into 2RF1 through these penetrations. Since access to the

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reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-4 could propagate into 2RF1 or from 2RF1 into 2RO-4.

Room 2RU is separated from 2RF1 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RF1 or from 2RF1 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RF1 into an adjacent room or from an adjacent room into 2RF1. TVA further concludes that the implementation of OMAs is not necessary.

2.9.18.3 System Evaluation

2.9.18.3.a Redundant FSSD Components in the Room

Lower compartment coolers A and D (LCC-A & LCC-D) and circuits associated with control rod drive mechanism coolers A and D (CRDM-A & CRDM-D) are located in 2RF1 along with the inboard containment isolation valves (FCV) supplying ERCW to those LCCs and CRDMs. Each cooler has an associated temperature control valve (TCV) that modulates ERCW flow to the cooler in response to area temperature. The TCVs fail open on loss of signal or loss of motive air pressure. LCC-A and CRDM-A FCVs and TCVs and associated train A cables are separated by at least 10 feet horizontally from LCC-D and CRDM-D FCVs and TCVs and associated train B cables except for the TCV modulating signal cables for LCC-D's TCV and CRDM-D's TCV. These two signal cables are routed in separate conduits with no other energized cables through the general area where LCC-A and CRDM-A cables are located. Even if a fire could damage these cables, the only credible failure modes (open, short, or ground) would cause a loss of signal and the TCV would fail to the desired position (open). Therefore, for any credible fire in 2RF1 at least one LCC and one CRDM are operable. Additionally LCC-B, which has no cables in 2RF1, is operable.

For FSSD, no lower compartment cooling is needed for two hours and ample cooling is provided by any combination of three LCCs or two LCCs and two CRDMs. As described above at least two LCCs and one CRDM are operable. The modulating signal cable for CRDM-C's TCV is routed through 2RF1 in a conduit with two other instrument signal cables. All three cables are two-conductor 16 AWG twisted, shielded cables with thermoset insulation. Considering the insignificant fire severity index of the room it is inconceivable that two of these cables could be damaged such as to create and sustain a cable-to-cable double hot short (plus-to-plus and minus-to-minus) without grounding. Such a fault is necessary to close the TCV. Temperature sensing (thermocouple) cables for CRDM-C and LCC-C temperature control valves are routed through 2RF1 in a vertical conduit with other thermocouple cables. These cables are two-conductor twisted shielded copper-constantan thermocouple extension leads. If these cables could be fire damaged, the most likely failures are the shorting between leads or shorting to ground. Either of these failures creates a new thermocouple junction in a high temperature

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environment causing the TCV to open. Likewise an open circuit (no signal) causes the valve to fail open. No credible fire damage could cause TCV closure. As additional defense-in-depth the thermocouple cable conduit is more than five feet horizontal from the conduit containing the CRDM-C TCV modulating signal cable. No credible fire in 2RF1 could damage cables in both conduits. The insignificant quantities of dispersed combustibles and lack of credible ignition sources provided additional assurance that containment cooling is maintained. Therefore, OMA listed in 2.9.18.1.a is not necessary.

The circuits for RHR system isolation valves and their by-pass valves are routed in 2RF1. The train A isolation valve and its by-pass valve (train B) (set 1) are in series with the Train B isolation valve and its by-pass valve (train A) (set 2). For hot shutdown, either set 1 or set 2 must remain closed. This is assured by removing motive power during normal plant operation and routing the power cables for one set of valves in dedicated conduit with no energized cables. An FSSD analysis which assumes failure of all cables and equipment in the room would result in the need for radiant energy shields on penetrations 6 and 9 to prevent the RHR isolation valves from spuriously opening due to postulated 3-phase hot shorts between 480 vac power cables at the penetration. The train A power cables are routed through penetration 6 and the train B power cables are routed through penetration 9. These penetrations are located 22 feet above the floor and there are no credible ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in the penetrations. In summation the following shows that no credible event could occur to create a flow path through these two sets of valves:

- a. Two 3-phase hot shorts must simultaneously occur on these normally closed sets of valves.
- b. The power cables for these valves are routed in dedicated conduits with no other cables in the conduits.
- c. The power to the cables has been removed during normal operation.

Therefore, it is concluded that there is not a fire hazard that would damage these cables and the addition of radiant energy shields on penetrations 6 and 9 is not needed.

The OMA listed in 2.9.18.1.b is not necessary to achieve and maintain hot shutdown but is for transitioning to cold shutdown. The RHR pumps would need to draw suction from the reactor coolant loop #4 hot leg by opening one valve from each set. A FSSD analysis applying III.G.2.d (20 feet horizontal) separation criteria would show that the cables for both isolation valves and either the train A or the train B bypass valve could be damaged by a large fire and one of the valves would have to be manually opened. The redundant valve circuits are routed in conduits in 2RF1 and train A cables are horizontally separated from the train B cables by at least 9 feet except for the main isolation valve (train A and train B) cables connecting to local panels L-358 and L-183. If a large fire could occur in this area, both main isolation valve circuits might be affected; however, all cables for both bypass valves are more than 9 feet (horizontal) from these panels and cables. Since there is insignificant in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could fail these valves or their circuits. Therefore, the OMA listed in 2.9.18.1.b is not necessary.

An FSSD analysis which assumes failure of all cables and equipment in the room would result in the need for radiant energy shields for train A head vent valve cables including penetration 27 to ensure the valves could be opened for RCS letdown. To prevent the head vent valves from

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spurious opening, power is removed during normal plant operation. The train A head vent valve cables are routed through penetration 27 and the train B head vent valve cables are routed through penetration 30. These penetrations are located at least 10 feet above the floor and there are no credible ignition sources and insignificant quantities of combustible material below them that could create a fire of sufficient magnitude to damage the cables in the penetrations. Therefore, the radiant energy shields for the train A head vent valves including penetration 27 are not necessary.

Cables for the RCS normal letdown isolation valves which are normally open and fail closed on loss of power or air are routed in conduit in room 2RF1. Since there is insignificant in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could damage circuits and spuriously energize both valve circuits. For additional defense-in-depth, if both valves are assumed to fail to close, the operator will isolate and depressurize the Unit 2 reactor building non-essential control air header from the main control room thereby causing the valves to close.

Cables for redundant train A and train B lower compartment purge isolation valves (containment isolation) are routed in conduits in room 2RF1. However, the redundant valve cables in room 2RF1 are horizontally separated by more than 20 feet.

A cable for reactor coolant pump (RCP) 4 seal return flow control valve which is normally open and fails open on loss of power or air is routed in conduit in room 2RF1. Since there is insignificant in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could fail this valve circuit. The other two cables in the conduit are normally de-energized and would not provide a hot short source to energize the valve even if there could be a large fire that caused damage to the cables. For additional defense-in-depth, if the valve does fail close the operator will close the control air header valve from the main control room thereby isolating control air which will open the valve.

2.9.18.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

There are no redundant FSSD components in the adjacent rooms within the analysis volumes.

2.9.18.3.c Other FSSD Components in the Room

Room 2RF1 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RF1). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Steam generator blow down isolation valve loops #1, #2, #3, & #4 cables
- Reactor coolant loop 3 letdown flow valve cables
- Safety injection system accumulator tank #1 & #4 flow isolation valve cables
- Pressurizer level and pressure transmitter cables
- Pressurizer power operated relief valve train B cables
- Reactor coolant system hot leg temperature cables (auxiliary control)

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- Pressurizer train A power operated relief valve block valve cable
- Reactor coolant pump thermal barrier return containment isolation valve cable
- Turbine driven auxiliary feedwater pump steam generator #1, #2, & #4 level transmitter cables
- Reactor Coolant System #4 hot leg and cold leg temperature cables
- Steam generator level transmitter cables
- Steam generator #1, #3 and #4 level indicator auxiliary cables
- Source range detector and indicator cables
- Containment Sump Level cables

2.9.18.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, there is no fire hazard in 2RF1 that necessitates the use of radiant energy shields or OMAs. TVA concludes that the intent of III.G.1 is assured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.19 Room 2RF2 – Unit 2 Reactor Building Fan Room 2

This deviation applies to room(s) 2RF2 Contain.

2.9.19.1 Description of Condition

This room is a part of fire area 77 which is analyzed in analysis volumes AV-118A, AV-118B, AV-118H, and AV-118J (see Part III Table 3-3 for room listing). Fire area 77 is considered a III.G.2 area because it contains components related to both redundant shutdown paths.

Physical separation in accordance with III.G.2 cannot be achieved in these analysis volumes. An FSSD analysis for this room assuming failure of all cables and equipment from a large fire would result in the installation of radiant energy shields and OMAs being credited in lieu of III.G.2 physical separation. Therefore, the following OMA and radiant energy shields are necessary to achieve fire safe shutdown:

- a. Unit 2 - Reduce RCP seal injection flow rate within 60 minutes by operation of a manual valve on 713-A1B.
- b. Unit 2 – Install radiant energy shielding for conduits containing cables for steam generator #1 & #4 level indication including penetration 45.
- c. Unit 2 – Install radiant energy shielding for conduits containing cables for pressurizer pressure transmitter input for safety injection (SI).
- d. Unit 2 – Install radiant energy shielding for conduits containing cables for hot and cold leg loop 1 temperatures including penetration 38.
- e. Unit 2 – Install radiant energy shielding for penetration 36.

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2.9.19.2 Fire Hazard Analysis

2.9.19.2.a Room Description

The Unit 2 Reactor Building Fan Room 2 is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick and from the Unit 2 Annulus by the steel containment shield. The concrete walls, ceiling and floor have mechanical and electrical penetrations that are not provided with fire rated seals/closures. Entry to the room is thru an opening in the 24-inch thick floor via a ladder from 2RO-2 and 2RO-3 below. The room has a floor area of 719-ft² and a ceiling height of 26-feet.

2.9.19.2.b Fire Load

The combustible loading is classified as insignificant and is due to small quantities of lubricant within control valves (accounts for 39% of combustible load) and small quantities of plastics associated with small control panels, a telephone and junction boxes. Only one of the adjacent rooms has a combustible load that could create a credible fire and that is the Unit 2 Annulus. The Unit 2 Annulus is provided with a suppression and detection system for cable separation that would prevent a fire in the Annulus from propagating into 2RF2. The dispersed location of the insignificant quantities of in situ combustible material and the lack of credible ignition sources (see 2.9.0 above) result in no credible fire occurring that could propagate from 2RF2 into an adjacent room. Therefore no credible fire in 2RF2 presents a hazard to components located in 2RF2 or to an adjacent room.

2.9.19.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RF2. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RF2 is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RO-4 via a ladder. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination provides assurance that no credible exposure fire would occur in 2RF2 that could damage components in the room or propagate into an adjacent room. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.19.2.d Adjacent Rooms

The Unit 2 Annulus is separated from 2RF2 by the steel containment shield. Over 98% of the in situ combustible load in the Unit 2 Annulus is due to insulation on the cables routed in trays. The remaining in situ combustible load is dispersed throughout the Annulus and there are no ignition sources. The Unit 2 Annulus is provided with automatic suppression and detection for cable separation in this area. The steel containment shield in combination with the automatic suppression and detection provides assurance that no credible fire in the Unit 2 Annulus could propagate into 2RF2 or from 2RF2 into the annulus.

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Room 2RA2 is separated from 2RF2 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA2 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 could propagate into 2RF2 through the unprotected penetrations.

Room 2RA3 is separated from 2RF2 by a 24 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA3 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA3 could propagate into 2RF2 through the unprotected penetrations.

Room 2RI-2 is separated from 2RF2 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-2 is low of which over 98% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire is contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles is not introduced into 2RI-2. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-2 could propagate into 2RF2 or from 2RF2 into 2RI-2.

Room 2RI-3 is separated from 2RF2 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping and ventilation penetrate the wall and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RI-3 is moderate of which over 97% is due to reactor coolant pump (RCP) lubricating oil. The RCP is provided with an oil collection system in accordance with Appendix R, Section III.O (see Part VII, section 2.8) and is protected with automatic suppression and detection. This assures that a postulated RCP fire is contained to the RCP. The strict entry controls for the reactor building during operation ensures that transient combustibles is not introduced into 2RI-3. The lack of other ignition sources or concentrations of in situ combustibles provides assurance that no credible fire in 2RI-3 could propagate into 2RF2 or from 2RF2 into 2RI-3.

Room 2RO-3 is separated from 2RF2 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-2 up to a hatch for entry into 2RF2. The in situ combustible load in 2RO-2 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-2 could propagate into 2RF2 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-2 could propagate from 2RO-2 into 2RF2 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire

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hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-2 could propagate into 2RF2 or from 2RF2 into 2RO-2.

Room 2RO-3 is separated from 2RF2 by 24 inch thick non-fire rated reinforced concrete ceiling. There is a ladder from 2RO-3 up to a hatch for entry into 2RF2. The in situ combustible load in 2RO-3 is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-3 could propagate into 2RF2 via this personnel access opening. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The lack of in situ combustibles and ignition sources provides assurance that no credible fire in 2RO-3 could propagate from 2RO-3 into 2RF2 through these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO-3 could propagate into 2RF2 or from 2RF2 into 2RO-3.

Room 2RU is separated from 2RF2 by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RF2 or from 2RF2 into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RF2 into an adjacent room or from an adjacent room into 2RF2. TVA further concludes that the implementation of OMAs is not necessary.

2.9.19.3 System Evaluation

2.9.19.3.a Redundant FSSD Components in the Room

Cables for train B pressurizer power operated relief valve (PORV) block valve and the redundant train A pressurizer PORV are routed in conduit in room 2RF2. Either the train A path or the train B path is needed for reactor coolant system pressure control. Either the train B pressurizer PORV block valve must remain open or the redundant train A pressurizer PORV must be operational to ensure a reactor coolant system pressure control path is available. The redundant valve cables in room 2RF2 meet II.G.2.d separation criteria. Therefore, there is no fire damage to cables that could fail both valves.

The train B head vent block and throttle valve cables are routed through penetration 36 and the redundant train A head vent block and throttle valve cables are routed through penetration 37. Penetration 36 would have to be protected by radiant energy shield based on the assumption that a large fire could damage all cables in the penetration and cause the head vent valves to spuriously open. To prevent spurious opening power is removed from the head vent valves during normal plant operation. The penetrations 36 and 37 and associated train A and train B head vent valve cables are horizontally separated by at least 4 feet and the penetrations are located at least 18 feet from the floor. There are no credible ignition sources and insignificant

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quantities of combustible material below them that could create a large fire of sufficient magnitude to damage the cables in the penetrations. For additional defense-in-depth the train B head vent valve cables are routed in dedicated conduit and the train A head vent valve cables are routed in conduit with instrumentation loops that would not provide a hot short source to open the head vent valves. Therefore, there is no fire hazard that could cause the head vent valves to open. Further, no radiant energy shield would need to be provided for penetration 36.

Two Pressurizer level transmitters (2-LT-68-320-F & -339-D) provide input to the charging flow control valve (2-FCV-62-93) control system. The transmitter cables are routed in conduits in room 2RF2 and are separated from each other by at least 3 feet horizontally. There are no ignition sources and insignificant quantities of combustible material below them that could create a large fire of sufficient magnitude to damage the cables in both conduits. Failure of either or both of these cables could cause the charging flow control valve to open. However, for additional defense-in-depth the operator can control the charging flow control valve flow from the main control room even if one or both of the level circuits fail. Therefore, OMA 2.9.19.1.a is not necessary.

Steam generator #1 #2, #3, & #4 level transmitter channel F cables are routed in separate conduits from penetration 45 in room 2RF2. A FSSD analysis assuming failure of all cables in the analysis volume due to a large fire would make it necessary that steam generator # 1 & #4 level transmitters channel F cables (including the penetration) be protected with radiant energy shields. However, two steam generators provide adequate decay heat removal and SGs #1 & #4 redundant channels E and G level transmitters and their cables are not located in room 2RF2. Therefore, there is no need to provide radiant shielding for a conduit or penetration to obtain III.G.2 separation.

Steam generator #1 level transmitter cables for steam generator #1 level control valves are routed in conduits in 2RF2 and terminate at penetration 37. There are no credible ignition sources and insignificant quantities of combustible material below them that could create a large fire of sufficient magnitude to damage the cables. Even if there could be a large fire of sufficient magnitude to damage the level control valve transmitter circuit, the operator can control the steam generator level control valve in manual mode from the main control room which provides additional defense-in-depth.

Signal cables for two pressurizer spray valves are routed in separate conduits in room 2RF2 and terminate at penetration 34. The valves are normally closed and fail closed on loss of signal or air. There are no credible ignition sources and insignificant quantities of combustible material below them that could create a large fire of sufficient magnitude to damage the cables in the penetrations. The cable for one valve is routed in dedicated conduit and the cable for the other valve is routed in conduit with other instrumentation loops. The cables in the conduit are all two-conductor twisted, shielded cables with thermoset insulation. Considering the insignificant quantities of in situ combustibles and lack of ignition sources in the room it is inconceivable that a large fire could develop and that two cables could be damaged such as to create and sustain a cable to cable double hot short (plus to plus and minus to minus) without grounding. No other failure mode could open the valve. For additional defense-in-depth, if one or both of the spray valves spuriously open, the operator would trip the reactor coolant pumps from the main control room which would stop pressurizer spray.

Two pressurizer pressure transmitter channel D and F cables are routed in separate conduits of which one must be free of fire damage to prevent a spurious safety injection (SI) signal. The transmitter cables are routed in conduits in room 2RF2 and are separated from each other by at

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least 3 feet horizontally; there are no ignition sources and insignificant quantities of combustible material below them that could create a large fire of sufficient magnitude to damage the cables in both conduits. All cables in the conduits are two-conductor 16 AWG twisted, shielded cables with thermoset insulation. Therefore, there is no need to provide radiant energy shielding for a conduit containing one channel to obtain III.G.2 separation from the other conduit containing the other channel.

Steam generator #1 T_{HOT} and T_{COLD} temperature channel D instrument cables are routed in conduit through 2RF2 and terminate at penetration 38. A FSSD analysis assuming failure of all cables due to a large fire in the room would make it necessary that steam generator #1 temperature channel D cables (including penetration 38) be protected with radiant energy shields. Since there are no ignition sources and insignificant quantities of combustible material below the penetration or near the vertical conduit that could create a large fire of sufficient magnitude to damage the cables or penetration, it is concluded that there is not a fire hazard that could fail these temperature circuits. Therefore, there is no need to wrap the conduit or penetration to obtain III.G.2 separation. As defense-in-depth these cables have thermoset insulation making them less susceptible to damage from any credible fire.

A cable for reactor coolant pump (RCP) 2 seal return flow control valve is routed in conduit in room 2RF2. The valve is normally open and fails open on loss of power or air. The conduit is routed from penetration 46 vertically to the floor and is embedded in the floor. There are three other cables in the conduit that are normally de-energized and would not provide a hot short source to energize the valve even if there could be fire damage to the cable. However, the lack of ignition sources and insignificant quantities of combustible material below the penetration or near the vertical conduit would prevent a fire of sufficient magnitude to damage the cable or penetration. It is concluded that there is not a fire hazard that could energize this valve circuit. For additional defense-in-depth, even if a postulated fire could cause the valve to fail closed, the operator would close the reactor building non-essential control air header isolation valve from the main control room thereby isolating control air which would open the valve.

Lower compartment coolers B and C (LCC-B and LCC-C) and circuits associated with the control rod drive mechanism (CRDM-B and CRDM-C) coolers are located in 2RF2 along with the inboard containment isolation valves (FCV) supplying ERCW to those LCCs and CRDMs. Each cooler has an associated temperature control valve (TCV) that modulates ERCW flow to the cooler in response to area temperature. The TCVs fail open on loss of signal or loss of motive air pressure. The LCC-B and CRDM-B FCVs and TCVs and associated train B cables are separated by at least 10 feet horizontally from LCC-C and CRDM-C FCVs and TCVs and associated train A cables. The modulating signal cable for LCC-D's TCV is routed through 2RF2 in a conduit with another instrument signal cable. These cables are two-conductor 16 AWG twisted, shielded cables with thermoset insulation. Considering the insignificant quantities of in situ combustibles and lack of ignition sources in the room it is inconceivable that two of these cables could be damaged by a credible fire such as to create and sustain a cable-to-cable double hot short (plus-to-plus and minus-to-minus) without grounding. Such a fault is necessary to close the TCV. Temperature sensing (thermocouple) cables for LCC-D temperature control valves are routed through 2FR2 in a conduit with other thermocouple cables. These cables are two-conductor twisted shielded copper-constantan thermocouple extension leads. If these cables could be fire damaged, the most likely failures are shorting between leads or shorting to ground. Either of these failures would create a new thermocouple junction in a high temperature environment causing the TCV to open. Likewise an open circuit (no signal) would cause the valve to fail open. No credible fire damage could cause TCV closure. The insignificant quantities of dispersed combustibles and lack of credible ignition sources provided

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additional assurance that containment cooling is maintained. For additional defense-in-depth the LCC-A, CRDM-A, CRDM-D and either LCC-B and CRDM-B or LCC-C and CRDM-C are available and provide ample containment cooling.

2.9.19.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

A cable for the excess letdown isolation valve is located in room 2RF2 and a cable for redundant excess letdown flow control valve E/P module is located in room 2RA2 and 2RO-2. Rooms 2RA2 and 2RO-2 are separated from 2RF2 by a 24 inch thick reinforced concrete wall (see 2.9.19.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 or 2RO-2 could propagate into 2RF2 or from 2RF2 into 2RA2 or 2RO-2 (see 2.9.19.2).

A cable for reactor coolant loop 3 letdown flow valve is located in room 2RF2 and cables for redundant reactor coolant loop 3 letdown flow valve are located in rooms 2RI-2 and 2RO-2. Rooms 2RI-2 and 2RO-2 are separated from 2RF2 by a 24 inch thick reinforced concrete wall (see 2.9.19.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RI-2 or 2RO-2 could propagate into 2RF2 or from 2RF2 into 2RI-2 or 2RO-2 (see 2.9.19.2).

Train A PORV and train B PORV block valve cables are located in room 2RF2 and the redundant train B PORV and train A PORV block valve cables are located in room 2RI-2. Room 2RI-2 is separated from 2RF2 by a 24 inch thick reinforced concrete wall (see 2.9.19.2 above). The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RI-2 could propagate into 2RF2 or from 2RF2 into 2RI-2 (see 2.9.19.2).

2.9.19.3.c Other FSSD Components in the Room

Room 2RF2 contains FSSD equipment and cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RF2). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD equipment and cables has been evaluated to assess its effect on plant operation. Failure of this FSSD equipment or cables is detected and mitigated by normal plant procedures and does not initiate or result in a plant trip.

- Lower compartment, upper compartment, instrument room purge isolation valve (containment isolation valve) cables
- Reactor coolant system aux spray valve cables
- Containment sump level transmitter channel D & F cables
- Safety Injection system accumulator tank #2 & #3 flow isolation valve cables
- Pressurizer level transmitter normal and auxiliary cables
- Turbine driven auxiliary feedwater pump steam generator #2, #3, & #4 level transmitter cables
- Source range detector and indicator channel E cable
- Pressurizer pressure transmitter cable
- Reactor coolant system loop#1 and #2 hot and cold leg temperature cables
- Steam generator level transmitter cables
- Steam generator #1, #2 and #3 level transmitter auxiliary cables

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- Reactor Coolant System loop #3 hot leg temperature cables
- Containment Air Return Fan cable

2.9.19.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources; therefore, no fire hazards exist in the room that would necessitate an OMA or protection of an electrical raceway with radiant energy shields. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.20 2RI– Unit 2 Reactor Building Inside Crane Wall [2RI-1 (0° to 90°), 2RI-2 (90° to 180°), 2RI-3 (180° to 270°), 2RI-4 (270° to 360°)]

This deviation applies to room(s) 2RI Contain.

2.9.20.1 Description of Condition

This area of the Unit 2 Reactor Building is a part of fire area 77 (see Part III, Table 3-3 for room listing) that is inside the Crane Wall and is analyzed in analysis volumes AV-118H, AV-118J, AV-118K and AV-118L. Fire area 77 is considered a III.G.2 area. An FSSD analysis of this room based on the assumption that all the cables and equipment in the room were assumed to fail due to postulated fire damage would result in reliance on radiant energy shields (RES) to protect cables and an OMA in lieu of III.G.2 cable separation. Therefore, the following OMA and radiant energy shields are necessary to achieve fire safe shutdown:

- a. Open RHR isolation valve via hand wheel within 240 minutes in preparation to transition to cold shutdown.
- b. Protect RCP loop 1 hot and cold leg temperature monitoring cables with radiant energy shields.
- c. Protect steam generator #1 and #4 level transmitter cables with radiant energy shields.
- d. Protect Reactor Head Vent Cables with radiant energy shields.
- e. Protect pressurizer level transmitter sense line with radiant energy shields.

2.9.20.2 Fire Hazards Analysis

2.9.20.2.a Room Description

The area of Unit 2 Reactor Building inside the Crane Wall is designated as 2RI and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 30 to 48-inches thick. These barriers are not assigned a fire resistance rating and contain electrical and mechanical penetrations that are not provided with fire rated seals/closures. The room has a floor area of 4,276-ft² and a ceiling height of 40-feet to 51-feet.

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2.9.20.2.b Fire Load

The combustible loading for 2RI is insignificant and is due to Reactor Coolant Pump (RCP) lubricating oil (98% of the in situ combustible load) and small quantities of plastics associated with small control panels, telephones and junction boxes. The combustible loading for quadrants 2RI-1, 2RI-2, and 2RI-4 is low. 2RI-3 has a moderate combustible load of which over 40% is due to insulation on cables routed in cable trays. There is a Steam Generator, a RCP and a CRDM cooler located in each quadrant. Each RCP is provided with an oil collection system (per Appendix R, Section III.O – See FPR Part VII, Section 2.8) and detection and automatic suppression. A postulated fire on a RCP is detected by the detection system which would activate the suppression system and alarm in the Main Control Room. A CRDM cooler unit consists of a plenum, three air cooling coils and two vane axial fans and their motors. Each unit is designed to seismic category I(L) criteria. A postulated fire in a CRDM cooler unit is contained within the unit and the lack of combustibles associated with the unit provides assurance that no components outside the unit are damaged. None of the other combustible materials in 2RI are associated with an ignition source. There are no other credible ignition sources in 2RI (MOV motors are not considered ignition sources – see 2.9.0 above). In addition to each RCP being provided with suppression and detection, standpipes in each of the quadrants of 2RI are also available for fire brigade use. There is no credible fire in 2RI that could propagate into an adjacent area. The lack of combustible material other than the RCP oil in combination with the oil collection system and automatic suppression for each RCP provides assurance that no credible fire in one quadrant of 2RI would propagate into another quadrant of 2RI.

2.9.20.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RF1. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RI is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RIR via a ladder down to 2RO and through the Crane wall into 2RI. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources in combination provides assurance that no credible exposure fire would occur in 2RI that could damage components in the room or propagate into an adjacent room or from one quadrant of 2RI into an adjacent quadrant. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.20.2.d Adjacent Rooms

Room 2RA1 is separated from 2RI-1 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA1 is low and is due to small quantities of lubricant in valves (61% of the load), expansion joint material (32% of the load) and small quantities of plastics associated with electrical control boxes and lights. The lack of

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ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA1 could propagate into 2RI-1 through the unprotected penetrations.

Room 2RA2 is separated from 2RI-2 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA2 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 could propagate into 2RI-2 through the unprotected penetrations.

Room 2RA3 is separated from 2RI-3 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA3 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA3 could propagate into 2RI-3 through the unprotected penetrations.

Room 2RA4 is separated from 2RI-4 by a 36 to 48 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RA4 is low and is due to small quantities of lubricant in valves (90% of the load) and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA4 could propagate into 2RI-4 through the unprotected penetrations.

The Unit 2 Fan Room 1 (2RF1) is separated from 2RI-1 and 2RI-4 by a 36 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF1 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RIR is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF1 that could propagate into 2RI-1 or 2RI-4 from 2RI-1 or 2RI-4 into 2RF1.

The Unit 2 Fan Room 2 (2RF2) is separated from 2RI-2 and 2RI-3 by a 36 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF2 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RF2 is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF2 that could propagate into 2RI-2 or 2RI-3 or from 2RI-2 or 2RI-3 into 2RF2.

The Reactor Instrument Room 2RIR is separated from 2RI-1 and 2RI-2 by a 36 inch thick reinforced concrete wall. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RIR is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RIR is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to

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the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RIR that could propagate into 2RI-1 or 2RI-2 or from 2RI-1 or 2RI-2 into 2RIR.

Room 2RO is separated from 2RI by 36 to 48 inch thick non-fire rated reinforced concrete Crane wall. The Crane wall contains electrical and mechanical openings that are not provided with fire rated seals/closures. There is a personnel access opening through the Crane wall from 2RO-3 into 2RI-3. The in situ combustible load in 2RO is low of which the expansion joint seal material accounts for 91% of the load. Only the edge of the seal is exposed, the rest is between concrete walls. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RO could propagate into 2RI via this personnel access opening or these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RO could propagate into 2RI or from 2RI into 2RO.

Room 2RU is separated from 2RI by a 24 inch thick reinforced concrete floor. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals or closures. The in situ combustible load in 2RU is moderate and is due to small quantities of lubricant in valves, cranes, glycol tank, pipe insulation, ventilation components, and small quantities of plastics associated with electrical control boxes and lights. The lack of ignition sources and types of in situ combustibles provides assurance that no credible fire in 2RU could propagate into 2RI or from 2RI into 2RU.

TVA concludes the types and quantities of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RI into an adjacent room or from an adjacent room into 2RI. TVA further concludes that the implementation of OMAs or the installation of radiant energy shields is not necessary.

2.9.20.3 System Evaluation

2.9.20.3.a Redundant Components in the Room

2RI is made up of four quadrants with a reactor coolant pump (RCP) and a steam generator (SG) and associated components in each. Any two steam generators provide adequate decay heat removal capability. The water level in each steam generator is monitored by three narrow range level transmitters and one wide range level transmitter. The transmitters for SG#1 and SG#4 (south side) are located in 2RF1 and the transmitters for SG#2 and SG#3 (north side) are located in 2RF2. Each SG has four pairs of instrument sensing lines connecting to the transmitters. The two steam generators and level instrumentation on the north side are horizontally separated from the two steam generators and level instrumentation on the south side by more than 20 feet.

Cables for RCS hot leg (HL) and cold leg (CL) temperature indication are located within the 2RI north side and south side with the corresponding SG except for RCS Loop 1 whose temperature indication cables are routed in conduit from quadrant 2RI-1 into 2RI-2 before entering 2RF2. The worst case is a fire in quadrant 2RI-2. For this case SG #3 and #4 are credited. The SG loop 3 temperature monitoring cables and level sense lines are horizontally separated by at least 10 feet from the SG loop 1 and loop 2 temperature monitoring cables and the SG loop 2 level sense lines. Based on the minimal fire hazards described in 2.9.20.2 there is no credible fire that could damage both the RCS Loop 1 cables and the Loop 2 and 3 cables or sense lines.

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Therefore, at least two steam generators and their associated level and temperature instrumentation are functional with a fire anywhere in 2RI. Therefore, radiant energy shields are not necessary for 2.9.20.1.b.

For a fire in quadrant 2RI-1 SG #2 and #3 are credited and for a fire in quadrant 2RI-3 SG #1 and #4 are credited and for both quadrants, one of the redundant level transmitters for the credited steam generator and its cables are not in 2RI. For a fire in quadrant 2RI-2 SG #3 and #4 are credited and one of the redundant level transmitters and its cables for SG #3 and SG #4 are located outside of 2RI. Based on the minimal fire hazards described in 2.9.20.2 there is no credible fire that could damage both the SG #3 temperature monitoring cables and the level transmitter cables. Therefore, radiant energy shields are not necessary for 2.9.20.1.c.

A RCP seal return flow isolation valve and cables are located in the quadrant with its associated RCP. The valves are air operated, normally open, solenoid controlled valves that fail open on loss of air or 125vdc electrical power and their desired position is open. The only fire induced failure that could energize the solenoid to close one of these valves is a cable-to-cable hot short and the conduits for these cables within 2RI do not contain any 125vdc energized cables. Therefore, even if fire could damage these cables the valves do not close.

One control rod drive mechanism cooler (CRDM) is located in each of the four quadrants along with a temperature control damper and a temperature control valve to regulate the amount of cooling provided by the cooler. Containment cooling is also provided by the four lower compartment coolers (LCCs) located in 2RF1 and 2RF2. Three LCCs alone or two LCCs and two CRDMS provide adequate containment cooling. Two LCCs and their temperature control valves and cables are located outside of 2RI in 2RF1 and 2RF2. The temperature sensing element (thermocouple) cables for the other two LCCs are routed through 2RI in conduits. Based on the limited fire hazard (2.9.20.2) there is no credible fire that could damage both of these cables. Even if they could be damaged, the most likely failure mode is a conductor to conductor short within the 2-conductor thermocouple extension wire cable which creates a new thermocouple junction in a hot environment resulting in a higher cooling demand and the valve opens as desired. Therefore, the manual actions listed in 2.9.20.1 are not necessary to ensure containment cooling. As additional defense-in-depth there are two CRDM coolers available for a fire in quadrants 2RI-3 and 2RI-4 where both LCC thermocouple cables are located. Cables for the CRDM are separated horizontally at least 6 feet from at least one of the two LCC thermocouple cables. Even if fire could damage both thermocouple cables, two LCCs and two CRDMs are available to provide the needed cooling.

Each train of ACAS supplies one component (pressurizer spray valve) located in 2RI. These two ACAS air users are horizontally separated by at least 8 feet. Based on the limited fire hazard (2.9.20.2) there is no credible fire that could damage both ACAS headers. At least one train of ACAS is available. As additional defense-in-depth the reactor building ACAS headers can be isolated by closing their containment isolation valves from the main control room and thereby preserves the ACAS to operate equipment in the auxiliary building.

The modulating signal cables for one pressurizer spray valves are routed in conduit through 2RI. The valve is normally closed and fail closed on loss of signal or air. The only failure that could prevent closure of a spray valve is a double hot short (plus-to-plus and minus-to-minus) without grounding between two instrument cables in the conduit. Such a failure is not credible considering the minimal fire hazard identified in 2.9.20.2. If the spray valve could not be closed, the main control room operator trips the RCP providing the motive force for the spray.

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The train A and train B pressurizer power operated relief valves (PORVs) and their associated block valves are located on top of the pressurizer in 2RI. The train A cables and train B cables are routed in conduit in opposite directions away from the pressurizer. Fire damage to a PORV or its cables could not spuriously open the valve and the head vent valves whose cables are routed in conduit outside of the pressurizer cavity are functional to depressurize the RCS if needed. Based on the minimal fire loading and ignition sources near the pressurizer, fire damage to the PORVs and their associated block valve or their cables and the head vent valve cables is not considered credible. The power is removed from the head vent valve circuits during normal plant operation to ensure they could not spuriously open. Therefore, radiant energy shields are not necessary for 2.9.20.1.d.

The pressurizer level transmitter sense lines originate near the top of the pressurizer and travel to the reactor instrument room. The sense lines from the tap on the pressurizer to the bellows (located outside of the pressurizer enclosure) consist of two parts. The parts are rigid tubing and flex hose (for thermal expansion/contraction). The flex hose is ASME Section III, class 2 flex hose assembly metal bellows. The rigid tubing is ASME Section III, class 2, schedule 160 welded stainless steel. The sense lines have horizontal separation at the taps in excess of four feet and they are located more than forty feet above the floor. Based on the minimal fire loading and ignition sources near the pressurizer, the design of the instrument sense lines utilizing only non-combustible material, the separation between the sense lines and the large distance from the floor of the pressurizer enclosure, fire damage to the sense lines is not considered credible. Therefore, radiant energy shields are not necessary for 2.9.20.1.e.

Redundant channel source range detector and indication cables are routed in 2RI. The cables are horizontally separated in excess of 20 feet. Therefore, even if there could be a fire of sufficient magnitude to damage one channel, the other channel could not be damaged based on physical separation.

Both RCS normal letdown flow control valves and associated cables are located in 2RI-2. These are normally open air operated valves that fail closed on loss of air or 125vdc electrical power. The desired position for FSSD is closed. There is insignificant in situ combustible loading and no credible ignition sources in the room; therefore, it is concluded that there is no fire hazard that could damage circuits and spuriously energize both valve circuits. For additional defense-in-depth, if both valves are assumed to fail to close, the operator will isolate and depressurize the Unit 2 reactor building non-essential control air header from the main control room thereby causing the valves to close.

2.9.20.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the Same Analysis Volume

The RHR system piping is isolated from the RCS by two opposite train motor operated isolation valves in series. Each of the isolation valves has a by-pass valve of the opposite train. One set (main isolation valve and its opposite train by-pass valve) of RHR isolation valves are located in 2RI-4 and its redundant set is located in 2RA4. Cables for the train A main isolation valve and its by-pass valves are routed in conduits through a portion of 2RI (2RI-1 and 2RI-4). The valves of one set must remain closed to achieve and maintain hot shutdown. This is ensured by removing power from the valves in both trains during normal plant operation. For RHR operation (cold shutdown) one valve of each set must be opened. The performance of an OMA (2.9.20.1.a) is credited in the FSSD analysis to manually open one of the valves in 2RI-4 before containment became uninhabitable due to reactor coolant accumulation resulting from letdown. As discussed in the fire hazard analysis (2.9.20.2) the combustible loading and ignition sources

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in 2RI are insufficient to create fire damage that results in entry into the fire safe shutdown procedures. Therefore the OMA to open one of the RHR isolation valves will not be necessary.

2.9.20.3.c Other FSSD Components in the Room

Room 2RI contains FSSD cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RI). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Reactor building sump level transmitter cable (input to RHR to sump isolation valve circuits).
- Upper containment purge isolation valve cable.
- Pressurizer heater cables.
- TDAFW steam generator #4 level transmitter cables.
- Reactor coolant system hot and cold leg temperature auxiliary cables.

2.9.20.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources. A credible fire would not cause loss of the station control air system, or damage equipment/cables and prevent FSSD in 2RI. There is no fire hazard in 2RI that necessitates any OMA or warrants protecting electrical raceways (conduits and junction boxes) with radiant energy shields. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

2.9.21 2RO– Unit 2 Reactor Building Outside Crane Wall [2RO-1 (0° to 90°), 2RO-2 (90° to 180°), 2RO-3 (180° to 270°), 2RO-4 (270° to 360°)]

This deviation applies to room(s) 2RO Contain

2.9.21.1 Description of Condition

Room 2RO of the Unit 2 Reactor Building is a part of fire area 77 (See Part III, Table 3-3 for room listing). It is outside the Crane Wall and is included in analysis volumes AV-118A, AV-118B, AV-118C, AV-118D and AV-118E. Fire area 77 is considered a III.G.2 area. 2RO contains redundant safe shutdown components. No OMAs would need to be performed for room 2RO, but an FSSD analysis assuming failure of all cables in 2RO, indicates that radiant energy shielding to protect cable 2V2783A for 2-FCV-74-1-A would need to be installed.

2.9.21.2 Fire Hazards Analysis

2.9.21.2.a Room Description

The area of Unit 2 Reactor Building outside the Crane Wall is designated as 2RO and is separated from adjacent areas of the Unit 2 Reactor Building by reinforced concrete barriers that are 24 to 48-inches thick. These barriers have mechanical and electrical penetrations that

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are not provided with fire rated seals/closures. Room 2RO has a floor area of 4,179-ft² and a ceiling height of 14-feet.

2.9.21.2.b Fire Load

The combustible loading in 2RO is low and is due to the expansion joint seal (91% of the in situ combustible load), small quantity of lubricant associated with two sump pumps, HEPA filters and plastics associated with small control panels, telephones and junction boxes. The two sump pumps that contain less than a quart of lubricant are not considered to be ignition sources (see Justification in 2.9.0 above). The in situ combustibles are of such small quantity and so dispersed throughout 2RO that they would not be capable of creating a fire that could propagate through any unprotected opening in the concrete barriers separating 2RO from an adjacent room, or from propagating from one quadrant of 2RO into an adjacent quadrant of 2RO.

2.9.21.2.c Control of Combustibles and Ignition Sources

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into 2RO. Compensatory measures must be implemented when transient combustibles or ignition sources are brought into a room due to work activities. Room 2RO is a CCZ (see Part II, sections 10 and 11 and WBN Technical Instruction TI-291, Combustible Control Zones and Sensitive Areas). For compliance with TI-291, the approval of an evaluation must be obtained before any transient combustible can be introduced into the room or hot work performed in the room. Access to the room is from 2RIR via a ladder down to 2RO-1. When Unit 2 is operating access to the reactor building is strictly controlled. Prior to returning a unit to operation, transient material that might have been brought into the room is removed. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur in 2RO that could damage components in 2RO, or propagate into an adjacent room, or from one quadrant of 2RO into an adjacent quadrant. Based on this, it is not expected that the plant will enter the fire safe shutdown procedure.

2.9.21.2.d Adjacent Rooms

Room 2RA1 is separated from 2RO-1 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-1 into 2RA1. Conduits, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RA1 is low and is due to small quantities of lubricant in valves (61% of the load), expansion joint material (32% of the load) and small quantities of plastics associated with electrical control boxes and lights. Transient combustibles are not considered since the access to the reactor building is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA1 could propagate into 2RO-1.

Room 2RA2 is separated from 2RO-2 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-2 into 2RA2. Conduits, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RA2 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. Transient combustibles are not considered since the access to the reactor building is

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strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA2 could propagate into 2RO-2.

Room 2RA3 is separated from 2RO-3 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-3 into 2RA3. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RA3 is low and is due to small quantities of lubricant in valves (88% of the load), and small quantities of plastics associated with electrical control boxes and lights. Transient combustibles are not considered since the access to the reactor building is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA3 could propagate into 2RO-3 through the unprotected penetrations.

Room 2RA4 is separated from 2RO-4 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-4 into 2RA4. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RA4 is insignificant and is due to small quantities of lubricant in valves (90% of the load) and small quantities of plastics associated with electrical control boxes and lights. Transient combustibles are not considered since the access to the reactor building is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. The lack of ignition sources and concentrations of in situ combustibles provides assurance that no credible fire in 2RA4 could propagate into 2RO-4 through the unprotected penetrations.

The Unit 2 Fan Room 1 (2RF1) is separated from 2RO-1 and 2RO-4 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-1 and 2RO-4 into 2RF1. Conduit, instrumentation lines and mechanical piping penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RF1 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to the reactor building is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF1 that could propagate into 2RO-1 or 2RO-4 or from 2RO-1 or 2RO-4 into 2RF1.

The Unit 2 Fan Room 2 (2RF2) is separated from 2RO-2 and 2RO-3 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-2 and 2RO-3 into 2RF2. Conduit, instrumentation lines and mechanical piping penetrate the wall and are not provided with fire rated penetration seals. The in situ combustible load in 2RF2 is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RF2 is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RF2 that could propagate into 2RO-2 or 2RO-3 or from 2RO-2 or 2RO-3 into 2RF2.

The Reactor Instrument Room 2RIR is separated from 2RO-1 and 2RO-2 by a 24 inch thick reinforced concrete floor. The floor contains an opening for personnel access from 2RO-1 into 2RIR. A portion of 2RO-2 extends into 2RIR and is separated from 2RIR by 36 inch thick reinforced concrete walls and ceiling. Conduit, instrumentation lines and mechanical piping

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penetrate the floor and are not provided with fire rated penetration seals. The in situ combustible load in 2RIR is insignificant and is dispersed throughout the room. Transient combustibles are not considered since the access to 2RIR is strictly controlled during unit operation and any transient material brought in during an outage is removed prior to unit start-up. It is concluded that due to the insignificant combustible load and lack of credible ignition sources, there is no credible fire in 2RIR that could propagate into 2RO-1 or 2RO-2 or from 2RO-1 or 2RO-2 into 2RIR.

Room 2RI is separated from 2RO by 36 to 48 inch thick non-fire rated reinforced concrete Crane wall. The Crane wall contains electrical and mechanical openings that are not provided with fire rated seals/closures. There is a personnel access opening through the Crane wall from 2RO-3 into 2RI-3. The in situ combustible load in 2RI is insignificant of which the RCP oil accounts for 98% of the load. Each RCP is provided with an oil collection system and automatic suppression. The CRDM coolers are enclosed units and the lack of combustible material in each unit provides confidence that a failure of the motors within the units will not create a fire that could damage components near the CRDM coolers. The lack of exposed in situ combustibles and ignition sources provides assurance that no credible fire in 2RI could propagate into 2RO via this personnel access opening or these penetrations. Since access to the reactor building is strictly controlled during operation and transient material brought into the reactor building for outage work is removed prior to start-up, it is concluded there is no fire hazard from transient material. Therefore, it is concluded that no credible fire in 2RI could propagate into 2RO or from 2RO into 2RI.

TVA concludes the lack of significant concentrations of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources provides assurance that no credible exposure fire would occur that could propagate from 2RO into an adjacent room or from an adjacent room into 2RO. TVA further concludes that the implementation of OMAs or the installation of radiant energy shields is not necessary.

2.9.21.3 System Evaluation

2.9.21.3.a Redundant FSSD Components in the Room

The RHR system piping is isolated from the RCS by two opposite train motor operated isolation valves in series. Each of the isolation valves has a by-pass valve of the opposite train. One set (main isolation valve and its opposite train by-pass valve) of RHR isolation valves are located in 2RA4 and its redundant set is located in 2RI-4. Cables for the train A main isolation valve and its by-pass valves are routed in conduits through a portion of 2RO (2RO-1 and 2RO-4). The valves of one set must remain closed to achieve and maintain hot shutdown. This is ensured by removing power from the valves in both trains during normal plant operation. For RHR operation (cold shutdown) one valve of each set must be opened. The train A main isolation valve cable is routed in 2RO-4 and is more than 5 feet horizontally from the conduits containing its train B by-pass valve cables. As discussed in the fire hazard analysis (2.9.21.2) the combustible loading and ignition sources in 2RO are insufficient to create a fire that could damage both of these cables. Therefore, no radiant energy shield must be installed. For additional defense-in-depth the cable for the train B main isolation valve has been relocated out of 2RO.

Reactor building lower compartment cooling is provided by four lower compartment coolers (LCC) and four control rod drive mechanism (CRDM) coolers. Three LCCs or 2 LCCs and 2 CRDMs provide adequate cooling. Cables for all four CRDM cooler motors are routed through

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2RO in conduits. The cables for one CRDM motor and associated damper and temperature control valve (TCV) are located in each quadrant (2RO-1, 2RO-2, 2RO-3, and 2RO-4) such that no more than two CRDM motors could be affected by a postulated fire anywhere in 2RO. Cables for the TCVs for LCC-C and LCC-D are also routed through 2RO-1 and 2RO-2 respectively in conduits that are horizontally separated by more than 20 feet. Based on the limited combustible loading and ignition sources described in the FHA (2.9.21.2), and the four quadrant locations of the CRDMs, a fire could not disable all of the CRDM coolers and the TCVs for two of the LCCs. Adequate cooling is assured by the available LCCs and CRDMs.

Cables for the excess letdown isolation valve and the flow modulating valve are both routed in conduit through 2RO. One conduit containing the flow modulating valve cable is located below elevation 716.0 floor slab and the redundant valve (letdown isolation) and its associated conduit is located above elevation 716.0 floor slab. Both of these areas are part of 2RO. The 716.0 floor slab has a hatch that is located on the opposite side of the room from the letdown isolation valve and its conduit (more than 10 feet horizontal separation) and is in an offset such that the concrete wall of the offset shields the valve from the hatch opening. The lack of in situ combustible material and ignition sources and the controls for transient combustibles and ignition sources (see 2.9.21.2 above) in both areas of 2RO provides assurance that no credible exposure fire would occur in either area that could damage both of these components. The flow modulating valve is normally closed and fails closed on loss of air or signal. The only credible failure that could open the valve is a cable to cable hot short (plus-to-plus and minus-to-minus without grounding) between two twisted shielded instrument cables. Such a fault is not credible considering the limited combustibles and lack of ignition sources in 2RO. As additional defense-in-depth, there are no other cables in the conduit with the flow modulating valve signal cable (no hot short source).

The modulating signal cables for the pressurizer spray valves are routed in conduit through 2RO. These valves are normally closed and fail closed on loss of signal or air. The only failure that could prevent closure of a spray valve is a double hot short (plus-to-plus and minus-to-minus) without grounding between two instrument cables in the conduit. Such a fault is not credible considering the limited combustibles and lack of ignition sources in 2RO. As additional defense-in-depth, if the spray valve could not be closed the main control room operator would terminate the spray by tripping the RCP that provides pressure for the spray.

A cable for reactor coolant pump (RCP) 2 seal return flow control valve is routed in conduit in room 2RO. The valve is normally open and fails open on loss of power or air. There are three other cables in the conduit that are normally de-energized and would not provide a hot short source to energize the valve even if there could be fire damage to the cable. However, the lack of ignition sources and insignificant quantities of combustible material below or near the conduit could not create a fire of sufficient magnitude to damage the cable. It is concluded that there is not a fire hazard that could energize this valve circuit. For additional defense-in-depth, if the valve could fail closed the operator would close the RB non-essential control air header valve from the main control room thereby isolating control air which would open the valve.

Cables for the RCS regenerative heat exchanger letdown isolation valves which fail closed on loss of power or air are routed in conduit in room 2RO. Since there is insignificant in situ combustible loading and no credible ignition sources in the room, it is concluded that there is not a fire hazard that could damage circuits and spuriously energize the valve circuits. For additional defense-in-depth, if the valves are assumed to fail to open, the operator will isolate and depressurize the Unit 2 reactor building non-essential control air header from the main control room thereby causing the valves to close.

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2.9.21.3.b FSSD Components with Redundant FSSD Components in an Adjacent Room within the same Analysis Volume

Cables for one of the RCS letdown flow control valves are located in 2RO along with the three regenerative letdown flow control valves. Cables for the redundant valve are located in 2RA2 and 2RF2. As described in FHA section 2.9.21.2.d no credible fire in 2RO could migrate into these adjacent rooms and cause cable damage. As defense-in-depth a third letdown isolation valve (located in the auxiliary building) can be closed from the main control room if needed.

2.9.21.3.c Other FSSD Components in the Room

Room 2RO contains cables associated with FSSD equipment relied upon for fires in other areas of the plant (i.e., equipment and cables not credited for a fire in Room 2RO). The cables are routed in conduit. Although no fire induced failures are expected due to the insignificant fire hazard in the rooms, postulated failure of the non-credited FSSD cables has been evaluated to assess its effect on plant operation. Failure of these FSSD cables is detected and mitigated by normal plant procedures and would not initiate or result in a plant trip.

- Pressurizer heater cables.
- Reactor building sump level sensor channel D, E, F & G cables (permissive sump isolation valves).
- Safety injection system accumulator valve cables.
- Pressurizer level & pressure normal & auxiliary cables.
- Reactor coolant system hot temperature auxiliary cables.

2.9.21.4 Conclusion

There is insignificant threat from transient combustibles, in situ combustible material, and no credible ignition sources. A credible fire would not damage equipment/cables and prevent FSSD in 2RO. There is no fire hazard in 2RO that warrants protecting electrical raceways (conduits and junction boxes) with radiant energy shields. TVA concludes that the intent of III.G.1 is ensured and requests approval of this deviation demonstrating compliance to III.G.1 criteria with a fire hazard analysis in lieu of the prescriptive separation criteria of III.G.2.

3.0 Engineering Evaluations

Per the Interpretations of Appendix R in Generic Letter 86-10, engineering evaluations may be performed to document the acceptability of specific fire protection features. The following sections document the engineering evaluations prepared to address Appendix R compliance.

3.1 Lack of Total Area Suppression and Detection

Requirement - Sections III.G.2.b and III.G.2.c of Appendix R state that, "In addition, fire detectors and automatic fire suppression system shall be installed in the fire area." Section III.G.2e also uses the phrase "fire detectors and an automatic fire suppression system in the fire area."

Per Item 5 of Enclosure 1 to Generic Letter 86-10, Interpretations of Appendix R, suppression and detection sufficient to protect against the hazards of the area must be installed. The

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generic letter identifies that detection and suppression providing less than full area coverage may be adequate to comply with the regulation. In order to justify less than full coverage, an evaluation must be performed to assess the adequacy of partial suppression and detection to protect against the hazards in the area. WBN has evaluated those plant locations with less than full detection and/or full suppression coverage where the criteria of Sections III.G.2.b, III.G.2.c, or III.G.2.e are utilized to demonstrate conformance with Appendix R requirements.

There are fire areas at WBN that contain FSSD components that either (1) rely on 20 feet of separation or 1-hour fire barriers outside of containment, or (2) rely on detection and suppression capabilities inside containment, but have less than full area detection and suppression capability. Each area is identified below, along with the rooms within the fire area that have less than full detection and suppression system coverage and whether the room contains FSSD components. The impact on fire safe shutdown capability is evaluated for rooms containing FSSD components.

3.1.1 Fire Area 1

The following table identifies those rooms in Fire Area 1 that have less than full detection and/or full suppression capability as required by Section III.G.2.b and/or III.G.2.c criteria.

<u>Rooms</u>	<u>Description</u>	<u>Detection</u>	<u>Suppression</u>	<u>FSSD Component</u>
674.0-A1	Tritiated Drain Collector Tank Room	No	No	Yes (see note 1)
674.0-A2	Tritiated Drain Collector Tank Pumps	No	No	None
676.0-A1	Corridor	Yes (Partial)	No	Yes (RHR)
676.0-A2	Hold-up Tank Room A	No	No	None
676.0-A3	Hold-up Tank Room B	No	No	None
676.0-A4	Floor Drain Collect Pump, Filter & Tank	No	No	None
676.0-A4a	Floor Drain Coll Tank Rm	No	No	None
676.0-A5	Gas Stripper Feed Pump Room	Yes (Partial)	No	None
676.0-A6	Spare	Yes	No	None
676.0-A7	Spare	No	No	None
676.0-A8	Containment Spray Pump 1B-B	Yes (Partial)	No	Yes (Spurious)
676.0-A9	Containment Spray Pump 1A-A	Yes (Partial)	No	Yes (Spurious)
676.0-A14	Containment Spray Pump 2A-A	Yes (Partial)	No	Yes (Spurious)
676.0-A15	Containment Spray Pump 2B-B	Yes (Partial)	No	Yes (Spurious)
676.0-A16	Unit 1 Pipe Chase	Yes	No	Yes
692.0-A1(*)	Tunnel to RWST from AB	No	No	Yes
692.0-A2	Gas Decay Tank Gallery	No	No	None
692.0-A3	Gas Decay Tank Room	No	No	Yes
692.0-A5	Gas Decay Tank Room	No	No	None
692.0-A8	Unit 1 Pipe Chase	Yes	No	Yes
692.0-A9(**)	Charging Pump 1A-A	Yes (Partial)	Yes (Partial)	Yes

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<u>Rooms</u>	<u>Description</u>	<u>Detection</u>	<u>Suppression</u>	<u>FSSD Component</u>
692.0-A17	Maintenance and Test Equipment Hot Tool Room	Yes (Partial)	Yes (Partial)	None
692.0-A18	Hot Tool Room	Yes (Partial)	Yes (Partial)	Yes
692.0-A27	Concentrate Filter Rm	No	No	None
692.0-A29	Boric Acid Evap Pkg Rm B	No	No	Yes
692.0-A30	Boric Acid Evap Pkg Rm A	No	No	Yes
692.0-A31	Spare	Yes (Partial)	No	None
713.0-A28	Unit 1 Pipe Chase	Yes	No	Yes

Note 1 Cables are auxiliary control (only required for a Control Building fire) and not necessary for FSSD in the Auxiliary Building.

(*) Room 692.0-A1 has full detection and suppression. Only the tunnels to the RWSTs, which open into 692.0-A1, are without detection and suppression.)

(**) The evaluation is also applicable to the other Charging Pump Rooms: 692.0-A10 (FA6), 692.0-A22 (FA67) and 692.0-A23 (FA68).

As shown in the above listing, of the rooms within Fire Area 1 that do not have full detection and suppression capability, fourteen have equipment or cables that are required for FSSD.

Evaluations of each of the rooms with FSSD capabilities follow.

Room 674.0-A1 Tritiated Drain Collector Tank Room

The Tritiated Drain Collector Tank Room (674.0-A1) is of reinforced concrete construction (walls, floor, and ceiling have thicknesses from 12 to 36-inches), but the barriers are not assigned a fire rating. The room has a floor area of 1,691-ft² and a ceiling height of 16-ft. The only major component in the room is the Tritiated Drain Collector Tank. There are no ignition sources in the room and a low quantity of in situ combustibles. Any transient combustibles that might be introduced due to work activities are addressed by NPG-SPP-18.4.7, "Control of Transient Combustibles". NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)", ensures that appropriate fire prevention actions are taken before performing work that could constitute an ignition source. It is highly unlikely that any fire would occur, but if it did, it would be very small, be contained within the room and would not cause damage to the FSSD circuits routed in conduits through the room.

The only FSSD circuits are required for fire in the Control Building. Therefore, since they are not needed for FSSD for a fire that might develop in the room, there is no impact to FSSD.

Room 676.0-A1 Corridor

The RHR pumps, power cables, and the RHR pump room coolers are required for cold shutdown after a fire. The RHR pump power cables are exposed in the Corridor, Room 676.0-A1 on opposite sides of the elevator shaft. These rooms are part of a larger fire area that has full area detection and suppression capabilities.

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Room 676.0-A1 is provided with ionization smoke detectors, but not an automatic fire suppression system. In addition standpipe and hose stations and portable extinguishers are provided for the area.

The in situ combustible loading of the corridor is insignificant. Since this area is accessible during normal operations, transient combustibles could be introduced into the area. The control of combustible materials in the plant is via Site Implementing Instructions.

The exposed conduit on elevation 676.0 that contains one train of RHR pump power cables is protected with a 3-hour fire barrier wrap where routed along the wall of the elevator shaft enclosure. Considering the combination of insignificant in situ combustibles, fire rated barriers, spatial separation and administrative controls, an adequate level of protection exists for the RHR pump circuits and the addition of automatic suppression on elevation 676.0 is not required for protection of the safe shutdown capability of the area.

Rooms 676.0-A8, 676.0-A9, 676.0-A14 and 676.0-A15: Containment Spray Pump Rooms

Each containment spray pump room is bounded by 2-hour fire rated regulatory fire barriers. Automatic detection is provided in each room except for the entrance labyrinth; however, automatic suppression capability is not provided.

Each containment spray pump is identified as a potentially spuriously operating component which must be prevented from starting. Each pump room contains the pump, its associated power cable and room cooler. A fire in any of these pump rooms will damage the power cable for the pump. As such, the pump will be prevented from spurious operation given a fire in the room. The combustible loads in each room result in an equivalent fire severity of insignificant, which is significantly less than the capabilities of the barriers that bound the room. Therefore, postulated fires will not spread from the containment spray pump rooms to adjacent rooms. Considering the combustible loading and 2-hour fire rated regulatory fire barriers, in combination with the existing detection system (except in the entrance labyrinth) and lack of fire safe shutdown impact given a fire in any pump room, an adequate level of protection exists for the containment spray pump rooms, Rooms 676.0-A8, 676.0-A9, 676.0-A14 and 676.0-A15.

Extending detection into the entrance labyrinth, and the addition of automatic suppression in the rooms, is not required for protection of the safe shutdown capability in the area.

Rooms 676.0-A16, 692.0-A8, and 713.0-A28: Auxiliary Building Pipe Chase

The pipe chase extends from elevation 676.0 to elevation 737.0 and is made up of Rooms 676.0-A16, 692.0-A8, and 713.0-A28. The pipe chase is separated from elevations 692, 713, and 737 by reinforced concrete construction that is equivalent to at least 2-hour fire rated barriers. The in situ combustible loading of the pipe chase is insignificant except 692.0-A8 which is low. Smoke detectors are installed in the pipe chase.

The pipe chase contains one path of FSSD equipment consisting of a volume control tank (VCT) level transmitter and its associated cabling, and cables for narrow and wide range level indication for two steam generators. The redundant path instrumentation is located outside the pipe chase. The chase also contains redundant RHR mini-flow valves and containment spray pump suction valves. These valves are required for FSSD only if a fire causes spurious pump

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actuation of an RHR or containment spray pump. Cables that could cause such spurious pump actuation are located outside the pipe chase.

Transient combustibles are minimized in the pipe chase. Rooms 676.0-A16 and 692.0-A8 are locked rooms with access controlled by Radiation Protection personnel. Room 713.0-A28 is a combustible control zone. Based on these considerations, fires involving transient combustible materials are not considered to be a credible event.

The addition of automatic fire suppression in the pipe chase would not significantly enhance the fire protection of FSSD capability of the plant. This is based on the insignificant combustible loading, access limitations, and administrative controls to limit the introduction of transient combustible materials, adequate compartmentation, and provision of fire detection in the pipe chase.

Tunnels from Auxiliary Building to Refueling Water Storage Tanks (RWSTs)

The RWST tunnels are underground tunnels of reinforced concrete construction equivalent to 3-hour fire rated barriers, except at each end. One end of each tunnel opens into the auxiliary building on elevation 692.0 into Room 692.0-A1 at column lines A1/U and A15/U. Each tunnel is considered as part of Fire Area 1. The other end of each tunnel is accessed via a manhole located in the yard near the RWSTs. The in situ combustible loading inside each tunnel is insignificant. Each tunnel is accessed by climbing a ladder to the roof of the turbine-driven AFW pump rooms at column lines A1/U and A15/U in the auxiliary building, crossing the roof of each TDAFW pump room, and entering into the tunnel. From the yard end, each tunnel is accessed through a manhole cover, down a ladder, and into the tunnel. This limited access minimizes the probability and amount of transient combustibles that can be expected in the tunnel.

Fire detection and automatic fire suppression on elevation 692.0 of the auxiliary building protects the entrance of the tunnel from an exposure fire in the auxiliary building.

Level transmitter circuits for the RWST are routed through the tunnel in conduits. These circuits are required for FSSD if a fire causes spurious actuation of RHR or containment spray pumps, or opening of RB sump valves. A fire in the tunnel cannot cause the identified spurious actuations.

Considering the limited FSSD circuits present, the configuration of the tunnel, insignificant in situ combustibles, and limited access; the addition of fire detection and fixed automatic suppression in the tunnel is not required for protection of theis not required for protection of the safe shutdown capability in the area.

Room 692.0-A9, -A10, -A22, -A23: Centrifugal Charging Pump 1A-A, 1B-B, 2A-A, 2B-B

The CCP rooms and the corridor outside the rooms are provided with fire detection and automatic suppression, but detection and suppression have not been extended into the entrance labyrinth to each pump room. Each pump room contains a single path of safe shutdown equipment consisting of a charging pump and its power and control circuits and cooling equipment. None of this equipment is located in the entrance labyrinth.

Each CCP room and entrance labyrinth is enclosed by reinforced concrete construction that is equivalent to at least 2-hour fire rated barriers. The in situ combustible loading for each pump room is low except 692.0-A23 which is moderate. Each CCP room is a radiological controlled

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area and access is administratively controlled. No significant quantities of transient combustibles are anticipated in the room during power operation.

If a fire did occur in a labyrinth, it is detected by a smoke detectors located in the pump room or corridor. The sprinklers in the pump room or corridor provide containment of the fire until the fire brigade responded to extinguish it.

The combination of fire rated construction, low in situ combustible loads, and installed detection and suppression systems provide an adequate level of fire protection. Providing additional fire detection and suppression in the entrance labyrinth of the CCP rooms is not required for protection of the safe shutdown capability in the area.

Room 692.0-A3: Gas Decay Tank Room

The room contains one fire safe shutdown cable. Fire damage will not cause spurious operation or affect safe shutdown.

The room has a combustible loading that result in an equivalent fire severity of insignificant. Based on the lack of redundant safe shutdown equipment and cables, combined with the low fire loading in the room, an adequate level of protection is currently provided. The addition of automatic detection and/or suppression in the rooms is not required for protection of the safe shutdown capability in the area.

Room 692.0-A18: Hot Tool Room

The room is provided with fire detection and automatic suppression, but suppression has not been extended into the entrance labyrinth of the room. The room contains one fire safe shutdown cable. Fire damage will not cause spurious operation or affect safe shutdown.

The room and entrance labyrinth is enclosed by reinforced concrete construction that is equivalent to at least 2-hour fire rated barriers. The in situ combustible loading for the room is insignificant. The room is a radiological controlled area and access is administratively controlled. No significant quantities of transient combustibles are anticipated in the rooms during power operation.

In the unlikely event a fire did occur in the labyrinth, it is detected by smoke detectors located in the room. The sprinklers in the room provide containment of the fire until the fire brigade responded to extinguish it.

The combination of fire rated construction, insignificant in situ combustible loads, and installed fire detectors and suppression systems provide a level of fire protection that is adequate. Additional suppression in the entrance labyrinth of the room is not required for protection of the safe shutdown capability in the area.

Rooms 692.0-A29 and 692.0-A.30: Boric Acid Evap Package Rooms A and B

As concluded in Section 2.9.1.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

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Remaining Rooms of Fire Area 1 Without Full Detection and/or Suppression

The remaining rooms in the tabular list of Fire Area 1 rooms without full detection and/or suppression capability do not contain any equipment or cables required for fire safe shutdown. Each of the rooms has a combustible loading that result in an equivalent fire severity classification of insignificant except 676.0-A5 and 692.0-A31 which are low. Based on the lack of safe shutdown equipment and cables, combined with the low fire loading in each of the rooms, an adequate level of protection is currently provided. The addition of automatic detection and/or suppression in the rooms is not required for protection of the safe shutdown capability in the area.

3.1.2 Fire Area 8

The following table identifies those rooms in Fire Area 8 that have less than full detection and/or full suppression capability as required by Section III.G.2.b and/or III.G.2.c criteria.

<u>Rooms</u>	<u>Description</u>	<u>Detection</u>	<u>Suppression</u>	<u>FSSD Component</u>
713.0-A1(*)	Aux Bldg, Boric Acid Area	Yes	Yes (Partial)	Yes
713.0-A1(*)	Demin and Fltr Enclosure	No	Yes (Partial)	None
713.0-A1(*)	Boric Acid Fltr Enclosures	No	Yes (Partial)	None
713.0-A1(*)	Ion Exchgr, Demin & Fltr	No	Yes (Partial)	None
713.0-A1(*)	Demineralizer and Fltr	No	Yes (Partial)	None
713.0-A9	Unit 1 Mixed Bed and Cation Valve Gallery	No	No	None
713.0-A10	Seal Water Hx Room 1A	No	No	None
713.0-A11	Hx Room 1B	No	No	Yes
713.0-A12	Hx Room 1A	No	No	Yes
713.0-A15	Hx Room 2A	No	No	Yes
713.0-A16	Hx Room 2B	No	No	Yes
713.0-A17	Seal Water Hx Room 2A	No	No	None
713.0-A18	Unit 2 Mixed Bed and Cation Valve Gallery	No	No	None
713.0-A23	CVCS Valve Gallery	No	No	None
713.0-A24	WGC Valve Gallery	No	No	None
713.0-A25	Waste Gas Compressor B	No	No	None
713.0-A26	Waste Gas Compressor A	No	No	None
713.0-A30	Air Lock	No	No	None
713.0-A31	Waste Gas Analyzer Rm	No	No	None

As shown in the above listing, of the rooms within Fire Area 8 that do not have full detection and suppression capability, only five have any equipment or cables that are required for FSSD.

(*Room 713.0-A1 has full detection and suppression except for the boric acid tank area between column lines A11-A13/Q-R, which only has detection, and the filter and demineralizer units inside concrete monolithic enclosures, which are not provided with detection or suppression.) Evaluations of each of the rooms with FSSD capabilities follow.

Room 713.0-A1: Auxiliary Building Room (Boric Acid Tank Area)

The general floor area on elevation 713.0 is provided with fire detection and automatic suppression except for the portion of the room over the boric acid transfer pumps, tanks, and

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filters located between column lines A11-A13/Q-R which is not provided with automatic suppression.

This room is an open area with a 21-foot high ceiling, a floor area of 17,693 ft², and a volume of 427,000 ft³. The room has a moderately severe in situ combustible loading which predominantly consists of insulation on cables in trays and Thermo-Lag fire barrier material. There are no significant quantities of in situ combustibles located within the curbed area that contains the boric acid pumps, tanks, and filters. The boric acid tank area has been designated as a combustible control zone (CCZ) as identified on the compartmentation drawings in Part II of the FPR.

The ceiling over this area is level and relatively unobstructed; therefore, in the unlikely event of a fire in this area, it is detected by the fire detectors in the boric acid tank area. The sprinklers in the immediate vicinity of this area control the spread of the fire until the fire brigade could extinguish it.

An adequate level of protection exists and the extension of the automatic suppression system into the area over the boric acid pumps, tanks, and filters would not significantly increase the fire protection of FSSD capability.

Rooms 713.0-A11, 713-A12, 713.0-A15, and 713.0-A16: RHR Hx Rooms 1B, 1A, 2A and 2B

Each RHR heat exchanger room is bounded by 2-hour fire rated regulatory fire barriers. Neither automatic detection nor automatic suppression capability is provided in the rooms.

Each RHR heat exchanger is a passive safe shutdown component without required cables for FSSD purposes. A fire in any room will not damage the heat exchangers or their associated valves. The combustible loads in each room results in an equivalent fire severity classification of insignificant for 713.0-A11 and 713.0-A12, and low for 713.0-A15 and 713.0-A16, which is significantly less than the capabilities of the barriers that bound the room. Introduction of transient combustible materials into the rooms is minimized because access to each room is a radiological controlled location. Considering the combustible loading and 2-hour fire rated regulatory fire barriers, in combination with the lack of fire safe shutdown impact given a fire in either room, an adequate level of protection exists for Rooms 713.0-A11, 713.0-A12, 713.0-A15, and 713.0-A16. The addition of automatic suppression and detection in the rooms is not required for protection of the safe shutdown capability in the area.

Remaining Rooms of Fire Area 8 Without Full Detection and/or Suppression

The remaining rooms in the tabular list of Fire Area 8 rooms without full detection and/or suppression capability do not contain any equipment or cables required for fire safe shutdown. Each of the rooms has a combustible loading that results in an equivalent fire severity of less than ten minutes. Based on the lack of safe shutdown equipment and cables, combined with the low fire loading in each of the rooms, an adequate level of protection is currently provided. The addition of automatic detection and/or suppression in the rooms is not required for protection of the safe shutdown capability in the area.

3.1.3 Fire Area 9

Fire Area 9 contains two rooms (713.0-A6 and A8). Room 713.0-A6 is provided with full detection and suppression system capability. Room 713.0-A8, the Reactor Building Access

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Room, is not provided with automatic detection or suppression systems. This room contains no equipment or cables that are required for fire safe shutdown. It has a combustible loading that results in an equivalent fire severity of insignificant. Based on the lack of safe shutdown equipment and cables, combined with the insignificant fire loading in the room, an adequate level of protection is currently provided. The addition of automatic detection and suppression in the rooms is not required for protection of the safe shutdown capability in the area.

3.1.3a Fire Area 9-1

Fire Area 9-1 (713.0-A7) contains the VCT room itself and the entrance labyrinth into the room. The VCT room is provided with full automatic suppression, but the entrance labyrinth is not. Lack of suppression in the entrance labyrinth is acceptable because there are insignificant in situ combustibles and no credible ignition sources. The combustibles in the labyrinth consists of a small amount of lube oil associated with two valves, insulation on cables in a small junction/control boxes, and a small amount of plastics associated with light covers and an emergency lighting unit. Even considering the total quantity of hydrogen that could be in the VCT, the combustible loading for the entire area results in an equivalent fire severity classified as insignificant. Room 713.0-A7 is identified as a combustible control zone (CCZ), which prohibits storage of transient combustible material unless compensatory measures are established. The Control of Transient Combustibles Program (Part II, Reference 4.2.68) and the Control of Ignition Sources (Hot Work) Program (Part II, Reference 4.2.69) provide assurance that no credible fire could occur in the labyrinth. The lack of suppression in the entrance labyrinth does not adversely impact the fire safe shutdown capabilities of the plant.

3.1.4 Fire Area 10

Room 729.0-A6 (Nitrogen Storage Area)

As concluded in Section 2.9.4.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

3.1.5 Fire Area 12

Rooms 729.0-A1 and 737.0-A6 (Unit 1 South Main Steam Valve Room and Air Lock)

As concluded in Section 2.9.2.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

3.1.6 Fire Area 13

Room 729.0-A2 (Unit 1 North Main Steam Valve Room)

As concluded in Section 2.9.3.4 above, there is an low fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

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Room 729.0-A12 (Unit 1 Steam Valve Instrument Room A)

As concluded in Section 2.9.7.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

3.1.7 Fire Area 14

The following table identifies those rooms in Fire Area 14 that have less than full detection and/or full suppression capability as required by Section III.G.2.b and/or III.G.2.c criteria.

<u>Rooms</u>	<u>Description</u>	<u>Detection</u>	<u>Suppression</u>	<u>FSSD Component</u>
737.0-A4	Air Lock	No	No	None
737.0-A7	Let Down Hx Rm	No	No	Yes
737.0-A8	Let Down Hx Rm	No	No	Yes
737.0-A11	Air Lock	No	No	None
737.0-A2	Hot Instrument Shop	Yes	No	None

As shown in the above listing, the rooms within Fire Area 14 that do not have full detection and suppression capability also do not have any equipment or cables that are required for FSSD, except for rooms 737.0-A7 and 737.0-A8. These two rooms each contain two FSSD circuit routed in conduit and have no significant ignition sources and low combustible materials. Redundant circuits are located in other rooms with suppression and detection to provide separation in accordance with Section III.G.2. Rooms 737.0-A4 and 737.0-A11 have a combustible loading that results in an equivalent fire severity classification of insignificant. Room 737.0-A2 has a fire severity classification of low. Based on the lack of safe shutdown equipment and cables combined with the low fire loading in all of the rooms an adequate level of protection is currently provided. The addition of automatic detection and/or suppression in the rooms is not required for protection of the safe shutdown capability in the area.

3.1.8 Fire Areas 33 and 45: 480V Board Rooms 1B and 2B

Fire Areas 33 and 45, Rooms 772.0-A2 and 772.0-A15, are the 480V Board Rooms. Ionization smoke detectors are provided throughout both of these rooms. Preaction sprinkler systems are provided throughout both rooms except for the portion of the room that contains one set of vital battery inverters and charger. These portions of Rooms 772.0-A2 and 772.0-A15 are between column lines A6-A8/Q-R and A8-10/Q-R, respectively, and each has an area of 315 ft².

The in situ combustible load in the unsprinklered area consists of the insulation on cables in a single vertical tray located on the wall near column line A8/R in both rooms and the insulation on the internal wiring of the inverters, chargers and transfer switches. In addition room 772.0-A2 has one conduit that is wrapped with Thermo-Lag 770 (3-hour protection). The in situ combustible load in room 772.0-A2 is severe, of which the insulation on cables routed in trays and Thermo-Lag fire barrier accounts for over 90%. The in situ combustible load in room 772.0-A15 is severe, of which insulation on cables in trays and Thermo-Lag fire barriers also accounts for over 90%.

The redundant inverters and chargers in each room are located at opposite ends of the rooms and are separated by a minimum of 42 feet. Other redundant components in the rooms are

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located within the protected area of the rooms and are separated in accordance with Section III.G.2. A single conduit routed in the unsprinklered portion of 772.0-A2 is protected with 3-hour fire rated Thermo-Lag 770.

An adequate level of fire protection is provided for redundant FSSD components in the two rooms. Extension of the suppression systems into the small unprotected areas is not required for protection of the safe shutdown capability in the area.

3.1.9 Fire Area 65:

The below listed rooms in Fire Area 65 have less than full detection and/or full suppression capability as required by Section III.G.2.b and/or III.G.2.c criteria.

<u>Rooms</u>	<u>Description</u>	<u>Detection</u>	<u>Suppression</u>	<u>FSSD Component</u>
676.0-A17	Unit 2 Pipe Chase	Yes	No	Yes
692.0-A24	Unit 2 Pipe Chase	Yes	No	Yes
713.0-A29	Unit 2 Pipe Chase	Yes	No	Yes

Room 676.0-A17, 692.0-A24, and 713.0-A29: Auxiliary Building Unit 2 Pipe Chase

The pipe chase extends from elevation 676.0 to elevation 737.0 and is comprised of Rooms 676.0-A17, 692.0-A24, and 713.0-A29. The pipe chase is separated from other fire zones on elevations 676, 692, 713, and 737 by reinforced concrete construction that is equivalent to at least 2-hour fire rated barriers. Smoke detectors are installed in the pipe chase. The in situ combustible loading of the pipe chase is insignificant.

The pipe chase contains one path of FSSD equipment consisting of a Volume Control Tank (VCT) level transmitter and associated cabling, and cables for narrow and wide range level indication for two steam generators. The redundant path instrumentation is located outside the pipe chase. The chase also contains redundant RHR mini-flow valves and Containment Spray pump suction valves. These valves are required for FSSD only if a fire causes spurious pump actuation of an RHR or Containment Spray pump. Cables that could cause such spurious pump actuation are located outside the pipe chase.

Transient combustibles are minimized in the pipe chase. Rooms 676.0-A17 and 692.0-A24 are locked rooms with access controlled by Radiation Protection personnel. Room 713.0-A29 is a combustible control zone. Based on these considerations, fires involving transient combustible materials are not considered to be a credible event.

The addition of automatic fire suppression in the pipe chase would not significantly enhance the fire protection of FSSD capability of the plant. This is based on the insignificant combustible loading, access limitations and administrative controls to limit the introduction of transient combustible materials, adequate compartmentation, and provision of fire detection in the pipe chase.

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3.1.10 Fire Area 71

Fire Area 71 consists of Rooms 713.0-A19 and -A21. Room 713.0-A19 is provided with full detection and suppression system capability. Room 713.0-A21, the RB Access Room, is not provided with automatic detection or suppression systems. This room contains no equipment or cables that are required for fire safe shutdown. It has a combustible loading that results in a fire severity classification of insignificant.

Based on the lack of safe shutdown equipment and cables, combined with the insignificant fire loading in the room, an adequate level of protection is currently provided. The addition of automatic detection and suppression in the rooms is not required for protection of the safe shutdown capability in the area.

3.1.10a Fire Area 71-1

Fire Area 71-1 (713.0-A20) contains the VCT room itself and the entrance labyrinth into the room. The VCT room is provided with full automatic suppression, but the entrance labyrinth is not. Lack of suppression in the entrance labyrinth is acceptable because there are insufficient in situ combustibles and no credible ignition sources. The combustibles in the labyrinth consists of a small amount of lube oil associated with two valves, insulation on cables in small junction/control boxes, and a small amount of plastics associated with light covers and an emergency lighting unit. Even considering the total quantity of hydrogen that could be in the VCT, the combustible loading for the entire area results in an equivalent fire severity classification of insignificant. Room 713.0-A20 is identified as a combustible control zone (CCZ), which prohibits storage of transient combustible material unless compensatory measures are established. The Control of Transient Combustibles Program (Part II, Reference 4.2.68) and the Control of Ignition Sources (Hot Work) Program (Part II, Reference 4.2.69) provide assurance that no credible fire could occur in the labyrinth. The lack of suppression in the entrance labyrinth does not adversely impact the fire safe shutdown capabilities of the plant.

3.1.11 Fire Area 72

Room 729.0-A11 and 737.0-A10 (Unit 2 South Main Steam Valve Room and Air Lock)

As concluded in Section 2.9.6.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

3.1.12 Fire Area 73

Room 729.0-A10 (Unit 2 North Main Steam Valve Room)

As concluded in Section 2.9.5.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire..

Room 729.0-A13 (Unit 2 Steam Valve Instrument Room B)

As concluded in Section 2.9.8.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

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Room 729.5-A17: (Unit 2 Shield Bldg Vent Rad Monitor Room)

Room 729.5-A17 is separated from the Unit 2 Reactor Building by 36-inch thick reinforced concrete that has been assigned a fire rating of 3-hours. The room is separated from adjacent Auxiliary Building rooms by 12-inch thick reinforced concrete, but these barriers have not been assigned a fire resistance rating. Entry to room is via a heavy duty hollow metal door from the Yard area. The room has a floor area of 107-ft² and a ceiling height of 8-feet. The combustible loading in the room is classified as insignificant and is due to very small quantities of lubricating oil in a pump and plastics associated with a telephone, light covers and electrical panels. There are no credible ignition sources in the room. Nearby Yard hydrants are available for fire brigade use.

Procedures NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" ensure that appropriate fire preventive control measures are taken to ensure that introduction of transient combustibles and/or ignition sources do not present a fire hazard to components located in the room. Therefore, there is insignificant threat from transient combustibles to any component or cable (cables are routed in conduit) required for normal plant operation or fire safe shutdown operation.

Since there is insignificant threat from transient combustibles; very low quantities of in situ combustible material (what is there is dispersed throughout the room); and no credible ignition sources, it is concluded that the addition of automatic suppression and detection in room 729.5-A17 would not increase the safety of the plant.

3.1.13 Fire Area 77

Room 2RA1: Unit 2 Accumulator Room 1

As concluded in Section 2.9.14.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due to the insignificant threat of a fire.

Room 2RA2: Unit 2 Accumulator Room 2

As concluded in Section 2.9.15.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due to the insignificant threat of a fire.

Room 2RA3: Unit 2 Accumulator Room 3

As concluded in Section 2.9.16.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due to the insignificant threat of a fire.

Room 2RA4: Unit 2 Accumulator Room 4

As concluded in Section 2.9.17.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due to the insignificant threat of a fire.

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Room 2RF1: Unit 2 Fan Room 1

As concluded in Section 2.9.18.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

Room 2RF2: Unit 2 Fan Room 2

As concluded in Section 2.9.19.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

Room 2RIR: Unit 2 Reactor Building Instrument Room

As concluded in Section 2.9.13.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

Room 2RI: Unit 2 Reactor Building – Inside Crane Wall [2RI-1(0° to 90°), 2RI-2 (90° to 180°), 2RI-3 (180° to 270°), and 2RI-4 (270° to 360°)]

As concluded in Section 2.9.20.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire.

Room 2RO: Unit 2 Reactor Building – Outside Crane Wall [2RO-1(0° to 90°), 2RO-2 (90° to 180°), 2RO-3 (180° to 270°), and 2RO-4 (270° to 360°)]

As concluded in Section 2.9.21.4 above, there is an insignificant fire threat to FSSD equipment in this location or adjacent rooms. Therefore it is concluded that no additional suppression or detection is required in this location due the insignificant threat of a fire..

3.2 Containment Purge Air System Return And Exhaust Air Duct Openings Protection Between 713.0-A6 Penetration Room and the Unit 1 Annulus and the Unit 2 Penetration Room (713.0-A19) and Unit 2 Annulus

REQUIREMENT - The walls separating the Unit 1 penetration room (713.0-A6) from the Unit 1 Annulus and the Unit 2 penetration room (713.0-A19) from the Unit 2 Annulus are 3-hour regulatory fire barriers. The containment purge air system return and exhaust ducts penetrate these walls. The penetrations (three per unit) are not provided with fire dampers.

EVALUATION - The containment purge air system ductwork penetrating the fire barriers are constructed of ¼" steel plates. The ductwork is rigidly connected to the wall opening by steel angle irons embedded in the structural concrete. The wall penetrations are not straight through openings but are instead offset openings to provide radiation protection. Beyond the opening, the rectangular portion of the duct transitions to a round duct constructed of spiral weld 10 gauge steel and terminates into the stainless steel housing of the purge air filtration unit. A flexible connection in Room 713.0-A6 is provided between the purge air duct and the embedded containment duct penetration. The flexible connection is protected with 3M M20A fire barrier mat to give a 3-hour rating to the connection. The flexible connection in room 713.0-A19 is

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protected with 3M E54C (M20A is no longer available and E54C is a superior fire rated replacement for M20A) fire barrier mat to give a 3-hour rating to the connection.

No vent openings exist in the ductwork within the room. The area underneath the ductwork in Room 713.0-A6 and 713.0-A19 are combustible control zones (CCZ) to limit potential transient combustibles under the penetrations. On the containment side of the wall, the ¼" steel plate ductwork continues for more than 20 feet within the annulus. Each unit's annulus is also a combustible control zone (CCZ) to limit potential transient combustibles in the area.

The combination of ductwork construction, its attachment to the wall, and the offset wall opening will provide an equivalent level of protection similar to that of a fire damper exceeding a 2-hour rating. Modification of the existing ductwork is not required for protection of the safe shutdown capability in either area.

3.3 Adequacy of HPFP Pumps

REQUIREMENT - Section E.2.c of Appendix A to BTP 9.5-1 identifies that the number of fire pumps provided at WBN should be based on the number required to satisfy the largest flow and pressure demands of the fire protection water system (including sprinkler and hose stream requirements) in safety related areas, with one pump inactive.

EVALUATION - The WBN fire protection program is based on a defense-in-depth design that incorporates fire detection and suppression capabilities, separation of redundant safe shutdown equipment and cables by either distance or fire barriers, and administrative controls of combustible materials. The intent of the defense-in-depth design is to prevent fires from starting, detect fires in their incipient stages, suppress those fires that occur, limit fire damage by compartmentation, and design plant systems such that a fire will not prevent essential plant safety functions from being performed. Plant locations/rooms that contain redundant safe shutdown capabilities are provided with 3-hour fire barriers for one train of safe shutdown capability, or one train in the location/room is provided with either 1-hour fire barriers and/or 20 feet of separation with automatic detection and suppression systems. Specific locations/rooms that have significant obstructions between ceiling-based sprinklers and the floor are also provided with obstruction level sprinklers to protect against floor-based fires. WBN has taken a conservative approach to regulatory compliance in the area of fire safe shutdown capability, with extensive modifications performed to ensure that the spacing and location of sprinkler heads conform to NFPA code requirements. The detectors that actuate the preaction sprinkler systems in rooms that contain redundant safe shutdown capabilities have been located in accordance with code requirements. This approach to regulatory compliance ensures the most rapid and effective application of sprinkler water discharge to postulated fires, thereby minimizing the time that a fire can grow and burn freely prior to sprinkler system actuation.

NRC Guidance and Regulatory Documents

The HPFP pumps at WBN are evaluated against the guidelines of BTP 9.5-1, Appendix A, Section E.2.c for each location provided with automatic fire protection water suppression capabilities. The HPFP pumps are also evaluated as Safe Shutdown components in the Appendix R fire safe shutdown analysis. Appendix A guidance and Appendix R criteria cover overlapping issues since they both address fire safe shutdown capability.

The guidance of Appendix A is reviewed in context of the requirements of Appendix R where issues overlap due to the differences in regulatory significance between the two documents.

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Appendix R was promulgated to resolve issues between NRC and utilities about the acceptable methods of satisfying Appendix A guidelines. While both documents address safe shutdown capability given a fire, three specific sections of Appendix R are applicable to all plants, even if the associated issues had been closed out and accepted by NRC as part of the Appendix A review process. The three specific areas are: III.G (fire protection of safe shutdown capability); III.J (emergency lighting); and III.O (RCP lube oil collection system). Only the separation requirements of Appendix R Section III.G are applicable to this evaluation.

Appendix A to BTP 9.5-1 Guidelines

BTP APCS 9.5-1 and its Appendix A (Part II, Reference 4.1.10) address fire safe shutdown capability. The purpose of the BTP is to provide assurance, through a defense-in-depth design, that a fire will not prevent the performance of necessary plant shutdown functions. Appendix A is to identify alternate acceptable fire protection designs when compared to the BTP. The ultimate purpose of both documents is as stated in Section 1.0 of the BTP, which is to ensure through a defense-in-depth design that a fire will not prevent the performance of necessary plant shutdown functions.

The issue of defense-in-depth as applied to fire pumps is addressed in Appendix A, E.2.c, which states in part "If pumps are required to meet system pressure or flow requirements, a sufficient number of pumps should be provided so that 100% capacity will be available with one pump inactive (e.g., three 50% pumps or two 100% pumps)." This criterion is applied to establish the total number of pumps necessary to be functional during normal plant conditions and to ensure, through defense-in-depth, that fire will not prevent the fire protection water system from performing its intended system functions.

WBN has demonstrated that the guidance of Appendix A, Section E.2.c is met by installation of four safety-related ASME electric pumps to supply the fire protection water distribution system. Each of the four electric pumps located in the IPS can provide 50% of the necessary pressure and flow to the largest demanding fire protection water system serving safety-related areas. A 100% capacity diesel fire pump with auto-start on system pressure and annunciation in the main control room has also been provided. The diesel pump is located in the yard. Compensatory actions have been developed for whenever less than three of the pumps are functional during normal operation with the diesel fire pump being one of the three pumps. WBN thereby exceeds Section E.2.c guidance for three 50% pumps by ensuring functionality of two 50% electric fire pumps and the 100% capacity diesel fire pump.

The largest demanding fire protection water system in non-safety related areas of the plant is a fire that involves transformers in the yard. For this event it is assumed that three transformer water spray systems operate simultaneously. This assumption is made due to the close proximity of the three main transformers. Two electric fire pumps and the diesel fire pump, for which functionality requirements are imposed, provide the necessary pressure and flow for this fire in the Yard. WBN maintains the functionality of all four electric fire pumps and the diesel fire pump to the full extent practical in accordance with standard engineering practices, maintenance procedures, and testing and inspection programs. However, WBN does not impose functionality requirements and compensatory actions to ensure that four electric fire pumps and the diesel fire pump are available in the event of a transformer fire in the yard.

Appendix A to BTP 9.5-1 requires that transformers be located at least 50 feet from buildings containing safety-related systems. The transformers are at least 50 feet south of the south wall of the turbine building. The nearest safety-related building to the transformers is the control

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building. The turbine building, which is non-safety-related, is located in between the transformers and the control building. While transformer suppression is not required to meet regulatory criteria or guidance documents, the fire suppression system for the transformers represents adequate fire protection practice for the type of fire hazard associated with the transformers.

Appendix R Requirements

The requirements of Appendix R and GL 81-12, Enclosure 1 (Part II, Reference 4.1.12), and the response to Question 7.2 in Generic Letter 86-10 (Part II, Reference 4.1.16), are applied in the evaluation of the HPFP pumps as safe shutdown equipment. Section III.G of Appendix R states that fire protection features shall be provided to ensure that one train of systems remains free of fire damage.

All HPFP equipment is initially assumed functional per Generic Letter 86-10, response to Question 7.2, which states that worst-case fires need not be postulated to be simultaneous with non-fire related failures. As such, at the time the worst-case Appendix R fire is initiated, at least three of the pumps provided to satisfy the guidelines of Section E.2.c of Appendix A are considered functional.

The consequences of a full analysis volume burnout is evaluated on all functions in accordance with the criteria of GL 81-12, Enclosure 1, Section 3.8 (Part II, Reference 4.1.12) to ensure that the required system function is met by the equipment protected from the effects of the postulated burnout. In the case of the HPFP pumps, for a fire in an area, the HPFP system flow for the area are compared with the capacity and capability of the pump(s) unaffected by the fire.

The WBN Appendix R safe shutdown analysis guarantees that sufficient pump capacity remains free of fire damage and will be available for fire suppression activities in safety-related areas of the plant. WBN has demonstrated that the requirements of Appendix R Section III.G are met by identifying the specific pumps which survive the Appendix R fire in the location of the fire.

HPFP Hydraulic Calculation Results

The fire suppression system design criteria incorporated into the hydraulic calculations include the necessary fire protection water flow and pressure for the most hydraulically remote location of each system, hose stream application (500 gpm), and those portions of the RSW loads that are not automatically isolated from the fire protection water system upon fire pump start due to a fire in safety-related areas. Four conditions are evaluated in the calculations to demonstrate hydraulic capabilities with clean pipe and corroded pipe to reflect a 40 year service life with and without a single impairment. Clean pipe calculations were based on actual pipe inside diameters and a Hazen-Williams C-factor of 100. Unlined steel pipe corrosion calculations were based on actual pipe inside diameters minus 8/10ths of an inch and a C-factor of 55 (i.e., the expected condition at the end of a 40 year service life).

The results of clean pipe calculations demonstrate that the available number of pumps in each location per the Appendix R analysis can meet the design criteria for fire suppression systems. The results of corroded pipe calculations demonstrate that approximately the highest hose stations of three standpipe systems may not be capable of providing their design basis flows at 40 years. These systems are, however, capable of providing design basis flows for a number of years and will be trended to ensure functionality.

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WBN has previously committed to testing fire pump capabilities at the rated head and at two diverse points, one above and one below the rated head. WBN also committed to a 3 year evaluation period (beginning at startup) to monitor the performance of the HPFP System. During the 3 year evaluation period, testing of the HPFP distribution system was performed once a year. The results of the monitoring program were to evaluate the adequacy of the existing fire suppression systems for testing frequency or possibly replacement plans. The results of this evaluation (Part II, Reference 4.2.55) determined that the appropriate testing frequency is once every three years, which is in compliance with industry standards.

To address the adequacy of the specific standpipe systems that may not provide design basis flows at 40 years, WBN will perform start-up flow tests on the specific systems to assure that adequate flow and pressure can be delivered. This start-up testing has become the hydraulic baseline for the systems. Flow tests are conducted once per year to ensure the systems can meet design basis requirements. The data is trended to promote corrective actions prior to the systems becoming non-functional. (Note: The performance of the flow tests was conducted once per year starting at Unit 1 fuel load. After three years of test data, TVA corporate engineering evaluated the data and determined that WBN could extend the testing to once per every three years to match industry practice (see FPR Part II, Section 12.1.)

Summary of HPFP Adequacy Evaluation

The impacts of these issues on the availability of HPFP capabilities before, during, and after the fire are as follows:

1. WBN is designed to have three 50% fire pumps installed based on the largest demand to safety related areas per BTP 9.5-1 Appendix A Section E.2.c guidance. WBN exceeds the guidance of Appendix A in this regard by ensuring functionality (with associated compensatory actions) of two 50% capacity electric fire pumps and the 100% capacity diesel fire pump.
2. Appendix R, via Generic Letter 86-10 Q&A 7.2, allows WBN to assume that equipment required for fire safe shutdown is functional at the time the fire occurs; as such, at least three fire pumps are functional at the time of the fire.
3. Appendix R requires that one train of systems required to support the safe shutdown function must be available to mitigate the impact of the worst case fire in (1) any plant location that contains systems, components, or cables required for safe shutdown, and (2) plant locations that present an exposure fire hazard to such FSSD locations.
4. WBN has evaluated the requirements for the HPFP system during the worst case Appendix R fire and has demonstrated that the available numbers of fire pumps are capable of meeting HPFP system demands in the location of the Appendix R fire.
5. WBN trends the performance of the HPFP system, and the specific standpipe systems that may not provide design basis flow for 40 years, to promote corrective actions prior to the systems becoming non-functional.

The Safe Shutdown Analysis sections in Part VI of the WBN Fire Protection Report identify on a location by location basis the number of fire pumps that are not affected by a fire in the location and which are available for fire suppression activities.

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3.4 Large Fire Dampers

REQUIREMENT - Fire dampers shall be tested and approved by a nationally recognized laboratory and the tests shall bound the installed configurations.

EVALUATION - Fire dampers 1-ISD-31-3807 and 2-ISD-31-3882 are installed in wall openings that are approximately 100-inches by 25-inches. The dampers are 98 $\frac{5}{8}$ -inches by 24 $\frac{1}{2}$ -inches. The maximum size damper shown on the vendor drawing is 90-inches by 72-inches.

The wall openings for each of the above listed dampers is approximately 100-inches wide by 25-inches high as shown on drawings 48N1251-1 and -3. The overall damper size to protect the openings is 98 $\frac{5}{8}$ -inches wide by 24 $\frac{1}{2}$ -inches high. Fire tests reports dated June 15, 1984 (Part II, Reference 4.2.45) and July 19, 1984 (Part II, Reference 4.2.46) document the results of tests conducted by Underwriters Laboratories (UL) for Ruskin (damper manufacturer) on large size damper installations. The report dated December 12, 1984 (Part II, Reference 4.2.47) documented UL's evaluation of TVA's installation of the large dampers.

The large damper configurations in the two tests (100-in. by 91-in. and 100-in. by 72-in.) both passed the 3-hour fire endurance acceptance criteria by remaining in place and not having an opening in the damper configuration. Both configurations however failed the hose stream test at the end of the 3-hour fire exposure. UL stated in the December 12, 1984 report that, "It is judged that the reduction in size from 100 by 91 in. to 100 by 36 in. would significantly minimize the buckling and twisting of the vertical mullions noted in the June 15, 1984 Report".

UL also stated that the maximum sizes of dampers covered by their classification and follow-up service program are 90-inches wide by 72-inches high in multiple assemblies (maximum sections being 30-inches wide by 36-inches high) and that dampers exceeding this are not eligible to be labeled.

It is however concluded that the large damper installations at Watts Bar provide adequate protection to their HVAC penetration. This conclusion is based on the following:

1. The individual sections are smaller than the maximum allowed for the UL listed multiple section damper assemblies. Watts Bar damper sections are approximately 24 $\frac{1}{2}$ -in. by 24-in. where the approved sections are 30-in. by 36-in.
2. The overall damper dimensions for the Watts Bar installations are 98 $\frac{5}{8}$ -in. by 24 $\frac{1}{2}$ -in.; however, the UL report refers to sizes of 100-in. by 36-in. The smaller overall assembly would further minimize the buckling and twisting of the vertical mullions.
3. The listed damper assembly is 3-sections wide by 2-sections high, but the Watts Bar assembly is only one section high. This makes the Watts Bar assembly more rigid and less likely to experience significant buckling or twisting of the vertical mullions.
4. The tested assemblies were subjected to a 3-hour fire test. The Watts Bar assemblies are only designed to be rated for 1 $\frac{1}{2}$ -hours (good for installations in fire barriers rated up to 2-hours). The tested assemblies passed the fire endurance tests but allowed small openings at the side of the damper curtains which allowed the passage of water. This resulted in a failure of the hose stream test. Since the failure occurred at the end of a 3-hour test, it is reasonable to conclude (as UL did) that the smaller assembly would not be subjected to significant buckling or twisting. The reduction in exposure to the fire by

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one half (1½-hour duration verses 3-hour) would also significantly reduce buckling and twisting. Therefore, it is conservative to conclude that the Watts Bar configurations would pass the hose stream test and provide an adequate level of fire protection to the HVAC penetration.

3.5 Fire Damper in VCT Room Fire Door

REQUIREMENT - Fire doors shall be tested and approved by a nationally recognized laboratory and the tests shall bound the installed configuration.

EVALUATION - The door (A63) into Unit 1 Volume Control Tank (VCT) Room was purchased with a fire damper and was a labeled fire door. The damper was a blade type damper and restricted the air flow through the opening. The damper was replaced with a curtain type damper. The fire door has not been tested with the curtain type damper.

Door A63 is in the wall that separates the VCT Room (713.0-A7) from the Unit 1 Penetration Room (713.0-A6). The Penetration Room has a combustible loading of approximately 150,000 Btu/ft² of which 82% is attributed to the cable trays (Thermo-Lag fire rated wrap on some trays and cable insulation on the other trays). The remaining combustibles consist of lube oil and grease associated with valves, fans, motors, wiring insulation associated with various panels and control stations, used C-zone clothing and waste at the step off pads, and other miscellaneous items (e.g., light covers, telephone, etc.). The VCT Room has a combustible loading of only 3,200 Btu/ft². Both the pipe gallery and the VCT room (except the entrance labyrinth) are provided with automatic detection and suppression.

The entrance to the Unit 1 VCT Room (door A63) is located near the entrance to the Unit 1 Penetration Room (door A62). Due to the close proximity of the two entrances, there is no significant amount of in situ combustibles located near the door. The access/egress path to the Unit 1 Reactor Building is through door A62; therefore, the storage of transient combustibles does not present a hazard.

The opening size in the door did not change. Only the type of damper changed (blade type to curtain type). The new damper is a damper/sleeve assembly and is installed with the damper inside the door. The sleeve extends a short distance on each side of the door (i.e., it is not cut off flush with the door as was the original damper). The change of damper types does not adversely affect the fire resistance capability of the fire door. The fire protection capability is considered to be adequate and equivalent to the door with the original damper for the following reasons:

1. The combustible loading in the immediate vicinity of the door is insignificant
2. The new damper is a listed damper
3. Rooms on both sides of the door are provided with automatic fire detection and suppression

Therefore, the change from a blade type damper to a curtain type damper is acceptable.

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4.0 Deviations to BTP 9.5-1 Appendix A

Deviations from the guidance of Appendix A to BTP 9.5-1 are identified in this section. They address: (1) fire rating of fire doors; (2) Control Building stair openings; (3) lengths of fire hose provided at hose stations; (4) fire barrier between diesel generator storage tanks and diesel generator corridor; (5) the lack of automatic detection on the Refuel Floor, and (6) embedded CO₂ control panel in fire barrier in Diesel Generator Building Corridor. Additional alternatives to the guidelines of Appendix A are identified in part VIII of the FPR.

4.1 Fire Doors

REQUIREMENT - Section D.1.j of BTP 9.5-1 Appendix A states that door openings should be protected with equivalent rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory.

DEVIATION - A number of fire doors have been altered by the addition of signs and security hardware, or have been damaged and repaired onsite.

EVALUATION - To ensure that modifications which have been made to fire doors do not compromise the fire barrier, TVA contracted with Underwriters Laboratories, Inc. (UL), to provide an evaluation of the fire doors as they existed in the plant. TVA letter from J. W. Hufham to E. Adensam (NRC) dated January 4, 1985 (Part II, Reference 4.2.52), summarized their evaluation and provides recommendations for modifications necessary to ensure the performance of the fire doors. Appropriate door repair criteria for fire doors is documented and controlled by General Engineering Specification -73, "Installation, Modification and Maintenance of Fire Protection Systems and Features". Generally TVA has addressed the recommendations of UL as follows:

1. Signs installed on fire doors are listed by UL for use on hollow-core, metal, swinging fire doors with up to a 3-hour fire rating.
2. Gasket material is approved for use on fire doors.
3. Conduit penetrations into the door frame are anchored either in accordance with ILL.2 of UL letter or by a continuously welded fitting (item 4 of UL letter).
4. Small holes (3/16-inch or smaller diameter) in fire doors and frames may be repaired by either of the following methods:
 - (1) Slightly dimple the hole 1/16-inch, weld the hole completely closed, and grind smooth.
 - (2) Install self-sealing rivets or steel pan head self-tapping sheet metal screws to seal the holes closed.

Holes 3/16-inch to 2 inches in diameter or rectangular holes with the longest side being less than 1-1/2 inches may be repaired by welding a 16 gauge steel plate overlapping the edge of the hole by a minimum of 3/4-inch.

Other repair criteria must be reviewed and approved by a fire protection engineer to ensure that the fire resistance rating of the fire door is maintained.

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5. Hardware on fire doors are checked to ensure they are UL listed or FM approved.
6. Fire doors, except A188, C49, and C50, are adjusted to ensure the gap between the door and the frame is 3/16-inch or less. Fire door frames with excessive gaps between the frame and wall openings are provided with spacers and with 1-1/2" x 1/2", 12 gauge angles in accordance with ILL.1 of UL letter. Fire rated sealant is used to seal the small openings caused by slight irregularities in the wall construction.

The frames for doors A188, C49, and C50 have been filled with grout and cannot be moved to adjust the door-to-frame gaps without destroying the frames. TVA has left the doors as-is with gaps of up to 3/8-inch. Door A188 is located between a mechanical equipment room (772.0-A10) and 480-V board room 2A (772.0-A16). Doors C49 and C50 are located between the main control room (755.0-C12) and 480-V shutdown board room 1B (757.0-A5) and 2A (757.0-A21), respectively. These rooms, except for the main control room, are provided with preaction sprinkler systems actuated by cross-zoned ionization smoke detectors.

The automatic suppression systems in the Auxiliary Building and manual firefighting actions that could be rapidly initiated in the main control room provide adequate compensation for the excessive door-to-frame gaps on the subject fire doors.

7. Labeled fire doors and frames that are missing their labels have been evaluated. If documentation from the manufacturer is on file indicating that the door assembly was originally shipped to WBN as UL labeled equipment or can be evaluated by a fire protection engineer as providing equivalent protection as a labeled door, that door assembly will not be replaced.
8. Fire doors with unlabeled louvers were provided by the manufacturer as a labeled assembly; therefore, no additional action is required.

The following information addresses responses to specific findings that were not covered by UL's general recommendations:

9. A continuous astragal that extends the full height of the door is provided on door A189.
10. Doors A188, C49, and C50 were supplied as part of labeled assemblies and the existing piano hinges are an integral part of these assemblies. Although the hinges are not labeled separately, they are identical to the piano hinges that were used to obtain the UL approval for the assemblies; therefore, no corrective action is required.

The corrective actions identified above will restore the fire doors to their required fire resistive rating, except for doors A188, C49, and C50. Adequate compensation is provided for these gaps as discussed above; therefore, the doors were left as-is.

Door A154 (shown on Figure II-31A) and doors W10A and W10B (shown on Figure II-36A) are special purpose doors. Door manufacturers do not provide these types of doors as an UL listed door. They are of heavy welded steel construction with multiple latch points on the sides, top, and bottom and provide a level of fire resistance that is equivalent to a fire rated door.

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These types of doors are similar to the doors evaluated, accepted, and submitted to the NRC for approval (Letter from L. M. Mills to A. Schwencer dated September 9, 1980 [Part II, Reference 4.2.53]) as providing an equivalent fire rating commensurate to the fuel loading in the areas or cells they separate the doors submitted to the NRC were accepted (SER June 1982). Therefore, based upon the similarity with these doors, doors A154, W10A, and W10B are acceptable.

This deviation applies to room(s) 772.0-A10, 772.0-A16, 757.0-A5, 757.0-A21, 755.0-C12, 757.0-A13, 737.0-A1c, IPS EL 722 W, and IPS EL 722 E.

4.2 Openings in Fire Walls

REQUIREMENT - Section D.1.j of Appendix A to BTP 9.5-1 identifies that fire area boundaries should be capable of withstanding the fire hazards to which they could be exposed. NRC generic letters and guidance documents require that penetrations in walls, floors, and ceilings forming part of a fire area boundary be protected with seals or closure devices having a fire resistive rating equivalent to that required of the barrier.

DEVIATION - A 6-inch wide by 3-inch deep gutter penetrates each stairwell enclosure (Stairwells C1 and C2) from the corridor (Room 692.0-C11) in the control building.

JUSTIFICATION - The gutter penetrates the walls separating the stairwells from the corridor. Floor drains, one in each stairwell and two in the corridor, are provided in the gutter. The only in situ liquids on this elevation is the 35 gallons of lube oil associated with each electrical board room chiller packages (O-CHL-31-128 and -129) that are located in the Unit 2 mechanical equipment room. The room is separated from stairwell C2 by a two-hour reinforced concrete wall.

The in situ combustible loading for the corridor is low and results in an equivalent fire severity classification of low. The corridor is provided with a preaction sprinkler system that is actuated by an ionization detection system. Standpipe and hose stations are in the two stairwells. Portable extinguishers are provided in the corridor.

The two stairwells are located at opposite ends of the corridor (approximately 170 feet apart). Postulated fires would not prevent fire brigade access to the corridor from both stairwells at the same time. The unprotected openings caused by the gutter do not pose a significant hazard to the fire protection capability and are acceptable.

This deviation applies to room(s) Stairwell C1, Stairwell C2, and 692.0-C11.

4.3 Manual Hose Stations

REQUIREMENT - Section E.3.d of Appendix A to BTP 9.5-1 identifies that interior manual hose installations should be able to reach any location with at least one effective hose stream. To accomplish this, standpipes with hose connections equipped with a maximum of 75 feet of 1-1/2 inch woven jacket lined fire hose and suitable nozzles should be provided.

DEVIATION - Manual hose stations with 100 feet of 1-1/2 inch UL listed or FM approved fire hose are located throughout the plant. Some hose stations are provided with more than 100 feet of hose.

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JUSTIFICATION - The standpipe and hose stations at WBN have been designed along the guidelines of NFPA 14 (Part II, Reference 4.4.13) which allow up to 100 feet of hose connected to the standpipe. Consideration was given to locating fire hose stations in areas with lower potential fire loading, as well as to ensure that they were readily accessible to ensure full hose coverage of fire areas.

The following hose racks are equipped with hose lengths in excess of 100 feet:

<u>Hose Valve</u>	<u>Building</u>	<u>Elevation</u>	<u>Hose length (ft)</u>	<u>Minimum Pressure (psig)</u>
0-26-1077	Diesel Generator	742.0	125	71
0-26-1188	Control	708.0	150	77
0-26-1193	Control	708.0	150	77
1-26-664	Auxiliary	772.0	125	71
2-26-664	Auxiliary	772.0	125	71
1-26-665	Auxiliary	757.0	150	77
2-26-665	Auxiliary	757.0	150	77

The hose stations listed above have 1.5-inch hoses and are required to have 65 psig at 100 gpm flowing. They were not pre-operationally tested, but 2.5-inch hose stations at higher elevations for each of the three buildings listed were pre-operationally tested for a minimum of 65 psig at 500 gpm; therefore, it is concluded that the lower hose stations will meet the pressure/flow requirements.

This deviation applies to room(s) DG 742.0-D9, ,CB Stair C1, CB Stair C2, 757.0-A2, 757.0-A24, 772.0-A7, and 772.0-A10.

4.4 Fire Barrier Between DG Storage Tanks and DG Corridor

REQUIREMENT - Section F.10 of Appendix A to BTP 9.5-1 identifies that diesel fuel oil tanks with a capacity of over 1100 gallons should not be located inside buildings containing safety-related equipment. If located inside such buildings, they should be separated by 3-hour fire barriers. Buried tanks are considered as meeting the 3-hour fire resistance requirements.

DEVIATION - The diesel generator fuel oil storage tank assembly for each diesel generator consists of four interconnected tanks, each with its own man-way access openings, one at either end of the tank. One set of access openings are located in each respective diesel generator room, Rooms 742.0-4, -5, -6, and -7. The other set of access openings are located in the common corridor, Room 742.0-9. There are a total of sixteen man-way access openings to the tanks from the corridor, and four in each diesel generator room. Each man-way access opening is in a pit covered by a removable plate cover sitting over the top of the pit flush with the floor. The four access openings in, and the four openings directly outside of, each diesel compartment are associated with the four interconnected tanks for the diesel generator in the compartment.

JUSTIFICATION - Each man-way opening is in its own pit, and each pit is about 2-1/2 feet wide by 2-1/2 feet deep. The man-way access is the only portion of the tank not buried underneath the floor of the diesel building. The man-way openings in each of the tanks are 7'6" apart, centerline-to-centerline. The man-way has an inside diameter of 18 inches, and is constructed

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of pressed steel. The cover is 1/4 inch thick steel plate, secured to the top of the tank by (18) 1/2 inch bolts.

There are three normally closed openings in the man-way covers located on the South end of the DG Fuel Oil Storage Tanks in the DG Corridor; Fire Area 53 Room 742.0-9.

Two of the openings are provided for fuel oil circulation, and the other is for taking fuel oil samples. These normally closed openings preclude the need to remove the man-way access cover to circulate the oil and take the required sample.

The corridor and each diesel generator compartment are provided with full automatic detection and suppression systems to control postulated fires prior to arrival of the fire brigade. Postulated fires involving the man-way openings, while reasonably remote, are very severe and could result in damage to equipment and cables in the corridor and in the diesel generator compartments.

Damage to equipment and cables associated with operation of the emergency diesel generators would not impact on safe shutdown capability. The diesel generators are only required for those fire scenarios that either result in, or require postulation of, a loss of offsite power. Offsite power capabilities would not be affected by a fire in any portion of the diesel generator building, including the corridor. Loss of offsite power need only be postulated for those locations that require alternative shutdown, and alternative shutdown capability is not required for a fire in the diesel generator building. Acceptance of this request was granted in NUREG-0847, SER 26, June 2013, Section 6.2.9.

This deviation applies to room(s) 742.0-D4, 742.0-D5, 742.0-D6, 742.0-D7, and 742.0-D9.

4.5 Lack of Automatic Detection in 757.0-A13 (Refueling Room) and New Fuel Storage Vault (741.5)

REQUIREMENT – Sections F.12 and F.13 of Appendix A to BTP 9.5-1 identifies that automatic fire detectors should be installed in the areas of new fuel and spent fuel pools.

DEVIATION - The refueling Area (Refueling Room 757.0-A13 which includes the New Fuel Storage Vault (741.5), Spent Fuel Pool and Fuel Transfer Canal) is not provided with an automatic detection system.

JUSTIFICATION - Acceptance of this request was granted in NUREG-0847, SER 26, June 2013, Section 6.2.1.

This deviation applies to room(s) 757.0-A13 and 741.5 New Fuel Storage.

4.6 Fire Barrier Between Fuel Oil Transfer Pump Room and Diesel Generator Building Corridor

REQUIREMENT - Section D.1.j of Appendix A to BTP 9.5-1 states, "Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself. The fire hazard in each area should be evaluated to determine barrier requirements."

DEVIATION - The fire barrier separating the Fuel Oil Transfer Pump Room (742-D8) from the Diesel Generator Building Corridor (742-D9) is a 2-hour rated fire barrier and contains a

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penetration containing a steel box. This penetration is not a tested fire rated penetration assembly.

JUSTIFICATION - The fire barrier separating the Fuel Oil Transfer Pump Room and the Corridor is constructed of 8" thick reinforced concrete block and is fire rated for 2-hours. The opening which contains the steel box is approximately 41" x 24" and the box is approximately 39" x 23". The annular gap between the block wall and the box is filled with concrete grout, but no sealant material is installed within the box. The box back (inside the Fuel Oil Transfer Pump Room) is a steel plate. The front of the panel is a steel plate with cutouts for three metal junction boxes. These boxes contain the following devices:

Box 1	0-HS-39-27A
Box 2	0-FSV-39-27
Box 3	0-ARB-39-27, 0-HS-39-27R, 0-SW-39-27

The in situ combustible loading of the Fuel Oil Transfer Pump Room is insignificant and is due to insulation on cables associated with panel 0-L-162, hand switches, an emergency lighting unit, and foam plastic insulation. The in situ combustible loading of the Corridor is low, of which approximately 96% is due to insulation on cables in cable trays.

The carbon steel panel located in the wall of the Fuel Oil Transfer Pump Room contains a manual control valve (0-FSV-39-27) for the CO₂ system and the valve is inside a metal box that is inside the panel. The valve does contain metallic and compressible materials. NFPA-12, Section 1433, it requires that "all devices shall be located, installed or suitably protected so that they are not subject to mechanical, chemical, or other damage which would render them inoperative." Fuel Oil Transfer Pump Room is in Fire Area 53, Analysis Volume AV-081B, and has full automatic detection (thermals) and full CO₂ suppression. The fire severity the room is insignificant. This room is such that it is highly unlikely that a fire could progress past the incipient stages without controlled by the subsequent suppression of the automatic CO₂ system, and the plant fire department putting out the fire. This is based on the following: (1) lack of ignition source(s) with sufficient energy to introduce thermal insult to more than a local area of exposed cables; (2) existence of a detection system which ensures prompt detections of a fire in its incipient stages; (3) a room configuration such the cables are located less than 2 feet below the ceiling and are not routed together to create a mass large enough that would even sustain any significant type fire in the room that would create a temperature high enough to damage the valve, and (4) the path the heat transfer would have to travel from the room through the back side of the panel, through dead air space, and through the metal box that contains the valve would take a certain amount of time after the fire was established, which results in the heat in the room having little influence on the valve before fire fighting activates are completed.

The Fuel Oil Transfer Pump Room is provided with an automatic detection system and a total flooding automatic CO₂ suppression system. The detection system alarms in the Main Control Room (MCR) and actuates the suppression system. The Corridor is provided with an automatic detection system and an automatic sprinkler system. The detection system alarms in the MCR and actuates the suppression system.

The Fuel Oil Transfer Pump Room does not contain components required for safe shutdown in the event of a fire in the room or for a fire in the Corridor. The small amount of in situ combustibles and the lack of free floor space limit the quantity of transient combustibles thereby limiting the severity of a postulated fire in the room. The failure of a fuel oil line or pump that

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resulted in a fire is addressed by the total flooding, automatic CO₂ suppression system which will also control a postulated transient fire until the Fire Brigade responds.

Neither fire is expected to challenge the steel box. In the event of a failure of the suppression system in the room, the fire would not challenge the ability of the box to prevent the passage of flames, hot gases or water from one side of the barrier to the other. This is based on observations of 3-hour fire tests of penetrations which contained pipe (diameters from as large as 30" to as small as 2") with a similar thickness steel plate welded on the end of the pipe placed in the test furnace. The single layer of steel in these tests did not allow the passage of flames, hot gases or water from one side of the barrier to the other. It is concluded that two layers of steel separated by an air gap would perform as well or better. Therefore, the penetration containing the steel box is adequately protected for the fire hazards in the Fuel Oil Transfer Pump Room.

The Corridor does not contain components required for safe shutdown in the event of a fire in the Corridor or for a fire in the Fuel Oil Transfer Pump Room. The majority (approximately 96%) of the in situ combustible loading is due to insulation on cables in the trays. The trays are routed across the ceiling except where they run down the south wall of the Corridor (approximately 13 feet away). The corner of the Fuel Oil Transfer Pump Room shields the box from direct exposure of a postulated fire in the cable trays. The other in situ combustibles are dispersed throughout the Corridor and do not present a direct exposure hazard to the box.

The Corridor width at the panel is approximately 6 feet. The door into the 2B-B Diesel Generator is across from the box and the door to the Fuel Oil Transfer Pump Room is next to the box. The end of the Corridor is less than 6 feet from this door and a high pressure fire protection system deluge valve station is located there. This arrangement minimizes the probability of transient combustibles being stored near the box. Since the top of the box is located approximately 13 feet below the ceiling, a fire in the Corridor would actuate the sprinkler system before the hot gas layer could bank down to challenge the box. The actuation of the sprinkler system will control the fire and keep the box face cool. In the event the sprinkler system failed to operate, the two layers of steel and the air gap between them would prevent the passage of flames, hot gases or water from propagating from the Corridor into the Fuel Oil Transfer Pump Room. Therefore, the penetration containing the box is adequately protected from the fire hazards in the Corridor.

The penetration configuration consisting of a steel box grouted in place in the reinforced concrete block wall and containing three metal boxes with components of the CO₂ suppression system is adequate to prevent the passage of flames, hot gases or water from the Corridor to the Fuel Oil Transfer Pump Room or vice versa.

This deviation applies to room(s) 742.0-D8 and 742.0-D9.

5.0 NFPA Code Deviations

The purpose of this section is to document the justifications for those NFPA code deviations that impact on the operational capabilities of the fire protection feature that is not in direct compliance with code criteria. The deviations that do not impact on the operational capability of the fire protection feature are identified in Part X of the FPR.

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5.1 Non-Listed, Non-Approved Fire Pumps and Fire Pump Controllers

NFPA 20 (Part II, Reference 4.4.15) requires that fire pumps and fire pump controllers be listed and approved for use. Four electric motor driven pumps provide water to the fire protection water system at WBN. The pumps, while not listed and approved for use as fire pumps, are ASME Section III seismic Category I high pressure vertical turbine motor-driven pumps due to their primary safety function (i.e. flood mode). The pumps do not start on pressure drop in the fire main; rather, they automatically start upon actuation of the fire detection systems in those plant locations provided with preaction suppression systems. The pumps can also be manually started and stopped from the main control room, and manually started via push buttons at specific hose stations in the plant. Conventional fire pump controllers are not used.

The existing configuration of four ASME Section III pumps and controllers are acceptable based on the following considerations:

1. The HPFP fire protection system has a primary safety function to serve as a backup water supply to the auxiliary feedwater system in the event of a flood above plant grade and, as such, requires the use of ASME Section III pumps as opposed to traditional UL/FM fire pump installations.
2. The pump curve verification tests have been revised to include multiple diverse points on the pump curve to replicate fire pump test requirements as opposed to the single point verification applicable to ASME Section III pumps.
3. Hydraulic calculations, based on the ratings and pump curve verification tests, have been performed to demonstrate that the pumps can provide adequate flow and pressure to the most hydraulically remote suppression systems in the plant.
4. The design and construction of electrical circuits for pump power and control meet IEEE Class 1E standards and, even though the pumps do not start on pressure drop in the piping system, they do automatically start when the Function B fire detectors actuate. (Refer to Part II of the FPR.)
5. The electric fire pumps can only be manually stopped from the main control room, which is constantly manned by operations personnel, or the shutdown board rooms. The diesel fire pump can only be stopped locally at the pump. These features provide adequate controls over when the fire pumps can be stopped.
6. The existing configuration of four ASME Section III pumps has been previously reviewed and approved by NRC in the June 1982 Safety Evaluation Report for WBN.
7. System pressure is normally maintained by the RCW system.

The use of non-listed and non-approved fire pumps and fire pump controllers do not pose a significant hazard to the fire protection capability and are acceptable. TVA therefore requests approval of this deviation.

This deviation applies to room(s) IPS-741 HPFP – A and IPS-741 HPFP – B.

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5.2 Sliding Fire Doors with Fusible Links on One Side of Door Only

NFPA 80-1975 (Part II, Reference 4.4.30) requires that fusible links be installed on both sides of the wall and interconnected so that the operation of any single fusible link will cause the door to close. For hollow metal doors a fusible link is required to be centered just above the opening and another at or near the ceiling. The sliding fire door at Watts Bar (Door D8A) is provided with fusible links but only on one side.

The configuration in NFPA 80 consists of an opening in a fire barrier that is protected by a sliding door. The configuration at Watts Bar is provided with swinging hollow metal door in the opening and a sliding fire door. The normally closed swinging hollow metal door is similar to labeled fire doors. The sliding fire door is installed to provide additional protection to the opening. The sliding fire door and its fusible links are installed in the room that presented a significant hazard to an adjacent room. In the event of a fire, the swinging hollow metal door would protect the opening until a fusible link melted and allowed the sliding door to close. A fire in the adjacent room would not impact the fire safe shutdown analysis and would not present any threat to fire safe shutdown even if it did propagate into the room containing the sliding fire door. Door D8A, located in the Diesel Generator Building Lube Oil Storage Room, is provided with two fusible links (one directly above the center line of the door and the other higher up) and the door has a CO₂ actuated door release.

While this configuration is not in verbatim compliance with NFPA 80, it provides an adequate level of protection that will perform the function as intended by NFPA 80. Therefore the as constructed configuration of the sliding fire door at Watts Bar is considered acceptable.

This deviation applies to room(s) 742.0-D2.

6.0 General Engineering Evaluations

The purpose of this section is to document the fire protection engineering evaluations other than those related to 10CFR50 Appendix R, BTP 9.5-1 Appendix A, and NFPA Codes. The evaluations are presented in the following format:

1. Statement of the condition being evaluated
2. Discussion and justification
3. Conclusion

6.1 Justification for Relaxation in Surveillance Frequency for the Reactor Bldg Equipment Hatches - 757.0-A11 And 757.0-A15

6.1.1 Statement of Condition

The Reactor Bldg Equipment Hatches (757.0-A11 and 757.0-A15) are inaccessible during plant operations; therefore, surveillance of sprinklers, fire detectors, penetration seals, and Thermo-Lag (757.0-A11 only) fire wrap cannot be performed per the regular schedules. The surveillances for these items will be performed only during outages when the room is accessible.

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6.1.2 Discussion and Justification

These rooms are the equipment access areas between the Refueling Room and the Reactor Building. They are considered as part of the Reactor Building during plant operations. They are constructed of reinforced concrete (minimum 3-feet thick) and are provided with smoke detectors and automatic (preaction) sprinkler system. The room barriers are 3-hour fire rated with the exception of the blast door into the Reactor Building. This door is of heavy metal construction and would prevent a fire from propagating from either the Reactor Building into the room or from the room into the Reactor Building.

Each room area is 673 square feet with a ceiling height of 24 feet. The in situ combustible loading in the rooms is comprised of the insulation on the cable trays that traverse the room, the light covers on the lights in the room, and Thermo-Lag (757.0-A11 only) on conduits that pass through the room. The fire severity classification of both rooms is low. There are no ignition sources in the room during power operation.

6.1.3 Conclusion

Performing the required surveillance during plant outages is acceptable for the following reasons:

1. The rooms are not accessible during plant operations,
2. Transient combustibles are not present during plant operations,
3. No ignition sources are in the rooms during operation,
4. More than adequate fire compartmentation.

6.2 Justification for Fire Damper Surveillance Requirements

6.2.1 Statement of Condition

Fire dampers are inspected periodically ($\geq 20\%$ per 18 months) to ensure proper operation and thus prevent a postulated fire from propagating from one side of the fire barrier to the other through the ventilation opening. Some of the fire dampers are not being inspected due to the potential for spreading of contamination.

6.2.2 Discussion and Justification

The following fire dampers are located in contaminated areas and to keep radiation exposure levels as low as reasonably achievable are considered to be inaccessible.

- 0-ISD-31-3846
- 0-ISD-31-3847
- 0-ISD-31-3848

The consequences of failure of any or all of these dampers to close during a fire event are evaluated below. The evaluations consider the damper location, proximity to combustibles, and

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construction features for the applicable rooms on each side of the damper. Accidental closure of the dampers is not considered because each of the dampers is held open by mechanical means (S-hooks and fusible links).

6.2.2.1 Damper 0-ISD-31-3846

This fire damper is located in a 24-inch diameter embedded duct that starts at an embedded collector box (4'x4'x2') located at column line A8 and runs for 40 feet where it exits the concrete wall (A5 column line) and immediately (within 2 feet) enters a 64-inch by 54-inch duct. This is located in the Ventilation and Purge Air Room (737.0-A5). The other ducts that enter the collector box are 20-inch diameter embedded ducts and they are the common ducts for the openings to the fuel transfer canal (the vent openings are located just above the water level in the fuel transfer canal).

There is no combustible hazard in the fuel transfer canal. There are negligible quantities of combustible in the vicinity of the duct in the Ventilation and Purge Air Room. In addition, the room is also provided with smoke detection and automatic suppression.

The combustible loading for the Ventilation and Purge Air Room is low which equates to a fire severity of approximately 11 minutes. Heavy gauge metal duct is generally considered to be equivalent to a 1-hour fire barrier. However, even if a fire in the room did breach the duct, it would have to travel more than 40 feet down the embedded duct before it could reach the fuel transfer canal.

Therefore, failure of the fire damper to close during a fire in the Ventilation and Purge Air Room would not affect the capability to contain the fire and thus there is no threat to the fire safe shutdown capability of the plant. Since there is no adverse affect to the plant if the fire damper fails to close, the need to perform surveillance and maintenance on the damper can be deleted.

6.2.2.2 Dampers 0-ISD-31-3847 and 0-ISD-31-3848

One of these fire damper is located in a 24-inch diameter embedded duct that starts at an embedded collector box (4'-3" x 4'-3" x 1'-10") located in the Spent Fuel Pit wall between column lines A5 and A6, runs for approximately 5 feet where it exits the concrete wall, traverses a corridor (5' - 6' wide), and penetrates the concrete wall at A5 column line and immediately (within 2 feet) enters a 58-inch by 54-inch duct. This is located in the Ventilation and Purge Air Room (737.0-A5). Two other ducts that enter the collector box are 20-inch diameter embedded ducts and they are the common ducts for the openings to the Spent Fuel Pit (the vent openings are located just above the water level). The other fire damper is located in a 30-inch diameter embedded duct that starts at an embedded collector box (2'-6" x 4'-6" x 4'-6") located in the opposite wall of the Spent Fuel Pit, runs for approximately 80 feet where it exits the Spent Fuel Pit wall (near the 24-inch duct), traverses the corridor, and penetrates the wall at A5 column line and immediately (within 2 feet) enters the 58-inch by 54-inch duct. Both of these round ducts are coated with 2-inches of fire protective material (Pyrocrete) where they traverse the corridor.

There is no combustible hazard in the Spent Fuel Pit. There are negligible quantities of combustible in the vicinity of the duct in the corridor (connects the Post Accident Sampling Room, 729.0-A8, to the Nitrogen Storage Area, 729.0-A6) and the Ventilation and Purge Air Room. In addition, the corridor and the Ventilation and Purge Air Room are also provided with smoke detection and the Ventilation and Purge Air Room is provided with automatic suppression.

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The combustible loading for the Ventilation and Purge Air Room is low which equates to a fire severity classification of low and the corridor has an insignificant combustible load which equates to a fire severity classification of low. Heavy gauge metal duct is generally considered to be equivalent to a 1-hour fire barrier. However, even if a fire in either room did breach the duct, it would have to travel approximately 10 feet down the 24-inch embedded duct and 80 feet down the 30-inch embedded duct before it could reach the Spent Fuel Pit.

6.2.3 Conclusion

Therefore, failure of the fire damper to close during a fire in the Ventilation and Purge Air Room or the corridor would not affect the capability to contain the fire and thus there is no threat to the fire safe shutdown capability of the plant. Since there is no adverse affect to the plant if the fire damper fails to close, the need to perform surveillance and maintenance on the damper can be deleted.

6.3 Justification of Gap Between Door and Frame for Fire Door W9

6.3.1 Statement of Condition

General Engineering Specification G-73, "Installation, Modification and Maintenance of Fire Protection Systems and Features," Section 4.2.3.1.9.b states, "The clearance between the door and frame and between the meeting edges of doors swinging in pairs shall be 3/16-inch or less as long as the door does not scrape." A portion of the gap between the door and frame of fire door W9 exceeds the maximum 3/16-inch clearance.

6.3.2 Discussion and Justification

Fire door W9 is in a 3-hour fire barrier that ensures that a fire on the RCW pump deck cannot endanger both safe shutdown paths of ERCW. The fire door is located in the wall that separates the RCW pump deck from a labyrinth that opens into the Train A ERCW pump room. The RCW pump deck is open to the atmosphere on the other three sides and does not have a roof over it. The in situ combustible load of the RCW pump deck equates to a fire severity classification of insignificant and consists primarily of lube oil associated with the RCW pumps. The nearest pump is located a horizontal distance of 17 feet from the door and the bottom of the door is 13.5 feet above the RCW pump deck. There are no in situ combustibles located directly under the door and the stairs and landings prevent any appreciable quantities of transient combustibles from being stored under the door. The door opens into a labyrinth that does not contain any in situ combustibles, nor are transient combustibles stored in the labyrinth.

6.3.3 Conclusion

Even if a fire on the RCW pump deck occurs, it does not impact an ERCW pump for the following reasons:

1. Distance from nearest combustible source is 17 feet horizontally and 13.5 feet vertically.
2. The RCW pump deck is open to the atmosphere on three sides.
3. There is a labyrinth between the fire door and the ERCW pump room.
4. The ERCW pump room is open to the atmosphere at the top.
5. There are no intervening combustibles between the RCW pump and the door.

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6. There are no intervening combustibles between the door and the ERCW pumps. Therefore, the door not being in compliance with the gap specifications as stated in G-73 does not create a violation to Appendix R separation requirements because the door still provides an adequate fire resistive barrier.

6.4 Justification for Relaxation of Penetration Seal Surveillance Requirements in High Radiation Areas

6.4.1 Statement of Condition

Penetration seals are inspected periodically (approx. 20% per 12 months) to ensure seal integrity and thus prevent a postulated fire from propagating from one side of a fire barrier to the other through a penetration opening. Some penetration seals in rated fire barriers cannot be inspected due to being located in a high radiation area.

6.4.2 Discussion and Justification

The penetration seals in the following rooms are located in high radiation areas. To keep radiation exposure levels as low as reasonably achievable, these penetration seals are considered to be inaccessible.

- Spent Resin Tank Room - 692.0-A15
- Hold-Up Tank Room A - 676.0-A2
- Hold-Up Tank Room B - 676.0-A3
- Tritiated Drain Collector Tank Room - 674.0-A1
- Gas Decay Tank Room - 692.0-A3
- Gas Decay Tank Room - 692.0-A5

The consequence of a failure of the penetration seals in the rated fire barriers between these rooms and adjacent rooms is evaluated below. The evaluations consider the areas not inspected, proximity to combustibles, and construction features for the applicable rooms on either side of the seals in question.

6.4.2.1 Spent Resin Tank Room - 692.0-A15

The Spent Resin Tank Room is separated from Pipe Chase Room 692.0-A24 by a 2 hour rated fire barrier of reinforced concrete construction. The barriers adjacent to other rooms are considered non-rated barriers. There is no safe shutdown equipment in the Spent Resin Tank room. The penetration seals in the rated barrier are accessible for surveillance inspection from room 692.0-A24; however, they are not accessible for inspection from the Spent Resin Tank Room due to the radiation posting of the room.

The combustible loading in the Spent Resin Tank Room equates to a fire severity classification of insignificant. The combustible loading in adjacent room 692.0-A24 also equates to a fire severity classification of insignificant. There is a very low probability of a fire in the Spent Resin Tank Room and Pipe Chase Room 692.0-A24 challenging the safety of the plant, based on the small amount of combustibles and the absence of safety equipment in the tank room. Based on the low combustible loading in the two rooms and the low probability of a fire in either room, it is unlikely that a fire could start in either room and spread to an adjacent room. It is therefore

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determined that the need to perform surveillance of the penetration seals on this fire barrier from inside room 692.0-A15 can be deleted.

6.4.2.2 Hold-Up Tank Rooms A and B - 676.0-A2 and 676.0-A3

Hold-Up Tank Rooms A and B are separated from adjacent rooms by both 2 and 3 hour fire barriers constructed of reinforced concrete. The barrier between the two rooms is a non-rated wall of reinforced concrete construction. There is no safe shutdown equipment in either of these rooms, nor is there any equipment that could be considered a plant trip initiator. Adjacent rooms containing safe shutdown equipment are accessible for surveillance inspection of the penetrations, with the exception of the barrier between Room 676.0-A2 and 692.0-A3. The penetrations are not accessible from inside the Hold-Up Tank Rooms for surveillance inspection due to the radiation posting of the rooms.

The combustible loading in Hold-Up Tank Rooms A and B equates to a fire severity classification of insignificant. There is a very low probability of a fire in either room challenging the safety of the plant, based on the small amount of combustibles and the absence of safe shutdown equipment in the rooms. Likewise, a fire spreading from another plant area into either Hold-Up Tank Room will not affect any safety shutdown equipment or affect any equipment that could initiate a plant trip. The rooms are both classified as high radiation areas and are not generally accessible, which reduces the likelihood that combustibles are moved or stored in these rooms.

Based on the low combustible loading of the rooms, it is very unlikely that a fire could start in Hold-Up Tank Room A or B and spread to an adjacent room. It is therefore determined that the need to perform surveillance of the penetration seals on the fire barriers from inside Hold-Up Tank Rooms 676.0-A2 and 676.0-A3 can be deleted.

6.4.2.3 Tritiated Drain Collector Tank Room - 674.0-A1

The Tritiated Drain Collector Room is separated from RHR Pump Room 1A-A (Room 676.0-A11) by a 2 hour reinforced concrete fire barrier. The barriers adjacent to other rooms are considered non-rated barriers. The penetration seals in the rated fire barrier are accessible for surveillance inspection from room 676.0-A11; however, they are not accessible for inspection from room 674.0-A1 due to the radiation posting of the room.

The combustible loading in the Tritiated Drain Collector Room is insignificant, making it highly unlikely that a fire could ever start in this area and spread to the adjacent Room 676.0-A11. The combustible loading in adjacent room 676.0-A11 equates to a fire severity classification of insignificant. There is a very low probability of a fire in the Tritiated Drain Collector Room challenging the safety of the plant, based on the negligible combustible loading and the absence of safe shutdown equipment required for a fire in this room or any adjacent rooms. The circuits routed in conduit in this room are only necessary for a control building fire that results in Main Control Room abandonment. Based upon the negligible combustible loading in the Tritiated Drain Collector Room and the low probability of fire in the room, it is unlikely that a fire could start in the room and spread to adjacent rooms. Therefore, it is determined that the need to perform surveillance inspections of the penetration seals of this fire barrier from inside room 674.0-A1 can be deleted.

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6.4.2.4 Gas Decay Tank Rooms - 692.0-A3 and 692.0-A5

The Gas Decay Tank Rooms are separated from adjacent rooms by both 2 and 3 hour rated fire barriers constructed of reinforced concrete. The barrier between the two rooms is a 2 hour rated barrier. The penetration seals are not accessible for inspection from the Gas Decay Tank Rooms due to the radiation posting of the rooms. The penetration seals in the barrier between the two rooms are not accessible from either side for surveillance inspection. Likewise, the barrier between Room 692.0-A3 and Room 676.0-A2 is not accessible for surveillance inspection. The penetration seals in the remaining barriers are accessible for surveillance inspection from the adjacent rooms.

The combustible loading in the two Gas Decay Tank Rooms is insignificant, making it very unlikely that a fire could ever start in either room and spread to an adjacent room. There is a very low probability of a fire in either of the Gas Decay Tank Rooms challenging the safety of the plant, based on the insignificant amount of combustibles in the rooms and the fact that neither room contains any safety shutdown equipment or plant trip initiators. Likewise, a fire spreading from another plant area into either Gas Decay Tank Room will not affect any safe shutdown equipment or affect any equipment that could initiate a plant trip. The rooms are both classified as high radiation areas and are not generally accessible, which reduces the likelihood that combustibles are moved or stored in these rooms.

Based on the negligible combustible loading in the two rooms and the low probability of a fire in either room, it is unlikely that a fire could start in either room and spread to an adjacent room. Therefore, it is determined that the need to perform surveillance inspections of the penetration seals of the fire barriers from inside these two rooms can be deleted.

7.0 Unit 1 Operator Manual Actions

Unit 1 operator manual actions (OMAs) were originally identified in calculation WBN-OSG4-165 and were evaluated and approved in SSER 18 (Part II, Reference 4.1.40). The Unit 1 OMA's are presently defined in calculation EDQ00099920090016 (Part II, Reference 4.2.1).

7.1 Manual Actions Performed in Location of the Fire

Manual operator actions in the location of the fire fall into two categories: (1) tripping circuit breakers to remove power from motors or motor operated valves (MOVs), and (2) manual valve manipulations to be performed after the fire is extinguished. The first category of manual actions need not be taken in the location of the fire. For the second category of manual actions, access to the location of the fire is necessary for performance of manual actions. Each is discussed separately below.

7.1.1 Tripping Breakers to Remove Power from Motors or MOVs

Actions to remove power from motors or MOVs are taken either in the location of the fire if the breaker is accessible, or outside of the location of the fire and electrically upstream at the board feeder breakers. Where circuit breakers must be opened to remove power from motors or MOVs, fire safe shutdown analysis requires that the board feeder breakers be tripped if the board itself is inaccessible due to the fire. (It is also normal practice for the fire Incident Commander to de-energize electrical power boards upstream from the energized electrical equipment involved in the fire.) The board feeder breakers are located outside of the area of the fire. As such, this type of manual action is not performed in the location of the fire.

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7.1.2 Manual Valve Manipulations in Location of Fire

Actions to manually manipulate valve positions are performed in the location of the fire when the valve is located in the same room as the fire. A few rooms must be entered for valve position manipulations approximately 1-hour after reactor trip. The following is a more detailed discussion of the manual actions, time to perform them, and fire hazards in the area.

7.1.3 Identification of Manual Actions: Performance, Completion and Access Times

7.1.3.1 Elevation 692

For a fire in Room 692.0-A7, the handwheel opening of RWST valves 1-LCV-62-135-A or -136-B must be performed after the fire is extinguished in the room. The valves are located near the wall just inside the room. The manual action in the room has a performance time of 10 minutes and must be completed within 75 minutes after reactor trip. Access to the room must take place within 65 minutes after reactor trip.

A fire in Room 692.0-A10 requires failing open 1-FCV-62-93 by isolating the air supply and bleeding the air off the valve. Seal injection flow is established using either 1-ISV-62-549 or 550 which are located in Room 713.0-A1A. The actions on 1-FCV-62-93 are taken in the room after the fire is extinguished. The same manual actions are required for a fire in 692.0-A1A occurring just outside the access door to 692.0-A10. The manual actions in 692.0-A10 have a performance time of 10 minutes and must be completed within 75 minutes after reactor trip. Access to 692.0-A 10 must take place within 65 minutes after reactor trip for a fire occurring in, or just outside the door to the room.

7.1.3.2 Elevation 713.0

For a fire in Room 713.0-A7, the handwheel closure of VCT valve 1-LCV-62-132-A must be performed after the fire is extinguished in the room. The valve is located in the entrance labyrinth to the room which leads to, but is segregated from, the volume control tank by a concrete wall and wire mesh door. The manual action in the room has a performance time of 10 minutes and must be completed within 70 minutes after reactor trip. Access to the room must take place 60 minutes after reactor trip.

7.2 Justification for Room Access Time

Where manual valve manipulations are necessary, the combustible loading will not damage the valve(s) or valve stem(s). Automatic detection and suppression, rapid fire brigade response, and the heat sink provided by the process piping fluid, provide a high degree of assurance that the valve(s) can be manually operated after the fire is extinguished. The bases for allowing access into the rooms in the identified time frames and the ability to perform the requisite manual actions are described in more detail below.

7.2.1 Combustible Materials, Combustible Loads, and Fire Severities

Room 692.0-A7, the U1 Penetration Room, has a combustible load that results in a fire classification of insignificant. The majority of the combustible loading is the lube oil and grease associated with the fans, pumps and valves in the room. Room 692.0-A7 is identified as a CCZ

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in order to control potential storage of transient combustible materials in the room. The valves are located just inside the room near the door to room 692.0-A1A and are next to the wall with easy access.

Room 692.0-A10, the 1 B-B Centrifugal Charging Pump room, has a combustible load that results in an equivalent fire classification of low. Over 95% of the combustible load is due to lube oil in the pump. Access to 692.0-A10 is from Room 692.0-A1 (Auxiliary Building Corridor) which has a combustible load that results in an equivalent fire classification of moderate. Over 90% of the combustible load is due to insulation on cables in cable trays.

Room 713.0-A7 is the Unit 1 Volume Control Tank room. The combustible material in the VCT portion of the room is associated with the maximum quantity of hydrogen which can be in the VCT, assuming that the tank is completely filled with hydrogen and pressurized to 75 psig. In the event of a leak in the hydrogen piping or the VCT itself in excess of 50 scfm, flow of hydrogen is automatically isolated by an excess flow device. Leaks less than 50 scfm are dispersed by the Auxiliary Building Ventilation system, precluding the danger of an explosion. The labyrinth contains the balance of combustible materials in the room (small amount of lube oil associated with the two valves, insulation on cables in a small junction box and three control boxes, and small amount of plastics associated with seven light covers and one emergency lighting unit). Even considering the total quantity of hydrogen that can be in the VCT, the combustible loading results in an equivalent fire classification of insignificant. In addition, Room 713.0-A7 is identified as a combustible control zone (CCZ), which prohibits storage of transient combustible material unless compensatory measures are established.

The fire severity in the rooms where manual actions may be necessary, especially considering the nature and location of combustible materials in each room, would not preclude the ability to enter the rooms within the identified times. Room 713.0-A7 is a normally locked room, thereby further limiting the potential for introduction of transient combustible materials in the room. The residual heat of a postulated fire in this room should not impact operator actions in the room. The possibility exists, however, that residual smoke from the postulated fire may require the Operator to wear a self contained breathing apparatus (SCBA); therefore, SCBAs are available for use if needed.

7.2.2 Automatic Detection and Suppression Capabilities

Each room is provided with an automatic detection system ensuring prompt notification of the fire brigade to initiate manual firefighting activities if necessary. Each of the rooms is also provided with an automatic suppression system. The only portion of Room 713.0-A7 that is not protected by automatic suppression is the entrance labyrinth.

The automatic detection and suppression systems in the identified room are provided to minimize postulated fire events. Prompt notification of the fire brigade upon detection of the fire will result in initiation of manual firefighting and smoke removal activities. Firefighting and smoke removal activities, when combined with the positive impact of automatic suppression, provide reasonable assurance that operators can enter the rooms within the identified times after reactor trip.

7.2.3 Potential Fire Damage to Valve Stems and Handwheels

The valve stems and handwheels that must be manipulated in the room in which the fire occurs are of steel construction. Aluminum is not used in the construction of the subject valve stems

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and handwheels. Given the short duration of postulated fires in the rooms of concern, it is reasonable to conclude that the valve stems and handwheels will not be damaged by the fire and will remain functional. The combustible materials in each room would not produce a high enough heat flux for a sufficient amount of time to result in damage to the valves stems or handwheels

7.2.4 Summary and Conclusions

The combustible loading, along with its location and configuration in each room, will not result in a fire of sufficient energy and duration to either prevent operator access in the required time periods or result in damage to valve stems and handwheels that must be manually operated. Automatic detection is provided in each of the rooms to detect postulated fires in the incipient stages, thereby ensuring notification of the fire brigade. The automatic suppression system installations will act to minimize postulated fire events.

8.0 Feasibility and Reliability Evaluations for Unit 2 Operator Manual Actions

8.1 Background

The WBN Appendix R safe shutdown compliance strategy requires local manual actions to accomplish various safe shutdown functions and to prevent or terminate spurious equipment operation having the potential to interfere with safe shutdown.

Operator manual actions (OMAs) that are required for compliance with 10CFR50 Appendix R at Watts Bar Nuclear (WBN) Unit 2 must be assessed for feasibility and reliability. The assumptions and methodology used to assure the action is feasible and reliable are consistent with the requirements of 10CFR50 Appendix R, Section III.G.2 and the guidance of NUREG-1852. However, the use of feasible and reliable manual actions alone does not address all levels of defense-in-depth. Therefore, additional considerations that are addressed in Regulatory Guide 1.189 such as fire detection and automatic suppression are also considered to ensure that adequate defense-in-depth is maintained. For additional detail regarding codes and standards applicable to fire detection and automatic suppression systems, refer to Part II, Section 4.4.

8.2 Generic Evaluation Information

NUREG-1852 indicates that a manual action used as a compliance strategy is considered acceptable if eleven conditions are met. These conditions are given below with a summary of the NUREG guidance and, where applicable, additional information regarding WBN application of the guidance.

An evaluation (Part II, Reference 4.2.16) has been performed as part of the feasibility and reliability walkdown for each OMA of the environmental conditions which will be encountered during the performance of the OMA. The evaluation considered: 1) environmental effects generated by the fire such as smoke/toxic gas, heat (thermal) and fire generated noise, 2) the environmental effects resulting from the fire fighting effort such as water spray, toxic gas (carbon dioxide - CO₂), equipment and/or transient path blockages due to fire hoses or other fire fighting equipment and noise from fire alarms and 3) normal environmental effects such as room temperature and radiation. The evaluation considered smoke migration paths, proximity to the fire for thermal effects and water spray resulting from sprinkler systems as well as fire hoses. The performance of the OMAs do not require special contamination related clothing and

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do not enter areas with high normal temperatures. The firefighting efforts, through the coordination between the fire brigade, the Incident Commander, and the Operations staff, will not introduce undesired effects of smoke migration or create blockages which would impede NAUO transit or equipment manipulations. Toxic gas from the carbon dioxide fire suppression systems will not impact the OMAs since there are no areas impacted by CO₂ that also has an OMA. For fires assumed to occur in the room in which the OMA is performed, the fire must be extinguished and smoke removal efforts begun prior to NAUO entry. The evaluation concluded that the NAUO performance times will not be adversely effected by the environmental effects present during the performance of the OMA

For some OMAs which are required for safe shutdown, Section 8.3 provides additional information regarding “important to safe shutdown” aspects of the OMA. This information is included to ensure consistency between the FPR and the supporting TVA calculations and does not require NRC review. The information is included in or denoted by [*brackets and italics*]. For these OMAs, the limiting (i.e., shorter) time appears in Part VI; however, the evaluations in Section 8.3 address only the required for safe shutdown considerations and time requirements that require NRC review. For example, one OMA controls auxiliary feedwater in order to: 1) prevent a spurious safety injection due to overcooling the steam generators (which is an important to safe shutdown aspect) and 2) prevent a steam generator overfill condition (which is a required for safe shutdown aspect). The sections below evaluate this type of OMA against the required for safe shutdown time requirement from Part II, Reference 4.2.1.

Additional information specific to each OMA is provided below in Sections 8.3 and 8.4.

a. Adequate Time Available to Perform Actions

This criterion addresses the need for an analysis to determine that there is adequate time available for the operator to perform the manual actions necessary to achieve and maintain hot shutdown after a single fire. The analysis should determine that the time available is long enough to allow the action to be diagnosed and executed. The adequacy of time and manpower must consider all of the operator manual actions that must be performed for a room, and the potential for concurrent performance of these actions.

b. Adequate Time Available to Ensure Reliability

This criterion addresses uncertainties to ensure that the OMA can be dependably and repeatedly performed within the available time. Per the guidance of NUREG-1852, Appendix B, an OMA is considered reliable provided that a 100% time margin remains when considering fire indicated time, diagnosis time, and OMA implementation, within the OMA event timeline. This margin allows for a high confidence of a low probability of failure for local operator manual actions in response to a fire. It is implied by these criteria that NUREG-1852 feasibility and reliability criteria for the actions are addressed and sound demonstrations are performed.

The time margin is calculated using the analyzed times from the OMA calculation (Part II, Reference 4.2.1) and also with the actual demonstrated (validated) performance times for each OMA. A time margin greater than 500% is not meaningful for actions with short completion times; therefore, the maximum time margin reported for WBN OMAs given in Section 8.3 of this Part is 500%.

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c. Environmental Factors

Environmental factors are those that could negatively impact the ability to perform manual actions, including radiation, lighting, temperature, humidity (caused, for instance, by water from a sprinkler operation), smoke, toxic gases, firefighting activities, and noise. Inaccessible areas are defined and listed in Part II, Section 5.0.

WBN emergency lighting units with at least an 8-hour battery power supply are provided in areas needed for operation of safe shutdown equipment and in access and egress routes (except as described in Section 2.7 of this Part). The operators also carry a portable lantern to perform a manual action in an area that has experienced a fire.

d. Equipment Functionality and Accessibility

This criterion addresses the need to ensure that the equipment that is necessary to enable implementation of an operator manual action to achieve and maintain post fire hot shutdown is accessible, available, and not damaged or otherwise adversely affected by the fire and its effects such as heat, smoke, water, combustible products, and spurious actuation. Per NUREG-1852:

- i The component to be operated is physically accessible (e.g., the component is within reach without a ladder, unless the ladder is staged).
- ii The manual action can be performed by the operator(s), e.g., opening an MOV is not feasible if the valve has no handwheel operator.
- iii Actions requiring entry into or travel through the affected Analysis Volume have been evaluated successfully based on factors such as combustible loading, location of combustibles, availability of detection and suppression equipment, and the physical properties of the component. Typically, entry into or through the affected room is acceptable after 1 hour without further evaluation.

Abnormal Operating Procedure 0-AOI-30.2, "Fire Safe Shutdown" (Part II, Reference 4.2.60) documents the credited manual action(s) that must take place given an Appendix R fire in any room of the plant. On an operator-by-operator basis, procedure 0-AOI-30.2 documents the locations and sequence in which operator manual actions must be performed. The equipment accessibility criteria, given above, are also addressed.

e. Available Indications

Available equipment needs to include indications relevant to the desired operator manual actions. As necessary equipment, indications should also meet functionality and accessibility criterion.

As described above in item d, procedure 0-AOI-30.2 documents the locations and sequence in which manual actions must be performed. Available indications are also addressed in these procedures.

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f. Communications

There are several means of communication available to the Operations staff. They include telephones, code alarm and paging, sound powered phones, and two-way radios. The in-plant radio signal will be the primary means of communication for performing manual actions and for the fire brigade use.

The trunked in-plant radio system consists of multiple base radios, portable radios (including tri-band), and redundant in-plant distributed antenna systems. To ensure communication availability, one of the radios and associated power cabling is located in a separate fire zone or is separated by a minimum of 20 feet with no intervening combustibles. The base radios are located at floor elevation 772.0 of the Auxiliary Building within the 480V Board Room 2A and the 480V Transformer Room 2A. The radios (multiple frequencies) are available for use by the fire brigade and for operations personnel for performing safe shutdown manual actions. The radio equipment features redundant diesel and battery backed power supplies. Antennas for the radios are located on the Aux. Building exhaust stack (above elevation 814.75) to transmit and receive the radio signal. In addition to the antennas on the exhaust stack, the internal distributed antenna systems (Radiax) are located in the control and turbine buildings and two widely separated trunk lines feed the radio signal to redundant distributed antenna systems located throughout the auxiliary building.

In some rooms, two-way radio communications may not be adequate in the room; however, adequate communications are available immediately outside the room. The action to be performed does not require that communication be established at the device (e.g., open/close valve or breaker).

g. Portable Equipment

Portable equipment necessary to successfully accomplish operator manual actions may include tools such as keys to open locked areas or manipulate locked controls, flashlights, ladders to reach high places, torque devices to turn valve handwheels, and electrical breaker rackout tools. This equipment should be readily available and its location should be known and constant. This equipment should be in working order (functional) and access to this equipment should be unimpeded so that it will not delay the operator manual actions. As described above, procedure 0-AOI-30.2 documents the locations and sequence in which operator manual actions must be performed. Necessary portable equipment is also addressed in these procedures.

h. Personnel Protection Equipment

Equipment needed to successfully implement operator manual actions may also include personnel protection equipment such as protective clothing, gloves, and self-contained breathing apparatus (SCBA). Access to this equipment should be unimpeded. It should also be in working order so that it will not delay the operator manual actions.

As described above, procedure 0-AOI-30.2 documents the locations and sequence in which operator manual actions must be performed. Necessary protective equipment is addressed in these procedures. Per general employee training descriptions, WBN Auxiliary Unit Operators (AUOs) and others who are expected to use an SCBA are trained annually in the proper use of an SCBA. This Personnel Protection Equipment (PPE) is readily available and is picked up as the AUOs report to the MCR for their assignments.

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i. Procedures and Training

Procedures governing manual actions need to be written and maintained. They should cover all of the manual actions and the need for each operator which may perform the actions to achieve and maintain hot shutdown.

WBN procedures and training are in place for implementation of operator manual actions. Abnormal Operating Procedure 0-AOI-30.2, "Fire Safe Shutdown" documents the necessary manual action(s) that must take place given an Appendix R fire in any room of the plant. On an operator-by-operator basis, 0-AOI-30.2 documents the locations and sequence in which manual actions must be performed.

Fire Safe Shutdown training is provided for operators every 4 years at Watts Bar Nuclear. This classroom training (3-OT-AOI3000, 0-AOI-30.1, "Plant Fires" and 0-AOI-30.2, "Fire Safe Shutdown") includes licensed and non-licensed operators.

j. Staffing

The intent of the staffing criterion is to ensure that an adequate number of qualified personnel are available so that hot shutdown conditions can be achieved and maintained in the event of a fire. Individuals who might be needed to perform the operator manual actions during the evolution of the fire scenario should not have collateral duties such as firefighting, security duties, or control room operation.

The minimum WBN staffing level to perform the manual actions for the worst case Appendix R fire is provided in Part V, Section 2.2. Operator manual actions are shown to be achievable within the analyzed time available and using the minimum staffing levels. The staffing evaluations provided for rooms addressed in Section 8.3 of this Part are based on validations of 0-AOI-30.2 per 0-TI-2018 (Part II, Reference 4.2.61). They demonstrate the adequacy of staffing and include manual actions performed within 120 minutes that are either required or important for fire safe shutdown.

Note that the fire brigade is a dedicated group that does not include the Shift Manager or the other members of the minimum shift crew necessary for safe shutdown of the unit, or any personnel needed for other essential functions during a fire emergency.

k. Demonstrations

This criterion provides a degree of overall assurance that the operator manual actions can be performed in the analyzed time available, i.e., the actions are feasible. The desired operator manual actions are shown to be achievable within the constraints, including the analyzed time available, using the minimum staffing levels, with the expected functional equipment, under the expected environmental conditions (to the extent that they can be reasonably simulated), using the procedures and training provided for the manual actions.

Demonstrations of manual actions at WBN are performed to actual conditions to the extent possible. Plant walkdowns were conducted using the dual unit 0-AOI 30.2 procedures to ensure the proper sequence operator actions, verify the amount of time needed to accomplish the manual action, and to identify the minimum number of operators necessary to support manual actions given a fire in any plant location. During the demonstrations AUOs pick up their PPE (including SCBA) as they go to the MCR for their assignments just as they would in an actual

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fire. Since PPE is included in the demonstration, additional PPE time allowance is not added in the performance time evaluation. Future walkdowns must demonstrate acceptable margins but the original validation times need not be demonstrated. The plant walkdowns are conducted for those manual actions that must be performed within the first 2-hours following reactor trip as a result of the Appendix R fire. The 2-hour time frame is selected to coincide with predicted minimal operator staffing prior to availability of additional personnel for manual actions as a result of plant callback procedure.

8.3 Fire Area Evaluations

8.3.1 Fire Zone 692.0-A1B (Auxiliary Building Corridor)

8.3.1.1 Fire Prevention

The Auxiliary Building Corridor, 692.0-A1 has been subdivided into major volumes 692.0-A1A, 692.0-A1B and 692.0-A1C. The walls, floor, ceiling and penetration seals, fire doors, and dampers separating 692.0-A1B from other fire areas have a fire resistance rating identified in Part VI, Section 3. The entire Auxiliary Building Corridor on elevation 692.0 has a floor area of 11,903 ft² and a nominal ceiling height of 19-feet.

The presence of intervening combustibles (insulation on cables in trays) in 692.0-A1 is justified and documented in Section 2.4 of this Part. The openings in the ceiling of room 692.0-A1B (Stairwell No. 5 and elevator door opening) are justified and documented in Section 2.6 of this Part. There are two round spiral welded HVAC ducts that penetrates the floor of 692.0-A1B from 676.0-A1. These combine into one duct that continues through the ceiling of 692.0-A1B onto elevation 713. The penetrations are not provided with fire dampers. This duct work is part of the Emergency Gas Treatment System (EGTS). Spiral welded pipe is treated like a pipe and is provided with fire rated penetration seals between the pipe and the sleeve. Justification for treating round spiral welded HVAC ducts as pipe is documented in Section 2.6 of this Part.

The combustible loading of the Auxiliary Building Corridor, all volumes of 692.0-A1 results in a fire severity classification of Moderate. The combustible material in the room consists of lube oil associated with pumps and valves, plastics associated with electrical panels and boxes, insulating oil associated with transformers; insulation on cables routed in cable trays and anticipated amounts of radwaste trash and laundry. Over 97% of the combustibles in this room come from insulation on cable trays. The assumed ignition sources in this room are transformers, electrical switchgear and panels, radiation monitors, and pumps. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures needed when transient combustibles or ignition sources are in a room.

8.3.1.2 Detection, Control, and Extinguishment

The Auxiliary Building Corridor is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The corridor is also provided with an installed automatic sprinkler system. The tunnel to the RWST on the far east side of the room is not provided with detection or suppression. This is justified and documented in Section 3.1.1 of this Part.

Any fire that starts in area 692.0-A1B is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing

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any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available in 692.0-A1A, 692.0-A1C, and 713.0-A1B for fire brigade use. This room is also provided with enhanced sprinkler coverage below obstructions as documented in Attachment 1 of this Part. With fire detection, an enhanced automatic suppression system, and fire resistance barriers, a fire in this area is either extinguished or contained until the fire brigade responds.

8.3.1.3 OMA 1159 and 1160 – Isolate Normal Charging/Safety Injection Flowpath

These OMAs are necessary if a fire in the immediate vicinity of 2-PNL-276-L112, in 692.0-A1B, damages instrumentation that could disable the pneumatic stop that ensures a minimum flow through 2-FCV-62-93 for Reactor Coolant Pump seal cooling. Thermal barrier cooling would provide this capability for up to 75 minutes before OMAs 1159 and 1160 have to be performed. For OMAs 1159 and 1160, an operator enters room 692.0-A23 to close valve, 2-ISV-62-527, and open valve, 2-ISV-62-526, respectively, using handwheels. It is assumed that the operator may be delayed access to room 692.0-A23 for up to 60 minutes due to a fire located in 692.0-A1B near Panel 2-PNL-276-L112 which will leave 15 minutes to perform the action. The panel does not constitute a credible ignition source and is not located within the fire damage Zone of Influence of any credible ignition source in the room. Given the provisions for fire detection and suppression, as well as the lack of credible ignition sources in the vicinity of this panel, there are no credible fires in 692.0-A1B for which a manual action is necessary. The operator will be able to enter room 692.0-A23 in 60 minutes or less and has at least 15 minutes to perform the actions.

OMAs 1159 and 1160 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 75-minutes before the OMAs must be completed. The analyzed travel and performance time was estimated to be 15 minutes for these actions. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C-series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time and time to perform the action was 7 minutes 40 seconds; therefore, there is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the actions is 15 minutes. It is assumed the AUO will obtain a SCBA when originally mobilized and travel to a safe location near the room during the 60 minutes allowed for fire suppression activities. For a worst case condition the AUO will have 15 minutes to perform the action which takes 7 minutes 40 seconds to complete. This provides a margin of 7 minutes 20 seconds which is adequate time available to ensure the reliability of performing these actions.

c. Environmental Factors

Normal and Standby lighting for the access routes and at the location of these OMAs is assumed to be affected; therefore, 8-hour emergency battery pack lighting is provided. For that

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reason, there is adequate lighting to access the components and perform the necessary OMAs. In order to perform these OMAs, the operator will have to traverse the fire zone. There may be impediments associated with fire suppression or firefighting activities, such as smoke, noise and water; however, these impediments would not prevent the operator from performing these OMAs. There are no other adverse environmental factors, such as radiation, associated with this OMA.

d. Equipment Functionality and Accessibility

The postulated fire in 692.0-A1B does not impact the functionality or prevent the accessibility of the components needed to be manually operated in room 692.0-A23. The fire is contained within room 692.0-A1.

e. Available Indications

Available local indications for ensuring valve position and MCR indications for control of CVCS charging/seal injection flow is adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary for these actions.

h. Personnel Protection Equipment

It may be necessary for the AUO to don an SCBA. The AUOs are trained in the use of SCBAs which are readily available for fire emergencies.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.1.4 Staffing Requirements for a Fire in 692.0-A1B

For a fire in 692.0-A1B, seven Unit 2 actions are performed by four AUOs and four Unit 1 actions are performed by two AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 692.0-A1B.

8.3.2 Room 692.0-A22 (Charging Pump 2B-B Room)

8.3.2.1 Fire Prevention

The Charging Pump 2B-B Room, 692.0-A22, is bounded by 2-hour fire rated regulatory fire barriers. Openings in these barriers are provided with fire doors, dampers and penetration seals that have a rating identified in Part VI, Section 3. The room has a floor area of 412 ft² and

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a nominal ceiling height of 19 feet. The combustible loading in room 692.0-A22 results in a fire severity classification of Low. Lube oil for Charging Pump 2B-B is 86% of the total combustible material in the room. The remaining 14% is from various plastic associated with emergency lighting and light covers, as well as assumed Rad Waste trash and laundry. The charging pump is the only credible ignition source in the room. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.2.2 Detection, Control, and Extinguishment

The Charging Pump 2B-B Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). An automatic sprinkler system is provided for the room, except in the entrance labyrinth (Section 3.1 of this Part provides justification and documentation of acceptance of the lack of suppression in the labyrinth). However, given that this room is a separate fire area with low combustible loading, the fire barrier ratings of the room, and the lack of redundant safe shutdown equipment in the room, a fire in this area/room will not endanger other safety-related equipment required for safe plant shutdown.

Any fire that starts in this area is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic, preaction suppression system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrived. A standpipe and hose station system is also available in the adjacent room (692.0-A1) for fire brigade use. Even if the postulated fire starts and is not extinguished, the fire rating of the room's barriers would contain the fire and not allow it to propagate to adjacent rooms. Therefore, a fire in this room is contained within the room and does not present an exposure hazard to any adjacent rooms.

8.3.2.3 OMAs 1159 and 1160 – Isolate Normal Charging/Safety Injection Flowpath

The Charging Header Flow Control Valve (2-FCV-62-93) is in room 692.0-A22 and could potentially be damaged by a fire in this room, inhibiting the ability to maintain minimum flow through the valve. The fire safe shutdown requirement is to isolate normal charging/safety injection flow and provide a RCP seal injection flow path within 75 minutes by operation of valves 2-ISV-62-526 and 2-ISV-62-527, located in room 692.0-A23.

OMAs 1159 and 1160 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 75-minutes before the OMAs must be completed. The analyzed travel and performance time was estimated to be 15 minutes for these actions. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time and time to perform the action was 9 minutes 58 seconds; therefore, there is adequate time to perform the action.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the actions (15 minutes) provides 60 minutes (400%) margin and the demonstrated validation (9 minutes 58 seconds) provides 65minutes 02 seconds (>500%) margin. There is adequate time available to ensure reliability of performing these actions.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of these OMA's. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access room 692.0-A23 and perform the necessary OMA's. The room with the postulated fire, room 692.0-A22, is adjacent to the room where the OMA's are performed, room 692.0-A23. The access to room 692.0-A23 is via the 692.0-A1B corridor which could potentially be affected by the fire or firefighting activities. There may be smoke from room 692.0-A22, as well as fire hoses and water in the access path. However, these factors would not prevent the performance of the OMA's.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of these OMA's is contained within room 692.0-A22. Though the fire is adjacent to the room where the OMA's are being performed, it would not affect the functionality and accessibility of the equipment needed to perform these OMA's.

e. Available Indications

Available local indications for ensuring valve position and MCR indications for control of CVCS charging/seal injection flow are adequate.

f. Communications

Adequate communications between the location of the OMA's and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for these OMA's.

h. Personnel Protection Equipment

This action is to be performed in a room near the fire location; therefore, the AUO may be required to use the SCBA, which was obtained when originally mobilized.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.2.4 Staffing Requirements for a Fire in Room 692.0-A22

For a fire in 692.0-A22, five Unit 2 actions are performed by three AUOs and three Unit 1 actions are performed by two AUOs for a total of five AUOs. The staffing of eight AUOs is more than sufficient to accomplish all of the needed Unit 1 and Unit 2 manual actions, should there be a fire in room 692.0-A22.

8.3.3 Room 692.0-A25 (Unit 2 Penetration Room)

8.3.3.1 Fire Prevention

The Unit 2 Penetration Room, 692.0-A25 is bounded by 2-hour regulatory fire barriers constructed of reinforced concrete. The openings through these barriers are protected with doors, dampers and penetration seals that have a rating identified in Part VI, Section 3. Room 692.0-A25 has a floor area of 2,003 ft² and a nominal ceiling height of 19-feet. The combustibles in 692.0-A25 consist of lube oil and grease associated with fans, pumps and valves and plastics associated with electrical panels, boxes and lights. The combustible loading in the room results in a fire severity classification of insignificant.

The potential ignition sources consist of four small recirculating chilled water pumps and two large valves. The chilled water pumps contain less than ½-gallon of lubricants each and the valves contain approximately 5-½ gallons of lubricant each. None of these are considered credible ignition sources and are not in the immediate vicinity of a significant quantity of combustibles. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.3.2 Detection, Control and Extinguishment

The Unit 2 Penetration Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available from the adjacent room (692.0-A1) for fire brigade use.

8.3.3.3 OMA 1065 – Establish RWST Suction

The fire safe shutdown requirement for a fire in 692.0-A25 is to manually open 2-LCV-62-136-B (RWST to Charging Pumps Valve) to establish RWST suction. A fire that is contained within room 692.0-A25 could potentially damage cables (2V2777B, 2M166, 2M162, 2V2767A, 2V2100B, 2V2101B, 2V2102B, 2V1202B, 2V1203A, 2V2070A, 2V2071A, and 2V2072A) requiring implementation of this OMA. The operator must open breaker 2-BKR-62-136-B on 2-MCC-213-B1-B to allow operation of a handwheel. This OMA is completed within 75 minutes and performed in room 772.0-A15.

OMA 1065 is both feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The operator has 75-minutes before the OMA must be completed. The analyzed time estimated to travel and complete the action is 5 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time and time to perform the action was 2 minutes 56 seconds; therefore, there is adequate time to perform the action. A fire in 692.0-A25 would not affect the performance of this OMA.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (5 minutes) provides 70 minutes (>500%) margin and the demonstrated validation (2 minutes 56 seconds) provides 72 minutes 4 seconds (>500%) margin which is adequate time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the needed OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

By comparison to similar Unit 1 actions (OMA 450), equipment necessary for the manual action is functional and accessible. The fire that results in the fire-induced damage requiring implementation of this OMA is contained in room 692.0-A25.

e. Available Indications

Available local indications for verifying the breaker is open are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed to complete this action.

h. Personnel Protection Equipment

Based on the location of the fire in relation to the areas where the OMA is performed, no personnel protection equipment is needed as part of the OMA.

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i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.3.4 OMA 1066 – Establish RWST Suction

The fire safe shutdown requirement for a fire in 692.0-A25 is to manually open 2-LCV-62-136-B (RWST to Charging Pumps Valve) to establish RWST suction. A fire that is contained within room 692.0-A25 could potentially damage cables (2V2777B, 2M166, 2M162, 2V2767A, 2V2100B, 2V2101B, 2V2102B, 2V1202B, 2V1203A, 2V2070A, 2V2071A, and 2V2072A) requiring implementation of these OMAs. The operator is to open the valve 2-LCV-62-136-B using the local handwheel. This action is performed in conjunction with OMA 1065, opening a breaker to allow operation of the handwheel. This OMA must be completed in 75 minutes.

It is assumed the AUO will obtain a SCBA when originally mobilized and travel to a safe location near the room during the 60 minutes allowed for fire suppression activities. For a worst case condition the AUO will have 15 minutes to perform the action which takes 3 minutes 3 seconds to complete. The in situ combustible loading in the room is insignificant and is dispersed throughout the room. The room is provided with automatic suppression and detection and is a combustible controlled area. There are no credible ignition sources or quantities of combustible material near the valve; therefore, it is concluded that access to and manipulation of the valve will not be delayed for 60 minutes.

OMA 1066 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 75-minutes before the OMA must be completed. The analyzed time estimated to travel and complete the action is 15 minutes. This action is to be performed in the same room as the fire, but since the combustible loading is insignificant, it is expected that the fire will be extinguished in less than an hour, allowing the operator to perform the OMA within the 75 minute time limit. The demonstrated time to complete the action is 3 minutes 3 seconds. Assuming a 60 minute delay, 15 minutes is left to complete the action which results in a margin of 11 minutes 57 seconds. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

It is assumed the AUO will access room 692.0-A25 within 60 minutes (time allowed for fire suppression activities in 692.0-A25) which leaves 15 minutes to perform the actions that take 3 minutes 3 seconds to complete. This provides a margin of 11 minutes 57 seconds which is adequate time available to ensure the reliability of performing these actions.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. It is highly unlikely that a credible fire in the room would affect the normal or standby lighting; however, if they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. The AUO would also be expected to carry a portable lantern, which is readily available. In order to perform this OMA, the operator will have to enter the fire zone and there may be impediments

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associated with fire suppression or firefighting activities, such as smoke, water, and the fire brigade. However, these impediments would not prevent the operator from performing this OMA. There are no other adverse environmental factors, such as radiation, associated with this OMA.

d. Equipment Functionality and Accessibility

The combustible loading in room 692.0-A25 is insignificant; the valve is not in the immediate vicinity of a credible ignition source or significant quantity of combustible material and is located just inside the door. Therefore, the valve will remain functional and is easily accessible.

e. Available Indications

Available local indications and MCR indications for verifying RWST suction are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

The AUO is expected to carry a portable lantern, which is readily available.

h. Personnel Protection Equipment

This action is to be performed in the room after the fire has been extinguished; therefore, the AUO may be required to use the SCBA, which was obtained when originally mobilized.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series - Part II, Reference 4.2.60) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.3.5 Staffing Requirements for a Fire in Room 692.0-A25

For a fire in 692.0-A25, five Unit 2 actions are performed by four AUOs and three Unit 1 actions are performed by two AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the dual unit manual actions, should there be a fire in room 692.0-A25.

8.3.4 Fire Zone 713.0-A1A (Auxiliary Building General Area)

8.3.4.1 Fire Prevention

The Auxiliary Building Corridor (713.0-A1) is a large area constructed of reinforced concrete which is subdivided into smaller areas. The walls and penetration seals ceiling, floor, door, and fire dampers of room 713.0-A1A have a fire resistance rating identified in Part VI, Section 3

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The presence of intervening combustibles (insulation on cables in trays) in 713.0-A1A are compensated for by an enhanced automatic preaction sprinkler system and is documented and justified in Section 2.4 of this Part. The 713.0-A1A floor and ceiling slabs contains stairwell #6 that is not provided with fire rated closures. Draft stops and a water curtain are utilized in lieu of rated barriers as documented in Section 2.6.3.1 of this Part.

The Auxiliary Building Corridor, all portions of 713.0-A1, has a floor area of 17,693 ft² and a nominal ceiling height of 23-feet. The combustible loading of 713.0-A1 results in a fire severity classification of Moderately Severe. The combustible material in the room consists of lube oil in the pumps, motors and valves, plastics associated with electrical panels, boxes and lights, insulation on cables routed in cable trays and anticipated amounts of radwaste trash and laundry. Insulation on cables in trays accounts for approximately 98% of the combustible loading in 713.0-A1. The assumed ignition sources in this room are transformers and motor control centers (MCCs). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.4.2 Detection, Control and Extinguishment

The Auxiliary Building Corridor is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). A fire is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic sprinkler system provided for the room activates, and delay the spread of the fire until the fire brigade arrives. The suppression system in this area does not extend over the boric acid equipment; however, the area is designated as a Combustible Control Zone (CCZ). In addition, the ceiling over this area is level and relatively unobstructed; therefore, detection is reliable. The sprinklers in the immediate vicinity of this area control the spread of the fire until the fire brigade responds. A standpipe and hose station system is also available in the room for fire brigade use.

8.3.4.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 713.0-A1A could damage the Auxiliary and Control Air Header B (ACAS-ENDUSER-B, 1-PCV-3-132 and 1-L-222B). Damage to this valve or panel would prevent the ability to modulate the power relief valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when necessary. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is implemented by an OMA (SG PORV Nitrogen Station panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.4.4 OMA 1023 – Operating Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 713.0-A1A could potentially damage the Auxiliary and Control Air Header A (ACAS-ENDUSER-A, 1-PCV-3-122 and 1-L-214B). Damage to this valve or panel would

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prevent the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when necessary. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is implemented by an OMA (SG PORV Nitrogen Station panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.4.5 Staffing Requirements for a Fire in Room 713.0-A1A

For a fire in 713.0-A1A, thirteen Unit 1 actions requiring five AUOs and five Unit 2 actions are performed by three AUOs for a total of eight AUOs. Therefore, a total of eight AUOs is sufficient to complete all of the OMAs for Unit 1 and Unit 2.

8.3.5 Fire Zone 713.0-A1B (Auxiliary Building General Area)

8.3.5.1 Fire Prevention

The Auxiliary Building Corridor (713.0-A1) is a very large area constructed of reinforced concrete. The area is subdivided into smaller overlapping fire zones as described in Part III, Section 10.3. The walls ceiling, floor, door, fire dampers, and penetration seals of Room 713.0-A1B have a fire resistance rating identified in Part VI, Section 3. The Auxiliary Building Corridor (713.0-A1) has a floor area of 17,693 ft² and a nominal ceiling height of 23-feet. The combustible loading of 713.0-A1 results in a fire severity classification of Moderately Severe.

The presence of intervening combustibles (insulation on cables in trays) in 713.0-A1B is documented and justified in Section 2.4 of this Part.

A water curtain is utilized in lieu of rated barriers for the Stair #5 opening in the floor and ceiling as documented in Section 2.6.3.1 of this Part. There is a 12 inch round spiral welded HVAC duct that penetrates the floor and ceiling of 713.0-A1B. The penetration is not provided with a fire damper. This duct is part of the Emergency Gas Treatment system. Spiral welded pipe is treated as normal pipe penetrations. Therefore they are provided with fire rated mechanical penetration seals and provide an adequate level of fire protection for these types of ducts as documented in Section 2.6.3.2.a of this Part.

The combustible material in the room consists of lube oil in the pumps, motors and valves, plastics associated with electrical panels, boxes and lights, insulation on cables routed in cable trays and anticipated amounts of radwaste trash and laundry. Approximately 90% of the combustibles in this room are from insulation on cables in trays.

The assumed ignition sources in this room are dry transformers and 480V Fuel & Waste Handling Board. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are required in a room.

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8.3.5.2 Detection, Control and Extinguishment

The Auxiliary Building Corridor (713.0-A1) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. The 713.0-A1 Corridor is provided with a standpipe and hose station system (3 standpipes with hose stations) for fire brigade use. Additional hose stations from the floors above and below are also available.

The suppression system in this area does not extend over the boric acid tank area; however, this area is designated as a CCZ. The engineering evaluation for less than full suppression capability in 713.0-A1 is documented in Section 3.1.1 of this Part.

8.3.5.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 713.0-A1B could potentially damage the Train A Auxiliary Control Air System (ACAS-ENDUSER-A, 2-PCV-3-122) or damage a control cable to the Steam Generator #1 Pressure Indicator Controller 2-PIC-1-6A, cable 2PM1372. Damage to 2-PCV-3-122 (AFW Pump Outlet Pressure Control Valve) in this room could result in a loss of air to operate the SG PORV (2-PCV-1-5). In addition, damage to cable 2PM1372 in this room could prevent the ability to modulate the pressure control valve to the SG PORV (2-PCV-1-5) when needed.

The fire safe shutdown requirement is to have an air source for 2-PCV-1-5 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #1 Steam Generator. Emergency air is provided for operation of the 2-PCV-1-5, which is implemented by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21. However, based on a review of the ignition source walkdown results, and the location of valve 2-PCV-3-122 and cable 2PM1372, there is no credible fire in 713.0-A1B that would necessitate this action. Cable 2PM1372 is outside the fire damage zone of influence created by credible ignition sources in room 713.0-A1 as identified by ignition source walkdown documentation. However, as additional defense-in-depth, the following is provided to show that the manual action is both feasible and reliable.

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis estimated a travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to travel and to perform the action was 12 minutes 19 seconds. The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within room 713.0-A1B and will not present an exposure hazard to the access paths from the Control Room to 480V Shutdown Board Room 2A (757.0-A21). The room in which this OMA is performed is unaffected by the fire. There is adequate time available to perform the OMA.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time of 12 minutes 19 seconds provides 47 minutes 41 seconds (>300%) margin. The time available for the AUO to perform the action is more than adequate to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Equipment for this manual action is functional and accessible. Also, the fire that results in the fire-induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, and will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.5.4 OMA 1023 – Operating Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 713.0-A1B could potentially damage the Train A Auxiliary Control Air System (ACAS-ENDUSER-A) or damage a control cable to the Steam Generator #3 Power Operated Relief Valve (2-PCV-1-23). Damage to 2-PCV-3-122 in this room could result in a loss of air to operate the SG PORV. In addition, damage to cable 2PM1617 in this room could prevent the ability to modulate the pressure control valve to the SG PORV when needed.

The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of 2-PCV-1-23, thereby establishing pressure control of the #3 Steam Generator. Emergency air is provided for operation of the 2-PCV-1-23, which is implemented by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) located in room 757.0-A24. However, based on a review of the ignition source walkdown results, and the location of valve 2-PCV-3-122 and cable 2PM1617, there is no credible fire in 713.0-A1B that would necessitate this action. Both valve 2-PCV-3-122 and cable 2PM1617 are outside the fire damage zone of influence created by the credible ignition sources in room 713.0-A1B. However, as additional defense-in-depth the following is provided to show that the manual action is both feasible and reliable.

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis estimated a travel and performance time of 8 minutes for this action. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to travel and to perform the action was 13 minutes 57 seconds; therefore, adequate time is available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated time to complete this action was 13 minutes 57 seconds which provides 46 minutes 3 seconds (>300%) margin.

c. Environmental Factors

The normal route to room 757.0-A24 from the MCR is through the 480V Shutdown Board Room 2A and this lighting would not be affected by a postulated fire in 713.0-A1B. Eight hour emergency battery pack lighting is available in 757.0-A24; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

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d. Equipment Functionality and Accessibility

The fire that results in the fire induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, and therefore will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.5.5 OMA 1615 and 1275 – Control Steam Supply to TDAFW Pump

A fire in room 713.0-A1B could potentially damage control cables or a power cable to the flow control valve (2-FCV-1-51-S) which prevents the ability to control steam supply to the Turbine Driven Auxiliary Feedwater Pump (2-TDAFW-14). The fire safe shutdown requirement is to manually control steam supply to the TDAFW within 20 minutes by operating transfer switches (2-XS-46-57 and 2-XS-46-57A) and hand switch (2-HS-46-56B) in AB rooms 692.0-A1B1 and 692.0-A26, respectively.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMAs 1615 and 1275 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The allowable time for obtaining control of the AFW supply to the steam generator is 20 minutes. OMAs 1615 and 1275 start and operate the TDAFW pump to supply water to the SG rather than to stop the flow. The analysis estimated a travel and performance time of 4 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series

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procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated times to travel and to perform these actions were 6 minutes 19 seconds. Therefore, total time to complete both OMAs (1615 and 1275) is 6 minutes 19 seconds which leaves a margin of 13 minutes 41 seconds; therefore, there is adequate time available to perform the actions.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (4-minutes) provides 16-minutes (400%) margin. The demonstrated validation (6 minutes 19 seconds) provides 13 minutes 41 seconds of margin (216%). The time available for the AUO to perform the action is more than adequate to ensure reliability.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMAs. Even if they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. The access through 713.0-A1 is through 713.0-A1A and the closest point of access is more than 40-feet from 713.0-A1B. The AUO should not need an SCBA, but it is readily available if needed. There are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire induced damage requiring implementation of these OMAs is on a separate elevation of the Auxiliary Building, and will not affect the functionality and accessibility of 2-FCV-1-51-S or 2-HS-46-56B, 2-XS-46-57 and -57A.

e. Available Indications

No local indications are needed.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed to complete this action.

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h. Personnel Protection Equipment

No special PPE is needed to access and complete this OMA.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current.

8.3.5.6 Staffing Requirements for a Fire in Room 713.0-A1B

For a fire in 713.0-A1B, 10 Unit 2 actions are performed by five AUOs and six Unit 1 actions are performed by two AUOs for a total of seven AUOs. This is within the minimum staffing for operating two units.

8.3.6 Room 713.0-A27 (Decontamination Room)

8.3.6.1 Fire Prevention

The Decontamination Room (713.0-A27) is constructed of reinforced concrete, walls, floor, ceiling, and openings in the fire rated barriers have fire resistant ratings identified in Part VI, Section 3. Room 713.0-A27 has a floor area of 487 ft² and a nominal ceiling height of 23-feet. The combustibles in 713.0-A27 consist of plastics associated with the electrical panels, equipment, light covers, trash, and temporary shielding blankets. The combustible loading in the room results in a fire severity classification of Low.

The small electrical panels, equipment, light covers, trash, and temporary shielding blankets in this room do not constitute credible ignition sources. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.6.2 Detection, Control, and Extinguishment

The Decontamination Room (713.0-A27) is provided with detection and automatic suppression. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, a standpipe and hose station system is available in adjacent room 713.0-A1 for fire brigade use.

8.3.6.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. This OMA is not necessary for 713.0-A27. In addition there are no credible ignition sources in this room. If the OMA is needed, the operator must operate 2-ISIV-1-406E2 at the N2 Operating Station for 2-PCV-1-30 (2-L-1000) to open/close 2-PCV-1-30. This OMA is to be completed within 60 minutes and is performed in room 757.0-A24.

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The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.6.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. This OMA is not necessary for 713.0-A27. In addition there are no credible ignition sources in this room. If the OMA is needed, the operator must operate 2-ISIV-1-407E2 at the N2 Operating Station for 2-PCV-1-23 (2-L-1000) to open/close 2-PCV-1-23. This OMA is to be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.6.5 Staffing Requirements for a Fire in Room 713.0-A27

For a fire in 713.0-A27, thirteen Unit 1 actions are performed by five AUOs and five Unit 2 actions are performed by three AUOs for a total of eight AUOs. This is the minimum staffing for operating two units.

8.3.7 2ANN – Unit 2 Annulus

8.3.7.1 Fire Prevention

The Unit 2 Annulus (2ANN) is separated from the Unit 2 Auxiliary Building by reinforced concrete that has a fire barrier rating of at least 3-hours and from Unit 2 Primary Containment by the steel shield wall. The penetrations through the concrete wall are provided with 3-hour rated penetration seals. The door penetrations are provided with 3-hour equivalent doors. The Annulus has a floor area of 1,901square feet.

The combustible loading of the Unit 2 Annulus results in a fire severity classification of Severe. The insulation on the cables routed in the cable trays constitutes 98% of the in situ fuel load. The remaining in situ fuel load is due to miscellaneous plastics associated with small electrical panels and junction boxes, insulating oil in small sump pumps, expansion joint material, HEPA filters and lighting fixtures. These materials are dispersed throughout the Annulus and none are credible ignition sources. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8. "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the area and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.7.2 Detection, Control, and Extinguishment

The Unit 2 Annulus is provided with automatic suppression and detection in the selected portions of the Annulus containing the cable trays to ensure that redundant fire safe shutdown components in the area are protected in accordance with Appendix R, section III.G.2.e. A fire that started in the Unit 2 Annulus would be detected by the detection system and personnel would be dispatched to investigate. Portable extinguishers are available for extinguishing any small credible fire. A large fire near the cable trays would activate the installed automatic

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suppression system. The suppression system would extinguish or limit the magnitude of the fire and prevent it from spreading outside the Annulus. Standpipe and hose stations are available throughout the Unit 2 Annulus for Fire Brigade use.

8.3.7.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 2ANN could damage control cable (2V4031B) to the Power Relief Solenoid Valve (2-PSV-1-24C-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 2ANN is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.7.4 Staffing Requirements for a Fire in Room 2ANN

For a fire in 2ANN, three Unit 2 actions are performed by three AUOs. Therefore, a total of eight AUOs are more than sufficient to complete all of the OMAs for Unit 2, should there be a fire in 2ANN.

8.3.8 Room 737.0-A1A (Auxiliary Building General Area)

8.3.8.1 Fire Prevention

Room 737.0-A1 of the Auxiliary Building is a large area that is subdivided into 737.0-A1A, 737.0-A1B, 737.0-A1CN, and 737.0-A1C. The Auxiliary Building Corridor (737.0-A1) is constructed of reinforced concrete walls, ceiling, and floor with a fire resistance rating identified in Part VI, Section 3. 737.0-A1A is separated from other parts of Room 737.0-A1 by an overlapping analysis as described in Part III, Section 10.3. Deviations are noted below. Room 737.0-A1 has a floor area of 23,144 ft² and a nominal ceiling height of 19-feet. The combustibles in 737.0-A1 consist of lube oil in the pumps, motors, and valves; plastic associated with electrical panels, boxes, and lights; and insulation on cables in trays. The majority (approximately 95%) of the combustibles is the insulation on the cables in trays. The combustible loading in the room results in a fire severity index of moderately severe.

The presence of intervening combustibles (insulation on cables in trays) in 737.0-A1 is justified and documented in Section 2.4 of this Part. The 737.0 floor slab has stairwell and hatch openings (various locations) that are not provided with fire rated closures. The justification for these openings, water curtain in lieu of rated barriers, is documented in Section 2.6 of this Part. There is a 12 inch round spiral welded HVAC duct that penetrates the floor of 737.0-A1B. The penetration is not provided with a fire damper.

This duct is part of the Emergency Gas Treatment system. Spiral welded pipe is treated like a pipe and is provided with fire rated seals between the pipe and the sleeve. Justification is documented in Section 2.6 of this Part.

There are a number of assumed ignition sources in 737.0-A1 including chillers, lighting boards and transformers, switchgear and a Motor Control Center (MCC). NPG-SPP-18.4.7, "Control of

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Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.8.2 Detection, Control, and Extinguishment

The Auxiliary Building Corridor, 737.0-A1, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available for fire brigade use. The lack of total area suppression and detection in the airlocks (AV-036, rooms 737.0-A4 and A11) is documented in Section 3.1.7 of this Part.

Even if the postulated fire starts and is not extinguished, the fire barriers contain the fire until the fire brigade responds.

8.3.8.3 OMA 1022 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A1A potentially damages control cables (2PV6756) to the Pressure Indicator Controller (2-PIC-1-31A), a control cable (2V7581B) to the Power Relief Solenoid Valve (2-PSV-1-31B-B), or directly damage an Auxiliary Control Air Header B (ACAS ENDUSER-B, 1-LCV-3-148, 1-LCV-3-148A, 1-LCV-3-171, 1-LCV-3-171A) which prevents the ability to modulate Power Relief Valve 2-PCV-1-30 to relieve pressure on the #4 Steam Generator when necessary. The fire safe shutdown requirement for a fire in this room is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

OMA 1022 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before this action must be completed. Analysis provided an estimated travel and performance time of 8 minutes for this action. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, (Part II, Reference 4.2.61). The demonstrated time for travel from the MCR to the nitrogen station and to perform the action was 19 minutes 19 seconds which leaves 40 minutes 41 seconds of margin. There is adequate time available to perform the actions.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated for travel to the room and to perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time was 19 minutes 19 seconds which provides 40 minutes 41 seconds (210%) margin. There is more than adequate time available to ensure reliability.

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c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone to perform the action in room 757.0-A24, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, on the opposite side of the building from the control location, and therefore will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Standard personnel protection equipment is used for the performance of this action.

i. Procedures and Training

The Appendix R operator manual actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.8.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A1A potentially damages a control cable (2PV6756) to the Pressure Indicator Controller (2-PIC-1-24A), a control cable (2PM1621) to the Power Relief Valve Modifier (2-PM-1-24), a control cable (2V7539A) to the Power Relief Solenoid Valve (2-PSV-1-24B-A), or damage control cable 2PL3786A or equipment supporting ACAS ENDUSER-A for the Auxiliary Control Air Compressor A (0-MTR-32-60-A) which prevents the ability to modulate Power Relief Valve 2-PCV-1-23 to relieve pressure on the #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in this room is to have an air source for 2-PCV-1-23 within 60

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minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before this action must be completed. Analysis provided an estimated travel and performance time of 8 minutes for this action. Verification and validation (Part II, Reference 4.2.27) for common O-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, O-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time for travel from the MCR to the nitrogen station and performance of the actions was 19 minutes 19 seconds which provides 40 minutes 41 seconds of margin. There is adequate time available to perform the actions.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated for travel to the room and to perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time 19 minutes 19 seconds provides 40 minutes 41 seconds (210%) margin. This is more than adequate time available to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone to perform the action in room 757.0-A24, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, on the opposite side of the building from the control location, and therefore will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

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g. Portable Equipment

No portable equipment is necessary to perform these OMA's. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Standard personnel protection equipment is used for the performance of this action.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.8.5 Staffing Requirements for a Fire in Room 737.0-A1A

For a fire in 737.0-A1A, twenty two Unit 1 actions are performed by four AUOs (#1, #2, #4 & #5); seven Unit 2 actions are performed by one AUO (#6); seventeen Unit 1 and one common actions are performed by one AUO (#3); one Unit 2 and three common actions are performed by one AUO (#7) and one Unit 1 and one Unit 2 actions are performed by one AUO (#8) for a total of eight AUOs. The staffing of eight AUOs is sufficient to accomplish all of the "common", Unit 1 and Unit 2 manual actions, should there be a fire in room 737.0-A1A.

8.3.9 Room 737.0-A1B (Auxiliary Building General Area)

8.3.9.1 Fire Prevention

The Auxiliary Building Corridor (737.0-A1B), a subdivision of 737.0-A1, is constructed of reinforced concrete and has a fire resistance rating identified in Part VI, Section 3. Doors, dampers, penetration seals and barriers (walls, floors, ceiling etc.) in 737.0-A1 are identified in Part VI, Section 3. Room 737.0-A1 has a floor area of 23,144 ft² and a nominal ceiling height of 19-feet. The combustibles in 737.0-A1 consist of lube oil in the pumps, motors, and valves, plastic associated with electrical panels and boxes and lights and insulation on cables in trays. The majority (approximately 97%) of the combustibles are the insulation on the cables. The combustible loading in the room has a fire severity classification of moderately severe.

The presence of intervening combustibles (insulation on cables in trays) is justified and documented in Section 2.4 of this Part. The 737.0 floor slab has stairwell and hatch openings that are not provided with fire rated closures, they are instead provided with water curtains. The justification for these openings is documented in Section 2.6 of this Part. There is a 12 inch round spiral welded HVAC duct that penetrates the floor of 737.0-A1B. The penetration is not provided with a fire damper. This duct is part of the Emergency Gas Treatment system. Spiral welded pipe is treated like a pipe and is provided with fire rated seals between the pipe and the sleeve. Justification is documented in Section 2.6 of this Part.

There are a number of assumed ignition sources in 737.0-A1 including chillers, lighting boards, transformers, switchgear and a Motor Control Center (MCC). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible

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material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.9.2 Detection, Control, and Extinguishment

The Auxiliary Building Corridor, 737.0-A1, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available for fire brigade use.

Even if the postulated fire starts and is not extinguished, the fire barriers contain the fire; therefore, propagation to adjacent rooms is unlikely. A fire in this room does not present an exposure hazard to the access path to the manual action locations in 713.0-A20, 757.0-A2, 757.0-A21, 757.0-A24, 757.0-A28 and 772.0-A16.

8.3.9.3 OMA 1016 - Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-5 (SG 1 Power Relief Valve) to control secondary pressure. A fire that is contained within 737.0-A1B could potentially fail Train A Auxiliary Control Air System or damage cables 2PV6750, or 2PM1369 and necessitate implementation of this OMA. The operator must operate 2-ISIV-1-408E2 at the local N2 station 2-L-1001. This OMA is to be completed within 60 minutes. This Action is performed in room 757.0-A21.

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 11 minutes 41 seconds which provides 48 minutes 19 seconds of margin. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time was 11 minutes 41 seconds which provides 48 minutes 19 seconds (>400%) of margin. There is more than adequate time available to ensure reliability. A fire in this room could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

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c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. The AUO does not have to enter or traverse the fire zone to perform this OMA. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Actions are performed at local control panels that are unaffected by the fire and are easily accessible. A fire in 737.0-A1 would not affect the functionality and accessibility of equipment necessary to perform this OMA. The control panels in room 757.0-A21 are readily accessible.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Standard personnel protection equipment is used for the performance of this action.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.9.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. A fire that is contained within room 737.0-A1B could potentially fail Train A Auxiliary Control Air System or damage cables (2PM1499, 2PM1501, 2PV6750, or 2PM1502) requiring implementation of these OMA. The operator must operate 2-ISIV-1-405E2 on 2-L-1001 at the N2 local station. This OMA is to be completed within 60 minutes and is performed in room 757.0-A21.

OMA 1024 is both feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyses provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 11 minutes 41 seconds which provides 48 minutes 19 seconds of margin. This provides adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time was 11 minutes 41 seconds which provides 48 minutes 19 seconds (>400%) of margin. There is more than adequate time available to ensure reliability. A fire in this room could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone to perform the action in room 757.0-A21, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Actions are performed at local control panels that are unaffected by the fire and are easily accessible. The control panels in room 757.0-A21 are readily accessible.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustments, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

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h. Personnel Protection Equipment

Standard personnel protection equipment is used for the performance of this action.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.9.5 OMA 1540 and 1542 – Control 2-LCV-3-173 and 2-LCV-3-174

A fire in room 737.0-A1B could damage control cables 2V1041B, 2V7027B, 2SG398B, 2SG403B, 2SG476B, 2PM4501B 2PM4502B, or 2PM5655 which could spuriously close the TDAFW Pump Steam Generator #1 Level Control Valve (2-LCV-3-174) or cables 2V1031B, 2V7026B, 2SG400B, 2SG402B, 2SG473B, 2PM4496B 2PM4497B, or 2PM5654 which could spuriously close the TDAFW Pump Steam Generator #2 Level Control Valve (2-LCV-3-173). The fire safe shutdown requirement for a fire in 737.0-A1B is to transfer from normal to auxiliary control. The operator must operate transfer switches 2-XS-3-174 for SG1 (OMA 1542) and 2-XS-3-173 for SG2 (OMA 1540). These actions are required to be completed within 20 minutes and are performed in 757.0-A28.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMAs 1540 and 1542 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 20 minutes to complete these actions. The analysis provided an estimated travel and performance time of four minutes for each action. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown demonstrated that the travel time and time to perform the actions was 1 minutes 35 seconds which provides 18 minutes 25 seconds of margin. There is adequate time available to perform the actions.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the Auxiliary Control Instrument Room 2B and perform the actions (4 minutes) provides 16-minutes (400%) margin. The demonstrated validation time 1 minutes 35 seconds which provides 18 minutes 25 seconds (>500%) of margin which is more than adequate time available to ensure reliability. A fire in this room could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. Since the reactor trip could occur before the NAUOs reach the main control room and are ready to be dispatched to the OMA location, a 5 minute penalty is added to the demonstrated performance time. Adding the 5 minute penalty to the demonstrated performance time yields a total performance time of 6 minutes 35 seconds which provides 13

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minutes 25 seconds (>100%) margin. This is deemed acceptable and the OMA is considered reliable based on the required for FSSD time limit.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and standby lighting is provided for the access routes and at the location of the OMAs. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMAs. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with these OMAs.

d. Equipment Functionality and Accessibility

The fire that results in fire-induced damage requiring implementation of the OMAs is on a separate elevation of the Auxiliary Building from the control location, and therefore will not affect the functionality of the equipment. The actions are performed on panel 2-L-11B and are therefore easily accessible.

e. Available Indications

The MCR Operator has adequate indications available and there are no local indications needed for the operation of the transfer switches.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to access and perform this OMA.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.9.6 Staffing Requirements for a Fire in Room 737.0-A1B

For a Fire in 737.0-A1B, 12 Unit 1 actions are performed by four AUOs, 10 Unit 2 actions are performed by three AUOs and 6 Unit 2 and 2 common actions are performed by one AUO for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in 737.0-A1B.

8.3.10 Room 737.0-A1C (Auxiliary Building General Area)

8.3.10.1 Fire Prevention

The Auxiliary Building Corridor (737.0-A1C), a subdivision of 737.0-A1, is constructed of reinforced concrete. The fire walls, floors, ceiling, doors, dampers and penetration seals have a fire resistance rating identified in Part VI, Section 3. Room 737.0-A1 has a floor area of 23,144 ft² and a nominal ceiling height of 19-feet. The combustibles in 737.0-A1 consist of lube oil in the pumps, motors, and valves, plastic associated with electrical panels and boxes and lights and insulation on cables in trays. The majority (approximately 97%) of the combustibles are the insulation on the cables in trays. The combustible loading in 737.0-A1 room has a fire severity classification of moderately severe.

The presence of intervening combustibles (insulation on cables in trays) is justified and documented in Section 2.4 of this Part. The 737.0-A1C floor slab has stairwell and hatch openings that are not provided with fire rated closures, they are instead provided with water curtains. The justification for these openings is documented in Section 2.6 of this Part.

There are a number of assumed ignition sources in 737.0-A1 including chillers, lighting boards, transformers, switchgear and a Motor Control Center (MCC). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.10.2 Detection, Control, and Extinguishment

The Auxiliary Building Corridor, 737.0-A1, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available for fire brigade use.

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8.3.10.3 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG #3 Power Relief Valve) to control secondary pressure. A fire in 737.0-A1C could potentially damage cable 2PM1621 for 2-PM-1-24 and cable 2PM1617 for 2-PIC-1-24A requiring implementation of this OMA. The operator must operate 2-ISIV-1-407E2 at the local station 2-L-1000 (N₂). This required for fire safe shutdown OMA is to be completed within 60 minutes and is performed in room 757.0-A24.

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to perform this action was 13 minutes 57 seconds. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation (13 minutes 57 seconds) provides 46 minutes 3 seconds (>300%) of margin. This is adequate time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access route and at the location of the OMA. The access path and control location are unaffected by the fire or other adverse environmental conditions. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

This OMA is performed in room 757.0-A24, on a separate elevation from the fire in room 737.0-A1; therefore, the equipment needed for the performance of this OMA is not affected by the fire and will remain functional and accessible.

e. Available Indications

The AUO will have adequate indications of the N₂ pressure when performing this OMA. Also, the MCR will have adequate indications available in order to instruct the AUO regarding the pressure control for the SG PORV (2-PCV-1-23).

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f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed in order to perform this action. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.10.4 Staffing Requirements for a Fire in Room 737.0-A1C

For a fire in 737.0-A1C, four Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 737.0-A1C.

8.3.11 Room 737.0-A1N (Auxiliary Building General Area)

8.3.11.1 Fire Prevention

The Auxiliary Building Corridor (737.0-A1N) is a subdivision of room 737.0-A1. Room 737.0-A1 is constructed of reinforced concrete and the walls, floor, ceiling, doors, dampers, and penetration seals have a fire resistance rating identified in Part VI, Section 3. None of the doors or dampers discussed in Part VI are identified as being in 737.0-A1N. Room 737.0-A1 has a floor area of 23,144 ft² and a nominal ceiling height of 19-feet. The combustibles in 737.0-A1 consist of lube oil in the pumps, motors, and valves, plastic associated with electrical panels, boxes, and lights; and insulation on cables in trays. The majority (approximately 97%) of the combustibles are the insulation on cables in trays. The combustible loading in the room 737.0-A1 has a fire severity classification of moderately severe.

The presence of intervening combustibles (insulation on cables in trays) is justified and documented in Section 2.4 of this Part. The 737.0 floor slab has stairwell and hatch openings that are not provided with fire rated closures. The stairwells and hatches are protected by water curtains. The justification for these openings is documented in Section 2.6 of this Part. There is a 12 inch round spiral welded HVAC duct that penetrates the floor of 737.0-A1B. The penetration is not provided with a fire damper. This duct is part of the Emergency Gas Treatment system. Spiral welded pipe is treated like a pipe and is provided with fire rated seals between the pipe and the sleeve. Justification is documented in Section 2.6 of this Part.

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There are a number of assumed ignition sources in 737.0-A1 including chillers, lighting boards, transformers, switchgear and a Motor Control Center (MCC). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.11.2 Detection, Control, and Extinguishment

The Auxiliary Building Corridor, 737.0-A1, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available for fire brigade use. The lack of total area suppression and detection in the airlocks is documented in Section 3.1 of this Part.

A fire in this room does not present an exposure hazard to the access path to the manual action located in 757.0-A24, the 6.9kV and 480V Shutdown Board Room B.

8.3.11.3 OMA 1016 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A1N could damage the control cable 2PM1369 and 2PV6756 to the Pressure Indicator Controller (2-PIC-1-6A) or control cable 2V7521A to the Solenoid Valve A (2-PSV-1-6B-A) which would prevent the ability to modulate the Power Operated Relief Valve (2-PCV-1-5) and relieve pressure on the #1 Steam Generator when needed.

The fire safe shutdown requirement for a fire in 737.0-A1N is to have an air source for 2-PCV-1-5 within 60 minutes for operation of 2-PCV-1-5, thereby establishing pressure control of the Steam Generator #1. Emergency control air is provided by a nitrogen bottle for operation of the 2-PCV-1-5 which is actuated by an Operator Manual Action (OMA) at the SG PORV Nitrogen Station (PNL 2-L-1001) in 757.0-A21.

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 12 minutes 19 seconds which provides 47 minutes 41 seconds of margin. There is adequate time available to perform the action.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time was 12 minutes 19 seconds which provides 47 minutes 41 seconds (>300%) of margin. There is more than adequate time available to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMA. If they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. The control location would be unaffected by the fire or other adverse environmental conditions, such as radiation.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within room 737.0-A1. The control location is separated from the location of the fire by rated fire barriers and therefore the fire would not affect the functionality and accessibility of equipment needed to perform this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.11.4 OMA 1024 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A1N could damage various control cables for equipment 2-MCC-214-B1-B and ERCW-HDR-2B supporting the Control Air Compressor B-B (0-MTR-32-86-B), control cable

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2PM1501 to the Steam Generator Power Relief Valve Modifier (2-PM-1-13) or control cables 2PM1502 and 2PM1499 to the Pressure Indicator Controller (2-PIC-1-13A) which would prevent the ability to modulate the Power Operated Relief Valve (2-PCV-1-12) and relieve pressure on the #2 Steam Generator when needed.

The fire safe shutdown requirement for a fire in 737.0-A1N is to have an air source for 2-PCV-1-12 within 60 minutes for operation of 2-PCV-1-12, thereby establishing pressure control of the #2 Steam Generator. Emergency control air is provided for operation of the 2-PCV-1-12, which is actuated by an Operator Manual Action (OMA) at the SG PORV Nitrogen Station (PNL 2-L-1001) in 757.0-A21.

OMA 1024 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60 minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 12 minutes 19 seconds which provides 47 minutes 41 seconds of margin. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time was 12 minutes 19 seconds which provides 47 minutes 41 seconds (>300%) of margin. There is more than adequate time available to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMA. If they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. The control location would be unaffected by the fire or other adverse environmental conditions, such as radiation.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within room 737.0-A1. The control location is separated from the location of the fire by rated fire barriers and therefore the fire would not affect the functionality and accessibility of equipment to perform this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

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f. Communications

Adequate communications between the location of the OMA and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.11.5 OMAs 1535 and 1536 – Control 2-LCV-3-156 and 2-LCV-3-164

A fire in room 737.0-A1N could damage control cables 2SG392A, 2SG394A, 2V1062A, 2V1082A, 2V7023A or 2V7024A which could spuriously close the MDAFW Pump Steam Generator #1 (2-LCV-3-164) or #2 (2-LCV-3-156) Level Control Valves. The fire safe shutdown requirement for a fire in 737.0-A1N is to transfer from normal to auxiliary control. The operator must operate transfer switches 2-XS-3-164 for SG1 (OMA 1535) and 2-XS-3-156 for SG2 (OMA 1536). These actions must be completed within 20 minutes and are performed in 757.0-A27.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMAs 1535 and 1536 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 20 minutes to complete these OMAs. The analyzed time estimated to travel and perform each action is four minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for these actions demonstrated that the time to travel and to perform the action was 2 minutes 18 seconds which provides 17 minutes 42 seconds of margin. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the actions (4 minutes) provides 16 minutes (400%) margin. The demonstrated validation time was 2 minutes 18 seconds which provides 17

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minutes 42 seconds (>500%) of margin. There is more than adequate time available to ensure reliability.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMAs. If they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMAs. Access paths and control location are unaffected by the fire or other adverse environmental conditions.

d. Equipment Functionality and Accessibility

The transfer switches for this manual action are not affected by the fire and remain functional and accessible. The fire that results in the fire-induced damage requiring implementation of these OMAs is contained within 737.0-A1. Therefore, the fire does not affect the functionality and accessibility of the equipment needed for these OMAs.

e. Available Indications

The MCR operator has adequate indications available and there are no local indications needed for the operation of the transfer switches.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.11.6 Staffing Requirements for a Fire in Room 737.0-A1N

For a fire in 737.0-A1N, 11 Unit 1 actions are performed by four AUOs, 13 Unit 2 actions are performed by three AUOs and three common actions are performed by one AUO for a total of

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eight AUOs. The staffing of eight AUOs is sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 737.0-A1N.

8.3.12 Room 737.0-A5M (Ventilation and Purge Air Room)

8.3.12.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A5) is subdivided into three areas; 737.0-A5M, 737.0-A5N and 737.0-A5S. There are no barriers between the three areas that comprise 737.0-A5. Room 737.0-A5 is constructed of reinforced concrete. The walls, floors and ceiling separating 737.0-A5 from other fire areas have a fire resistance rating identified in Part VI, Section 3. Openings in these barriers are provided with fire doors, dampers and penetration seals that are identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A5) has a floor area of 2933 ft² with a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (2 gallons), radiation protection related trash, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A5 is justified and documented in Section 2.4 of this Part.

There are no significant ignition sources in 737.0-A5. The air supply fans have small motors with minimal combustibles (2 pounds plastic) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.12.2 Detection, Control, and Extinguishment

The Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available for fire brigade use from the adjacent room (737.0-A1).

8.3.12.3 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A5M could damage the Auxiliary Control Air Header A (ACAS-ENDUSER-A, 1-FCO-30-146B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A5M is to have an air source for 2-PCV-1-23 within 60

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minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A5M could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.12.4 Staffing Requirements for a Fire in Room 737.0-A5M

For a fire in 737.0-A5M, three Unit 1 actions are performed by three AUOs, and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A5M.

8.3.13 Room 737.0-A5N (Ventilation and Purge Air Room)

8.3.13.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A5) is subdivided into three areas; 737.0-A5M, 737.0-A5N and 737.0-A5S. There are no barriers between the three areas that comprise 737.0-A5. The rooms are constructed of reinforced concrete. The walls, floors and ceiling separating these rooms from other fire areas have a fire resistance rating identified in Part VI, Section 3. Openings in these barriers are provided with fire doors, dampers and penetration seals that are identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A5) has a floor area of 2933 ft² with a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (2 gallons), radiation protection related trash, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A5 is justified and documented in Section 2.4 of this Part.

There are no significant ignition sources in 737.0-A5. The air supply fans have small motors with minimal combustibles (2 pounds plastic) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.13.2 Detection, Control, and Extinguishment

The Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available for fire brigade use from the adjacent room (737.0-A1).

8.3.13.3 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A5N could damage the Auxiliary Control Air Header A (ACAS-ENDUSER-A, 1-FCO-30-146A) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A5N is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A5N could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.13.4 Staffing Requirements for a Fire in Room 737.0-A5N

For a fire in 737.0-A5N, three Unit 1 actions are performed by three AUOs, and four Unit 2 actions are performed by three AUOs for a total of six AUOPs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A5N.

8.3.14 Room 737.0-A5S (Ventilation and Purge Air Room)

8.3.14.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A5) is subdivided into three areas; 737.0-A5M, 737.0-A5N and 737.0-A5S. There are no barriers between the three areas that comprise 737.0-A5. The rooms are constructed of reinforced concrete. The walls, floors and ceiling separating these rooms from other fire areas have a fire resistance rating identified in Part VI, Section 3. Openings in these barriers are provided with fire doors, dampers and penetration seals that are identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A5) has a floor area of 2933 ft² with a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity

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classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (2 gallons), radiation protection related trash, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A5 is justified and documented in Section 2.4 of this Part.

There are no significant ignition sources in 737.0-A5. The air supply fans have small motors with minimal combustibles (2 pounds plastic) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.14.2 Detection, Control, and Extinguishment

The Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available for fire brigade use from the adjacent room (737.0-A1).

8.3.14.3 OMA 1022 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A5S could damage the Auxiliary Control Air Header B (ACAS-ENDUSER-B, 1-LCV-3-173, 1-PSV-1-31C/1-L-762) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A5S is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A5S could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.14.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A5S could damage the Auxiliary Control Air Header A (ACAS-ENDUSER-A, 1-FCO-30-146B, 1-LCV-3-172, 1-PSV-1-6C/1-L-761) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The

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fire safe shutdown requirement for a fire in 737.0-A5S is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A5S could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.14.5 Staffing Requirements for a Fire in Room 737.0-A5S

For a fire in 737.0-A5S, six Unit 1 actions are performed by three AUOs and five Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A5S.

8.3.15 Room 737.0-A9M (Ventilation and Purge Air Room)

8.3.15.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A9) is subdivided into three areas; 737.0-A9M, 737.0-A9N and 737.0-A9S. There are no barriers between the three areas that comprise 737.0-A9. The rooms are constructed of reinforced concrete. The walls, floors, ceiling, doors, dampers, and penetration seals separating these rooms from other fire areas have a fire resistance rating identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A9) has a floor area of 2933 ft² and a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (3 gallons), cloth and plastic from hazardous material spill kits, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A9 is justified and documented in Section 2.4 of this Part. There are no significant ignition sources in 737.0-A9. The air supply fans have small motors with minimal combustibles (2 pounds plastic each) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.15.2 Detection, Control, and Extinguishment

The Unit 2 Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in 737.0-A1 for fire brigade use.

8.3.15.3 OMA 1022 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A9M could damage the Auxiliary Control Air Header B (ACAS-ENDUSER-B, 2-FCO-30-157B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9M is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9M could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.15.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A9M could damage a control cable (2PM1617) to the Pressure Indicator Controller (2-PIC-1-24A) or a control cable (2PM1621) to the Power Relief Valve Modifier (2-PM-1-24) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9M is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9M could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

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8.3.15.5 Staffing Requirements for a Fire in Room 737.0-A9M

For a fire in 737.0-A9M, four Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A9M.

8.3.16 Room 737.0-A9N (Ventilation and Purge Air Room)

8.3.16.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A9) is subdivided into three areas; 737.0-A9M, 737.0-A9N and 737.0-A9S. There are no barriers between the three areas that comprise 737.0-A9. The rooms are constructed of reinforced concrete. The walls, floors, ceiling, doors, dampers, and penetration seals separating these rooms from other fire areas have a fire resistance rating identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A9) has a floor area of 2933 ft² and a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (3 gallons), cloth and plastic from hazardous material spill kits, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A9 is justified and documented in Section 2.4 of this Part.

There are no significant ignition sources in 737.0-A9. The air supply fans have small motors with minimal combustibles (2 pounds plastic each) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.16.2 Detection, Control, and Extinguishment

The Unit 2 Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in 737.0-A1 for fire brigade use.

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8.3.16.3 OMA 1022 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A9N could damage the Auxiliary Control Air Header B (ACAS-ENDUSER-B, 2-FCO-30-157A) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9N is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9N could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.16.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 737.0-A9N could damage a control cable (2PM1617) to the Pressure Indicator Controller (2-PIC-1-24A) or a control cable (2PM1621) to the Power Relief Valve Modifier (2-PM-1-24) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9N is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9N could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.16.5 Staffing Requirements for a Fire in Room 737.0-A9N

For a fire in 737.0-A9N, four Unit 1 actions performed by three AUOs and four Unit 2 actions performed by three AUOs requires a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A9N.

8.3.17 Room 737.0-A9S (Ventilation and Purge Air Room)

8.3.17.1 Fire Prevention

The Ventilation and Purge Air Room (737.0-A9) is subdivided into three areas; 737.0-A9M, 737.0-A9N and 737.0-A9S. There are no barriers between the three areas that comprise

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737.0-A9. The rooms are constructed of reinforced concrete. The walls, floors, ceiling, doors, dampers and penetration seals separating these rooms from other fire areas have a fire resistance rating identified in Part VI, Section 3. HVAC ducts penetrate two of the fire barriers in this room but are not provided with fire dampers. Justification for the lack of fire dampers is provided in Section 2.6.1 of this Part.

The Ventilation and Purge Air Room (737.0-A9) has a floor area of 2933 ft² and a nominal ceiling height of 19 feet. The combustible loading of the room results in a fire severity classification of Low. The combustible material in the room consists of charcoal in the gas treatment system filter, plastics associated with panels, junction boxes, fans and lighting, minor amounts of lube oil associated with valves (3 gallons), cloth and plastic from hazardous material spill kits, rubber expansion joints and insulation on cables in trays. The presence of intervening combustibles (insulation on cables in trays) in 737.0-A9 is justified and documented in Section 2.4 of this Part.

There are no significant ignition sources in 737.0-A9. The air supply fans have small motors with minimal combustibles (2 pounds plastic each) and are not significant ignition sources. The panels are a small wall mounted type, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.17.2 Detection, Control, and Extinguishment

The Unit 2 Ventilation and Purge Air Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in 737.0-A1 for fire brigade use.

8.3.17.3 OMA 1022 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A9S could damage the Auxiliary Control Air Header B (ACAS-ENDUSER-B, 2-FCO-30-157B, 2-LCV-3-173, 2-PSV-1-31C/2-L-762) or a control cable (2V4035A) to the Power Relief Solenoid Valve (2-PSV-1-31C-A) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9S is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9S could result in this manual action.

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The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.17.4 OMA 1023 - Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 737.0-A9S could damage the Auxiliary Control Air Header A (ACAS-ENDUSER-A, 2-LCV-3-172, 2-PSV-1-6C/2-L-761) or a control cable (2V4031B) to the Power Relief Solenoid Valve (2-PSV-1-24C-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 737.0-A9S is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of significant ignition sources in the Ventilation and Purge Air Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) it is unlikely that a fire originating in room 737.0-A9S could result in this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.17.5 Staffing Requirements for a Fire in Room 737.0-A9S

For a fire in 737.0-A9S, five Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by two AUOs for a total of five AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 737.0-A9S.

8.3.18 Room 737.0-A12 (U2 AB Gen Sup Fan Room)

8.3.18.1 Fire Prevention

Room 737.0-A12, the Unit 2 Heat and Vent Equipment Room of the Auxiliary Building, is constructed of reinforced concrete walls, floors, ceilings, doors, HVAC dampers, and penetration seals with a fire resistance rating identified in Part VI, Section 3. Room 737.0-A12 has a floor area of 2,545 ft² and a nominal ceiling height of 19-feet. The combustibles in 737.0-A12 consist of lubricants for fans, plastic associated with electrical panels, boxes and lights and insulation on cables in trays. The majority (approximately 97%) of the combustibles is the insulation on cables in trays. The combustible loading in the room results in a fire severity index of Low.

The two Auxiliary Building general supply fans, a panel, emergency lighting and junction boxes, small motors, small wall mounted panels, junction boxes, and motor operated valves (MOVs), etc., with small combustible loadings, such as these, are not considered significant fire sources capable of damaging other equipment and cables. Room 737.0-A12 is not subject to incidental transient combustibles. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into

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the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.18.2 Detection, Control, and Extinguishment

The Unit 2 Heat and Vent Equipment Room, 737.0-A12, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing small credible fires. A larger fire activates the automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available for fire brigade use from the adjacent corridor, 737.0-A1.

Even if the postulated fire starts and is not extinguished, the 2 and 3-hour fire rating of the walls, floors and ceiling and door, fire dampers and penetration seals contain the fire until the fire brigade responds.

8.3.18.3 OMA 1024 - Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement for this operator action is to operate 2-ISIV-1-405E2 at the N₂ operating station to provide an air source for 2-PCV-1-12 within 60 minutes to maintain pressure control of the #2 Steam Generator. Nitrogen (N₂) cylinders are provided at Panel 2-L-1001 for emergency operation of the PCV from room 757.0-A21.

A fire that is contained within room 737.0-A12 potentially damages supporting equipment to the Power Relief Valve 2-PCV-1-12 requiring implementation of this OMA. However, given the low combustible loading in this room, the lack of significant ignition sources (as indicated by the combustible loading calculation and ignition source walkdown documentation), and the detection, control and extinguishment provisions, there is no credible fire originating in room 737.0-A12 and therefore this manual action is not necessary.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.18.4 Staffing Requirements for a Fire in Room 737.0-A12

For a fire in room 737.0-A12, four Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2.

8.3.19 Room 757.0-A1 (Auxiliary Control Room)

8.3.19.1 Fire Prevention

The Auxiliary Control Building room 757.0-A1 is constructed of reinforced concrete. The walls, floor, ceiling, fire doors, dampers and penetration seals separating 757.0-A1 from other fire areas and analysis volumes have a fire resistance rating identified in Part VI, Section 3. Room 757.0-A1 has a floor area of 431ft² and a nominal ceiling height of 14-feet.

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The combustibles in 757.0-A1 consist of plastics associated with electrical panels and boxes and lights, and insulation on cables in trays. The combustible loading in the room results in a fire severity classification of moderate. The potential ignition sources in this room consist of two large panels and several smaller panels. The large panels are an assumed ignition source. The smaller panels are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.19.2 Detection, Control, and Extinguishment

Room 757.0-A1 is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small fires. If a larger fire occurs, the automatic preaction sprinkler system that is provided for the room activates. A standpipe and hose station system is also available in adjacent rooms 757.0-A2 and 757.0-A24 for fire brigade use. Even if the postulated fire starts and is not extinguished, the 2 and 3-hour fire rating of the walls, floors and ceiling and doors, fire dampers and penetration seals contain the fire and prevents it from propagating to adjacent rooms. In addition, a fire in this room does not present an exposure hazard to the access path to the manual action located in 757.0-A24, the 6.9kV and 480V Shutdown Board Room B.

8.3.19.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A1 could potentially damage cable 2PL3786A to 0-MTR-32-60-A Control Air Compressor A-A, cables 2V7521A and 2V7523A to Solenoid Valve 2-PSV-1-6B-A or cable 2PM1371 to 2-PM-1-6, which could result in loss of control of the Steam Generator #1 Power Operated Relief Valve (2-PCV-1-5). The fire safe shutdown requirement is to have an air source for 2-PCV-1-5 within 60 minutes for operation of 2-PCV-1-5, thereby establishing pressure control of the #1 Steam Generator. Emergency air is provided for operation of the 2-PCV-1-5, via an OMA at the SG PORV Nitrogen Station (PNL 2-L-1001) in 757.0-A21.

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. The demonstrated time to travel to room 757.0-A21 and perform the action was 12 minutes 19 seconds. There is adequate time available to perform this action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The validation time was 12 minutes 19 seconds provides 47 minutes 41 seconds (>300%) margin. There is adequate time available to ensure reliability.

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c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Equipment needed for this manual action is functional and accessible. Also, the fire that results in fire-induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, and therefore will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Only standard PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.19.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A1 could potentially damage multiple cables to 0-MTR-32-86-B Control Air Compressor B-B, cable 2V4016A to Solenoid Valve 2-PSV-1-13C-A, or damage a control cable 2PV258 to pressure controller 2-PIC-1-13A which are necessary to operate the Steam Generator #2 Power Operated Relief Valve (2-PCV-1-12). Damage to 2-PSV-1-13C-A and 0-MTR-32-86-B in this room could result in a loss of air to operate the SG PORV. In addition, damage to cable 2PV258 in this room could prevent the ability to modulate the pressure control valve to the SG PORV when needed.

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The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of 2-PCV-1-12, thereby establishing pressure control of the #2 Steam Generator. Emergency air is provided for operation of the 2-PCV-1-12, via an OMA at the SG PORV Nitrogen Station (PNL 2-L-1001) in 757.0-A21.

OMA 1024 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to access and perform this action was 12 minutes 19 seconds. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8-minutes) provides 52-minutes (>500%) margin. The validated time to access and perform the actions was 12 minutes 19 seconds which leaves 47 minutes 41 seconds (>300%) margin. There is sufficient time available to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in fire-induced damage requiring implementation of this OMA is on a separate elevation of the Auxiliary Building, and therefore will not affect the functionality and accessibility of equipment.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

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g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Only standard PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.19.5 Staffing Requirements for a Fire in Room 757.0-A1

For a fire in 757.0-A1, six Unit 2 actions are performed by three AUOs and six Unit 1 actions are performed by two AUOs and two common actions are performed by one AUO for a total of six AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in 757.0-A1.

8.3.20 Room 757.0-A2 (6.9kV and 480V Shutdown Board Room A)

8.3.20.1 Fire Prevention

The 6.9kV & 480V Shutdown Board A Room (757.0-A2) is constructed of reinforced concrete. The walls, floor, ceiling, doors, fire dampers, and penetration seals have a fire resistance rating identified in Part VI, Section 3.

The non-rated steel equipment hatch in the ceiling of room 757.0-A2 is protected with a water curtain designed in accordance with NFPA 13, section 4-4.8.2.

The 6.9kV & 480V Shutdown Board A Room has a floor area of 6,147 ft² and a nominal ceiling height of 14 feet. The combustible loading of room 757.0-A2 results in a fire severity classification of Moderately Severe. The combustible material in the room consists of plastics associated with electrical boards, MCCs, switches panels, boxes and lights, rubber hoses, other miscellaneous plastics and paper, as well as insulation on cables in trays. However, insulation on cables in trays accounts for over 95% of the combustibles in this room. The assumed ignition sources are the Electrical Panels and Boards, Motor Control Centers, Switches and Multiplexer.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.20.2 Detection, Control, and Extinguishment

The 6.9kV & 480V Shutdown Board A Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel

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are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in the room for fire brigade use.

8.3.20.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A2 could potentially damage the Auxiliary Control Air Header B (ACAS-ENDUSER-B, 0-TT-31-54), several cables supporting board 0-BD-236-3-F, and control cables (2V4034A and 2V4035A) to the Steam Generator #4 Power Relief Solenoid Valve (2-PSV-1-31C-A) which prevents the ability to modulate valve 2-PCV-1-30 to relieve pressure on #4 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

OMA 1022 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 13 minutes 57 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The validated time to complete this action is 13 minutes 57 seconds which leaves 46 minutes 3 seconds (>300%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

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d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within Fire Area 17. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.20.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A2 could potentially damage many control and power cables to the train A 6.9KV and 480V Shutdown Boards and many cables and equipment needed for the Steam Generator #3 Power Relief Solenoid Valve (2-PSV-1-24B-A) which prevents the ability to modulate valve 2-PCV-1-23 to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes for this action. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference

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4.2.61). The demonstrated time to travel to room 757.0-A24 and perform the action was 13 minutes 57 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated validation time is 13 minutes 57 seconds) provides 46 minutes 3 seconds (>300%) margin. An AUO would have sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMAs. Even if they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within the associated fire area and does not affect the functionality and accessibility of equipment needed for this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.20.5 OMA 1712 – Provide ERCW flow to CCS Heat Exchangers A and B

A fire in room 757.0-A2 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to ERCW header 1B for component cooling system heat exchanger A and B within 118 minutes to provide cooling for seal water heat exchangers by opening locked closed valve 1-FCV-67-458-A in 737.0-A1A.

OMA 1712 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 10 minutes 46 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1A and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 10 minutes 46 seconds which leaves 107 minutes 14 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A2. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

Local indications are adequate to verify valve position.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

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g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.20.6 OMA 1713 – Provide ERCW flow to CCS Heat Exchangers A

A fire in room 757.0-A2 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to ERCW header 1B for component cooling system heat exchanger A within 118 minutes to provide cooling for seal water heat exchangers by opening valve 1-FCV-67-143-A in 737.0-A1B.

OMA 1713 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 7 minutes 8 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1B and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 7 minutes 8 seconds which leaves 110 minutes 52 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

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d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A2. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

Local indications are adequate to verify valve position.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.20.7 OMA 1577 – Provide ERCW flow to CCS Heat Exchangers A and B

A fire in room 757.0-A2 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to component cooling system heat exchanger A and B within 118 minutes to provide cooling for seal water heat exchangers. Three ERCW pumps may be required, one per board. Start the non-running B-train ERCW pump by operating bypassing interlock switch (0-HS-67-228C-B) in 757.0-A24. Overloading the diesel generator will be avoided by manually tripping 2-HTR-68-341D, 2-MTR-30-278 and 0-MTR-30-139-F if connected.

OMA 1577 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 6 minutes 1 second. This is adequate time to perform the action.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1A and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 6 minutes 1 second which leaves 111 minutes 59 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A2. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

There are no local indications required for the operation of the switch.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.20.8 Staffing Requirements for a Fire in Room 757.0-A2

For a fire in 757.0-A2, three AUOs perform a combination of fifteen Unit 1, two Unit 2 and five common actions, three AUOs perform eight Unit 1 actions and two AUOs perform three Unit 2 actions for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to

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accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in room 757.0-A2.

8.3.21 Room 757.0-A3 (125V Vital Battery Board Room II)

8.3.21.1 Fire Prevention

The 125V Vital Battery Board Room II (757.0-A3) is constructed of reinforced concrete. The walls, floor, ceiling, penetration seals, doors and dampers in this room have a fire resistance rating identified in Part VI, Section 3. Room 757.0-A3 has a floor area of 329 ft² and a nominal ceiling height of 14-feet. The combustibles in 757.0-A3 consist of plastics associated with electrical panels, boxes, and lights; and insulation on cables in trays. The fire severity rating of this room is low.

The potential ignition sources in this room consist of 125V DC Vital battery board, 120V AC Instrument boards, transformers, control panels and junction boxes. The control panels and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.21.2 Detection, Control, and Extinguishment

The 125V Vital Battery Board Room II (757.0-A3), is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts would be quickly detected and personnel would be dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire were to occur, the manual sprinkler system that is provided for the room would be manually actuated. A standpipe and hose station system is also available in adjacent room 757.0-A24 for fire brigade use.

Even if the postulated fire were to start and not be extinguished, the 3-hour fire rating of the walls, floors and ceiling and doors, fire dampers and penetration seals would contain the fire and prevent it from propagating to adjacent rooms. In addition, a fire in this room would not present an exposure hazard to the access path to the manual action located in 757.0-A21, the 480V Shutdown Board Room 2A.

8.3.21.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG #2 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A3 could potentially damage the equipment requiring implementation of this OMA due to SG 2 Pressure Indicator/Controller (2-PIC-1-13A) control cable (2PV6756) failure and 0-MTR-32-86-B fails due to supporting equipment (2-MCC-214-B1-B, ERCW-HDR-2B, 0-MTR-32-462, and various cables) failure. The operator must operate 2-ISIV-1-405E2 on the N₂ Operating Station for 2-PCV-1-12 (2-L-1001) to open/close 2-PCV-1-12. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

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The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.21.4 Staffing Requirements for a Fire in Room 757.0-A3

For a fire in 757.0-A3, two AUOs perform six Unit 1 actions, two AUOs perform four Unit 2 actions and one AUO performs one common and one Unit 1 action for a total of five AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in 757.0-A3.

8.3.22 Room 757.0-A4 (125V Vital Battery Board Room I)

8.3.22.1 Fire Prevention

The 125V Vital Battery Board Room I, 757.0-A4, is constructed of reinforced concrete. The walls, floor, ceiling, penetration seals, doors and dampers in this room have a fire resistance rating identified in Part VI, Section 3. Room 757.0-A4 has a floor area of 329 ft² and a nominal ceiling height of 14 feet. The combustible loading in the room results in a fire severity classification of low. The combustibles in 757.0-A4 consist of plastics associated with the electrical boards, panels, boxes and lights and insulation on the cables in the trays.

The potential ignition sources in this room consist of 125V DC Vital battery board, 120V AC Instrument boards, transformers, control panels and junction boxes. The control panels and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.22.2 Detection, Control, and Extinguishment

The 125V Vital Battery Board Room I (757.0-A4), is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the manual sprinkler system provided for the room is manually actuated. A standpipe and hose station system is also available in adjacent room 757.0-A2 for fire brigade use.

Even if the postulated fire were to start and not be extinguished, the 3-hour fire rating of the walls, floors and ceiling and doors, fire dampers and penetration seals would contain the fire and prevent it from propagating to adjacent rooms. In addition, a fire in this room would not present an exposure hazard to the access path to the manual action located in 757.0-A24, the 6.9kV and 480V Shutdown Board Room B.

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8.3.22.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A4 potentially damages equipment requiring implementation of this OMA if supporting equipment (2-PM-1-31) fails. The operator must operate 2-ISIV-1-406E2 at the N₂ Operating Station (2-L-1000) to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.22.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A4 potentially damages equipment requiring implementation of this OMA if supporting equipment (2-PM-1-24 and 0-MTR-32-60-A) fails. The operator must operate 2-ISIV-1-407E2 at the N₂ Operating Station (2-L-1000) to open/close 2-PCV-1-23. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.22.5 Staffing Requirements for a Fire in Room 757.0-A4

For a fire in 757.0-A4, three AUOs perform five Unit 2 actions, three AUOs perform six Unit 1 actions, one AUO performs a common, one Unit 1 and one Unit 2 actions and one AUO performs one common action for a total of eight AUOs. Therefore, the staffing of 8 AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 757.0-A4.

8.3.23 Room 757.0-A5 (480V Shutdown Board Room 1B)

8.3.23.1 Fire Prevention

The 480V Shutdown Board Room 1B (757.0-A5) is constructed of reinforced concrete. The walls, floor, ceiling, doors, dampers, and penetration seals have a fire resistance rating identified in Part VI, Section 3. The room has a floor area of 2,223 ft² and a nominal ceiling height of 14-feet.

The fire severity classification of combustible loading in 757.0-A5 is Moderately Severe. The combustible material in the room consists of plastics associated with MCCs, electrical panels, boards, annunciators, boxes, lights, fire response equipment and insulation on cables in trays. Insulation on cables in trays accounts for approximately 92% of the combustible loading in this room.

The assumed ignition sources are the shutdown boards, MCCs and annunciators. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition

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Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.23.2 Detection, Control, and Extinguishment

The 480V Shutdown Board Room 1B is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts would be quickly detected and personnel would be dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire would activate the installed automatic sprinkler system provided for the room. This would extinguish or limit the magnitude of the fire until the fire brigade arrived. A standpipe and hose station system is also available in the adjacent room for fire brigade use.

8.3.23.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 757.0-A5 could potentially damage a control cable (1PV72A) for the Auxiliary Air Compressor A-A CAM Timer/Air Dryer Flow Control Valve (0-MTR-32-461) and a control cable to the Steam Generator #1 Power Relief Solenoid Valve for 2-PSV-1-6C-B which prevents the ability to modulate Power Relief Valve 2-PCV-1-5 to relieve pressure on #1 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-5 within 60 minutes for operation of the PCVs and thereby maintain pressure control of the #1 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, (Part II, Reference 4.2.61). The demonstrated time to travel to and perform the action was 13 minutes 57 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated time was validated to be 13 minutes 57 seconds which provides 46 minutes 3 seconds (>300%) margin. This is more than adequate time to ensure reliability.

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c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were still unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within 757.0-A5 and will not affect the functionality and accessibility of the N₂ control panels in 757.0-A21.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.23.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in 757.0-A5 could potentially damage a control cable to a flow control valve for the Essential Raw Cooling Water Strainer 2B-B Backwash and Flush (2-FCV-67-10A-B and 2-FCV-67-10B-B) which prevents the ability to modulate the Power Relief Valve 2-PCV-1-12 to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, via an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

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OMA 1024 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to travel and perform the action was 13 minutes 57 seconds. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated time was validated to be 13 minutes 57 seconds which provides 46 minutes and 3 seconds (300%) margin. This is more than adequate time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were still unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within 757.0-A5 and will not affect the functionality and accessibility of the N₂ control panels in 757.0-A21.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

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h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.23.5 Staffing Requirements for a Fire in Room 757.0-A5

For a fire in 757.0-A5, three AUOs perform seven Unit 2 actions, four AUOs perform eleven Unit 1 actions and one AUO performs three common actions for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in room 757.0-A5.

8.3.24 Room 757.0-A9 (Personnel and Equipment Access Room)

8.3.24.1 Fire Prevention

The Personnel and Equipment Access Room (757.0-A9) is constructed of reinforced concrete. The barriers separating 757.0-A9 and 757.0-A2 are non-rated barriers. The remaining barriers have a fire resistance rating identified in Part VI, Section 3. Openings in these barriers are provided with fire doors, dampers and penetration seals that are identified in Part VI, Section 3. The door separating this room from other fire areas is not a UL listed fire door but has been evaluated as being equivalent to fire rated doors.

The Personnel and Equipment Access Room (757.0-A9) has a floor area of 821 ft² and a nominal ceiling height of 14-feet. The combustible loading of the room results in a fire severity classification of Moderate. The combustible material in the room consists of plastics associated with a panel, junction boxes and insulation on cables in trays. Insulation on the cables accounts for approximately 79% of the combustibles in room 757.0-A9.

The potential ignition sources in this room consist of the air handling units (AHU), an electrical panel and junction boxes. The air handling units' motors are completely enclosed by the heavy sheet metal housing of the AHU and are not considered as fire sources. The panel is a small, wall mounted panel, and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of combustibles associated with the boxes to create and sustain a large fire). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.24.2 Detection, Control, and Extinguishment

The Personnel and Equipment Access Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic

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preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available in the room for fire brigade use.

8.3.24.3 OMA 1022 – Operating Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A9 could potentially damage the Auxiliary Control Air Header B, ACAS ENDUSER B, 0-TT-31-54 which could prevent the ability to modulate Power Relief Valve 2-PCV-1-30 to relieve pressure on #4 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. Due to the lack of credible ignition sources in 757.0-A9 and the provisions provided for detection and extinguishment, it is unlikely that a fire in 757.0-A9 would necessitate the performance of this manual action. However, the following is an evaluation of the feasibility and reliability of the OMA that provides additional defense-in-depth for FSSD assurance.

OMA 1022 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyzed time estimated to travel and perform the action is 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to travel and perform the action was 13 minutes 57 seconds. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated time was validated to be 13 minutes 57 seconds which provides 46 minutes and 3 seconds (>300%) margin. This is more than adequate time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMAs. Even if they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The postulated fire in 757.0-A9 does not affect the N₂ station in 757.0-A24; therefore, it remains functional and accessible.

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e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.24.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A9 could potentially damage the Auxiliary Control Air Header A, ACAS ENDUSER A, 0-TT-31-41, which prevents the ability to modulate the power relief valve 2-PCV-1-23 to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. However, given the lack of credible ignition sources in 757.0-A9 and the provisions provided for detection and extinguishment, it is unlikely that a fire in 757.0-A9 would damage an ACAS Enduser and necessitate the performance of this manual action.

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes for this action. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time to travel and perform the action was 13 minutes 57 seconds. There is adequate time available to perform the action.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and perform the action (8-minutes) provides 52-minutes (>500%) margin. The demonstrated time was validated to be 13 minutes 57 seconds which provides 46 minutes and 3 seconds (>300%) margin. This is more than adequate time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMAs. Even if they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within the associated room.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.24.5 OMA 1712 – Provide ERCW flow to CCS Heat Exchangers A and B

A fire in room 757.0-A9 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to ERCW header

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1B for component cooling system heat exchanger A and B within 118 minutes to provide cooling for seal water heat exchangers by opening locked closed valve 1-FCV-67-458-A in 737.0-A1A.

OMA 1712 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 10 minutes 46 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1A and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 10 minutes 46 seconds which leaves 107 minutes 14 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A9. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

Local indications are adequate to verify valve position.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

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h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.24.6 OMA 1713 – Provide ERCW flow to CCS Heat Exchangers A

A fire in room 757.0-A9 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to ERCW header 1B for component cooling system heat exchanger A within 118 minutes to provide cooling for seal water heat exchangers by opening valve 1-FCV-67-143-A in 737.0-A1B.

OMA 1713 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 7 minutes 8 seconds. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1B and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 7 minutes 8 seconds which leaves 110 minutes 52 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

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d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A9. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

Local indications are adequate to verify valve position.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.24.7 OMA 1577 – Provide ERCW flow to CCS Heat Exchangers A and B

A fire in room 757.0-A9 could potentially damage Essential Raw Cooling Water (ERCW) supply to header 2A. The fire safe shutdown requirement is to have a water supply to ERCW header 1B for component cooling system heat exchanger A and B within 118 minutes to provide cooling for seal water heat exchangers. Three ERCW pumps may be required, one per board. Start the non-running B-train ERCW pump by operating bypassing interlock switch (0-HS-67-228C-B) in 757.0-A24. Overloading the diesel generator will be avoided by manually tripping 2-HTR-68-341D, 2-MTR-30-278 and 0-MTR-30-139-F if connected.

OMA 1577 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 118-minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 10 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The validated time to complete this action is 6 minutes 1 second. This is adequate time to perform the action.

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b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1A and perform the action (10-minutes) provides 108-minutes (>500%) margin. The validated time to complete this action is 6 minutes 1 second which leaves 111 minutes 59 seconds (>500%) margin. There is sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 757.0-A9. Therefore, equipment needed to perform this OMA will be functional and accessible.

e. Available Indications

There are no local indications required for the operation of the switch.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed for this action.

h. Personnel Protection Equipment

No special PPE is needed to access and perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.24.8 Staffing Requirements for a Fire in Room 757.0-A9

For a fire in 757.0-A9, three AUOs perform a combination of fifteen Unit 1, two Unit 2 and five common actions, three AUOs perform eight Unit 1 actions and two AUOs perform three Unit 2 actions for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to

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accomplish all of the Unit 1, Unit 2 and common manual actions, should there be a fire in room 757.0-A9

8.3.25 Room 757.0-A10 (Miscellaneous Equipment Room)

8.3.25.1 Fire Prevention

The Miscellaneous Equipment Room (757.0-A10) is constructed of reinforced concrete. The walls, floor, ceiling, door, fire dampers, and penetration seals have a fire resistance rating identified in Part VI, Section 3. The floor slab in Room 782.0-A1 to 757.0-A10 has an equipment hatch that is covered with a non-fire rated steel cover, two HVAC ducts without fire dampers, and a stairway enclosed by 2 hour non-regulatory fire barriers. There is one fire door in the room which has been evaluated as equivalent to a UL listed door. 757.0-A10 has a floor area of 2,271ft² and a nominal ceiling height of 24-feet. The combustibles in 757.0-A10 consist of plastics associated with the electrical panels, and lights, wood storage racks, nylon ropes, and the insulation on the cables in the trays. The insulation and Thermo-Lag on the cables accounts for over 98% of the combustibles in the room. The combustible loading in the room results in a fire severity classification of moderate (insignificant if Thermo-Lag and cable insulation are not included). There are no credible ignition sources in 757.0-A10. The junction boxes are small, with minimal associated combustibles (2 pounds of plastic), and are not considered ignition sources.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.25.2 Detection, Control, and Extinguishment

Miscellaneous Equipment Room (757.0-A10) is provided with ionization smoke detection that alarms in the Main Control Room (MCR). Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinklers in the room activate. A standpipe and hose station system is available in the room and in adjacent room 757.0-A13 for fire brigade use. With fire detection, an automatic suppression system, and fire resistant barriers, a fire in this area is contained until the fire brigade responds and does not cause an exposure hazard to any adjacent rooms.

8.3.25.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in AV-050 could damage the Auxiliary and Control Air Header A (ACAS ENDUSER-A, specifically components 1-L-44 in 782.0-A1 and 0-FCO-30-149 in 782.0-A2) which could prevent the ability to modulate Steam Generator #1 Power Operated Relief Valve (2-PCV-1-5) to relieve pressure on #1 Steam Generator. The fire safe shutdown requirement is to have an air source for 2-PCV-1-5 within 60 minutes for operation of the PCV and thereby maintaining pressure control of the #1 Steam Generator. Emergency Air is provided for operation of the PCV, is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

The insignificant combustible loading in this room (if cable insulation and Thermo-Lag are not considered in the combustible loading), the insignificant credible ignitions sources (as indicated

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by the combustible loading calculation), the suppression and detection in the room, and because the ACAS air users which cause this failure are located in rooms 782.0-A1 and 782.0-A2 rather than room 757.0-A10 (these rooms are separated by a 2 hour rated floor / ceiling but are analyzed together despite the separation) there is no credible fire originating in room 757.0-A10 that could result in the need for this manual action.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.25.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A10 could potentially damage control cables to the Steam Generator #2 Power Relief Solenoid Valve (2-PSV-1-13C-A, 2V4017A). The fire is also assumed to spread to 782.0-A1 or 782.0-A2, and damage the Auxiliary and Control Air Header B (ACAS-ENDUSER-B). This damage prevents the ability to modulate the Power Relief Valve (2-PCV-1-12) to relieve pressure on the #2 Steam Generator. The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

The insignificant combustible loading in this room (if cable insulation and Thermo-Lag are not considered in the combustible loading), the insignificant credible ignitions sources, the suppression and detection in the room, and because the ACAS air users which cause this failure are located in rooms 782.0-A1 and 782.0-A2 rather than room 757.0-A10 (these rooms are separated by a 2 hour rated floor / ceiling but are analyzed together) result in no credible fire originating in room 757.0-A10 that could result in the need for this manual action.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.25.5 Staffing Requirements for a Fire in Room 757.0-A10

For a fire in 757.0-A10, 14 Unit 1 actions are performed by four AUOs and five Unit 2 actions are performed by three AUOs for a total of seven AUOs. Therefore a total of eight AUOs is sufficient to complete all of the OMAs for Unit 1 and Unit 2.

8.3.26 Room 757.0-A16 (Emergency Gas Treatment Filter Room)

8.3.26.1 Fire Prevention

The Emergency Gas Treatment Filter Room, 757.0-A16, is constructed of reinforced concrete. The walls, floor, ceiling, door, fire dampers, and penetration seals in 757.0-A16 have a fire rating identified in Part VI, Section 3. The room has a floor area of 2174 ft² and a nominal ceiling height of 24-feet.

The combustible loading in 757.0-A16 is Moderate. The combustible material in the room consists of lube oil, plastics associated with electrical panels, boxes, a telephone, lights, charcoal in filter housings and insulation on cables in trays. Insulation on cable trays makes up over 93% of the combustibles in this room.

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The possible ignition sources in 757.0-A16 are two motors, panels and junction boxes. Small motors and wall mounted panels and junction boxes, with small combustible loadings, such as these, are not considered significant fire sources capable of damaging other equipment and cables.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.26.2 Detection, Control and Extinguishment

The Emergency Gas Treatment Filter Room, 757.0-A16, is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire.

If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available in the room for fire brigade use.

8.3.26.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A16 could potentially damage Auxiliary Control Air Header B (ACAS ENDUSER B) or damage a control cable to the Steam Generator #4 Power Relief Solenoid Valve 2-PSV-1- 31C-A which prevents the ability to modulate the valve to relieve pressure on #4 Steam Generator when needed.

The fire safe shutdown requirement for a fire in 757.0-A16 is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.26.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A16 potentially damages Auxiliary Control Air Header A (ACAS ENDUSER A) or damages a control cable to the Steam Generator #3 Power Relief Solenoid Valve 2-PSV-1- 24B-A which prevents the ability to modulate the valve to relieve pressure on #3 Steam Generator when needed.

The fire safe shutdown requirement for a fire in 757.0-A16 is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

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The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.26.5 Staffing Requirements for a Fire in Room 757.0-A16

For a fire in 757.0-A16, eight Unit 2 actions are performed by four AUOs and five Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of 8 AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 757.0-A16.

8.3.27 Room 757.0-A17 (Personnel and Equipment Access Room)

8.3.27.1 Fire Prevention

The Unit 2 Personnel and Equipment Access Room (757.0-A17) is constructed of reinforced concrete with a fire resistance rating identified in Part VI, Section 3. The openings through these barriers are protected with door, damper and penetration seals that are identified in Part VI, Section 3. The walls separating 757.0-A17 and 757.0-A24, which are in the same fire area, are not fire rated barriers. The room has a floor area of 821 ft² and a nominal ceiling height of 14-feet.

The combustible loading in 757.0-A17 results in a fire severity classification of Low. The combustible material in the room consists of plastics associated with electrical panels, boxes, lights and insulation on cables in trays. Insulation on cable trays makes up for over 92% of the combustibles in this room. The potential ignition sources in 757.0-A17 are the air handling units (AHU), panels and junction boxes. The air handling units' motors are completely enclosed by the heavy sheet metal housing of the AHU and are not considered as fire sources. Small wall mounted panels and junction boxes, with small combustible loadings, such as these, are not considered significant fire sources capable of damaging other equipment and cables.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.27.2 Detection, Control, and Extinguishment

The Unit 2 Personnel and Equipment Access Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire.

If a larger fire occurs, the installed automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available in room 757.0-A24 for fire brigade use.

8.3.27.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A17 could potentially damage Auxiliary Control Air Header A (ACAS ENDUSER A, 0-TCV-31-108) and damage control cables (2V4012B, 2V4010B, 2V4011B, and 2V4013B) to the Steam Generator #1 Power Relief Solenoid Valve 2-PSV-1- 6C-B or a control

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cable (2PM1371) to SG #1 Power Relief Valve Modifier 2-PM-1-6, which prevents the ability to modulate the valve to relieve pressure on #1 Steam Generator when needed. The fire safe shutdown requirement for a fire in 757.0-A17 is to have an air source for 2-PCV-1-5 within 60 minutes to maintain pressure control of the #1 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

However, given the low combustible loading in this room, the lack of significant ignition sources (as indicated by the combustible loading calculation and ignition source walkdown documentation), and the detection, control and extinguishment provisions, it is not likely that this manual action is needed for a fire in 757.0-A17.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.27.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A17 could potentially damage Auxiliary Control Air Header B (ACAS ENDUSER B, 0-TCV-31-138) and damage a control cable (2V7570B) to the Steam Generator #2 Power Relief Solenoid Valve 2-PSV-1-13B-B, which prevents the ability to modulate the valve to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement for a fire in 757.0-A17 is to have an air source for 2-PCV-1-12 within 60 minutes to maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

However, given the low combustible loading in this room, the lack of significant ignition sources (as indicated by the combustible loading calculation and ignition source walkdown documentation), and the detection, control and extinguishment provisions, it is not likely that this manual action is needed for a fire in 757.0-A17.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.27.5 Staffing Requirements for a Fire in Room 757.0-A17

For a fire in 757.0-A17, five Unit 2 actions are performed by three AUOs, three Unit 1 actions are performed by two AUOs, and one Unit 1 and two "common" actions are performed by one AUO for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 actions, should there be a fire in room 757.0-A17.

8.3.28 Room 757.0-A21 (480V Shutdown Board Room 2A)

8.3.28.1 Fire Prevention

The 480V Shutdown Board Room 2A, 757.0-A21 is constructed of reinforced concrete. The walls, doors, floors, ceiling, and dampers have a fire resistance rating identified in Part VI, Section 3. Room 757.0-A21 has a floor area of 2,244 ft² and a nominal ceiling height of 14-feet. The combustibles in 757.0-A21 consist of plastics associated with the electrical panels and boxes, lights, and insulation on the cables in the trays (trays account for 97% of the

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combustibles in this room). The combustible loading in the room results in a fire severity classification of moderately severe.

The assumed ignition sources are the shutdown boards, MCCs and transformers. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.28.2 Detection, Control, and Extinguishment

The 480V Shutdown Board Room 2A (757.0-A21) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room would activate. A standpipe and hose station system is also available in adjacent room 757.0-A24 for fire brigade use.

Even if the postulated fire starts and is not extinguished, the fire barriers contain the fire and prevent propagation to adjacent rooms.

8.3.28.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. The operator must operate 2-ISIV-1-407E2 at the N₂ Operating Station for 2-PCV-1-23 (2-L-1000) to open/close 2-PCV-1-23. A fire that is contained within room 757.0-A21 potentially damages equipment requiring implementation of this OMA. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.28.4 OMA 1516 – Control 2-PCV-3-132-B

A fire in room 757.0-A21 could damage control cables 2V6712B which could prevent the ability to operate the B Motor Driven Auxiliary Feedwater Pump (MDAFW) Outlet Pressure Control Valve (2-PCV-3-132-B). The fire safe shutdown requirement for a fire in 757.0-A21 is to control discharge pressure on the MDAFW Pump by transferring from normal to auxiliary control and operating the PCV from auxiliary control room. Discharge pressure of the MDAFW pump must be controlled within 20 minutes. The operator must transfer from normal to auxiliary control (OMA 1516) using transfer switch 2-XS-3-132, located on local control station 2-L-11B in room 757.0-A28.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMA 1516 is feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The Operator has 20 minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 3 minutes. The demonstrated transit and performance time was 2 minutes 35 seconds which provides 17 minutes 25 seconds (>500%) margin. The fire that results in the fire-induced damage requiring implementation of this OMA is contained within room 757.0-A21 and does not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the board and operate 2-XS-3-132 (3 minutes) provides 17-minutes (>500%) margin and the validated time of 2 minutes 35 seconds, provides 17 minutes 25 seconds (>500% margin). An AUO would have sufficient time to ensure reliability. A fire in this room could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. Since the reactor trip could occur before the NAUOs reach the main control room and are ready to be dispatched to the OMA location, a 5 minute penalty is added to the demonstrated performance time. Adding the 5 minute penalty to the demonstrated performance time yields a total performance time of 7 minutes 35 seconds which provides 12 minutes 25 seconds (163%) margin. This is deemed acceptable and the OMA is considered reliable based on the required for FSSD time limit.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The board in room 757.0-A28 is remote from the fire and is readily accessible; therefore it is ensured that they are functional and accessible.

e. Available Indications

Auxiliary Control Room and MCR indications for performing these OMAs are adequate.

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f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed to complete these actions.

h. Personnel Protection Equipment

Only standard PPE is needed to perform this action.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series - Part II, Reference 4.2.60) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.28.5 Staffing Requirements for a Fire in Room 757.0-A21

For a fire in 757.0-A21, two “common” actions are performed by one AUO, six Unit 2 actions are performed by two AUOs and four Unit 1 actions are performed by three AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 757.0-A21.

8.3.29 Room 757.0-A22 (125V Vital Battery Board Room IV)

8.3.29.1 Fire Prevention

The 125V Vital Battery Board Room IV (757.0-A22) is constructed of reinforced concrete and the fire barriers (walls, floors, ceiling, floors, and penetration seals) have a fire resistance rating of 3-hours. Doors and dampers are fire resistance rated for 3-hours. Room 757.0-A22 has a floor area of 329 ft² and a nominal ceiling height of 14-feet. The combustibles in 757.0-A22 consist of plastics associated with electrical panels and boxes and lights and insulation on cables in trays. The insulation on cable trays accounts for 58% of the total combustibles in the room. The fire severity classification is Low.

There are a number of assumed ignition sources in 757.0-A22 including 120V Vital Power boards, 125V Vital Battery boards and a transformer. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.29.2 Detection, Control, and Extinguishment

The 125V Vital Battery Board Room IV (757.0-A22), is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the sprinkler system provided for the room is manually actuated. A standpipe and hose station system is also available in adjacent room 757.0-A24 for fire brigade use. Even if the postulated fire starts and is not extinguished, the 3-hour fire rating of the walls, floors, ceiling, doors, dampers and penetration seals contain the fire and prevent it from propagating to adjacent rooms. A fire in this room does not present an exposure hazard to the access path to the manual action located in 757.0-A24, the 6.9kV and 480V Shutdown Board Room B.

8.3.29.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to operate 2-PCV-1-5 (SG 1 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A22 could potentially damage cable 2PL3786A for motor 0-MTR-32-60-A, cable 2V4010B for valve 2-PSV-1-6C-B, and many cables for board 0-BD-236-4-G, all supporting 2-PCV-1-5 which results in the implementation of this OMA. The operator is required to operate 2-ISIV-1-408E2 at the N₂ Operating Station for 2-PCV-1-5 (2-L-1001). This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.29.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A22 could potentially damage cable 2V7567B for valve 2-PSV-1-13B-B, many cables for board 0-BD-236-4-G supporting 2-PCV-1-12 which results in the implementation of this OMA. The operator must operate 2-ISIV-1-405E2 on the N₂ Operating Station for 2-PCV-1-12 (2-L-1001). This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.29.5 Staffing Requirements for a Fire in Room 757.0-A22

For a fire in 757.0-A22, two “common” actions are performed by one AUO, seven Unit 2 actions are performed by three AUOs and five Unit 1 actions are performed by three AUOs for a total of seven AUOs. The staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 757.0-A22.

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8.3.30 Room 757.0-A23 (125V Vital Battery Board Room III)

8.3.30.1 Fire Prevention

The 125V Vital Battery Board Room III, 757.0-A23, is constructed of reinforced concrete. Doors, dampers, penetration seals and barriers (walls, floors, and ceiling) in 757.0-A23 are fire resistance rated as identified in Part VI, Section 3. Room 757.0-A23 has a floor area of 329 ft² and a nominal ceiling height of 14-feet.

The combustible loading in the room results in a fire severity classification of low. The combustibles in 757.0-A23 consist of plastics associated with the electrical boards, panels, boxes, and lights and insulation on the cables in the trays. The combustible loading in the room results in a fire severity classification of low.

There are a number of assumed ignition sources in 757.0-A23 including 120V Vital Power boards, 125V Vital Battery boards, and a transformer. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.30.2 Detection, Control, and Extinguishment

The 125V Vital Battery Board Room III (757.0-A23), is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the sprinkler system provided for the room is manually actuated. A standpipe and hose station system is also available in adjacent room 757.0-A24 for fire brigade use.

Even if the postulated fire were to start and not be extinguished, the 3-hour fire rating of the walls, floors and ceiling and doors, fire dampers and penetration seals would contain the fire and prevent it from propagating to adjacent rooms.

8.3.30.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A23 potentially damages equipment (2-PSV-1-31C-A because of cable 2V4032A and upstream power supply failures) requiring implementation of this OMA. The operator must operate 2-ISIV-1-406E2 at the local N₂ Operating Station for 2-PCV-1-30 (2-L-1000). This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

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8.3.30.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. A fire that is contained within room 757.0-A23 potentially damages equipment (2-PSV-1-24B-A because of cable 2V7536A and upstream power supply failures and 0-MTR-32-60-A because of 2PL3786A and upstream power supply failures) requiring implementation of this OMA. The operator must operate 2-ISIV-1-407E2 at the local N₂ Operating Station for 2-PCV-1-23 (2-L-1000). This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.30.5 Staffing Requirements for a Fire in Room 757.0-A23

For a fire in 757.0-A23, two “common” actions are performed by two AUOs, eight Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of eight AUOs. The staffing of eight AUOs is sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 757.0-A23.

8.3.31 Room 757.0-A24 (6.9kV & 480V Shutdown Board Room B)

8.3.31.1 Fire Prevention

The 6.9kV & 480V Shutdown Board B Room (757.0-A24) is constructed reinforced concrete with a fire resistance rating identified in Part VI, Section 3. The openings through these barriers are protected with door, damper and penetration seals that are identified in Part VI, Section 3.

The non-rated steel equipment hatch in the ceiling of room 757.0-A24 is protected with a water curtain designed in accordance with NFPA 13, section 4-4.8.2.

The 6.9kV & 480V Shutdown Board B Room has a floor area of 6,134 ft² and a nominal ceiling height of 14 feet. The combustible loading of room 757.0-A24 results in a fire severity classification of Moderately Severe. The combustible material in the room consists of plastics associated with electrical boards, MCCs, switches, panels, boxes and lights, rubber hoses, other miscellaneous plastics and paper, as well as insulation on cables in trays. However, insulation on cable trays accounts for over 93% of the combustibles in this room. The assumed ignition sources are the Electrical Panels and Boards and Motor Control Centers.

NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.31.2 Detection, Control, and Extinguishment

The 6.9kV & 480V Shutdown Board B Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed

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automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in the room for fire brigade use. In addition, a water curtain is provided for the equipment hatch.

8.3.31.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A24 could potentially damage control cables (2V4010B, 2V4011B, 2V4012B, and 2V4013B) to the Power Relief Solenoid Valve (2-PSV-1-6C-B) and a control cable (2PM1371) to the Power Relief Valve Modifier (2-PM-1-6) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-5) to relieve pressure on #1 Steam Generator when needed. The fire safe shutdown requirement for a fire in 757.0-A24 is to have an air source for 2-PCV-1-5 within 60 minutes to maintain pressure control of the #1 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.31.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A24 could potentially damage many control cables to the Control Air Compressor (0-MTR-32-86-B) and a control cable (2V7570B) to the Power Relief Solenoid Valve (2-PSV-1-13B-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-12) to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.31.5 Staffing Requirements for a Fire in Room 757.0-A24

For a fire in 757.0-A24, five Unit 2 actions are performed by three AUOs, three Unit 1 actions are performed by two AUOs, and one Unit 1 and two “common” actions are performed by one AUO for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 757.0-A24.

8.3.32 Room 757.0-A26 (Auxiliary Control Instrument Room 1B)

8.3.32.1 Fire Prevention

The Auxiliary Control Instrument Room 1B (757.0-A26) is constructed of reinforced concrete. The walls, floor, ceiling, fire dampers, doors, and penetration seals separating this room from other fire areas have a fire resistance rating identified in Part VI, Section 3. The room has a floor area of 114 ft² and a nominal ceiling height of 14-feet.

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The combustible loading in 757.0-A26 results in a fire severity classification of Moderately Severe. The combustible material in the room consists of plastics associated with electrical panels, boxes, lights, Thermo-Lag and insulation on cables in trays. Insulation on cable trays makes up for over 86% of the combustibles in this room. The only assumed ignition source in 757.0-A26 is panel 1-L-11B.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.32.2 Detection, Control, and Extinguishment

The Auxiliary Control Instrument Room 1B is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire.

If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available in rooms 757.0-A2 and 757.0-A24 for fire brigade use.

8.3.32.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A26 could potentially damage a control cable (1PV210B) to the Auxiliary Air Compressor B-B Cam Timer/Air Dryer Flow Control Valve 0-MTR-32-462-B which supports Auxiliary Air Compressor 0-MTR-32-86-B thereby preventing the ability to modulate valve 2-PCV-1-12 to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement for a fire in 757.0-A26 is to have an air source for 2-PCV-1-12 within 60 minutes to maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.32.4 Staffing Requirements for a Fire in Room 757.0-A26

For a fire in 757.0-A26, six Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by two AUOs for a total of five AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2 should there be a fire in 757.0-A26.

8.3.33 Room 757.0-A27 (Auxiliary Control Instrument Room 2A)

8.3.33.1 Fire Prevention

The Auxiliary Control Instrument Room 2A (757.0-A27) is constructed of reinforced concrete with a fire resistance rating identified in Part VI, Section 3. The openings through these barriers

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are protected with door, damper, and penetration seals that are identified in Part VI, Section 3. The room has a floor area of 114 ft² and a nominal ceiling height of 14-feet.

The combustible loading in 757.0-A27 results in a fire severity classification of Moderate. The combustible material in the room consists of plastics associated with an electrical panel, lighting, and insulation on cables in trays. The only assumed ignition source in this room is a control panel (PNL 2-L-11A).

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.33.2 Detection, Control, and Extinguishment

The Auxiliary Control Instrument Room 2A is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in the nearby rooms (757.0-A2 and 757.0-A24) for fire brigade use.

8.3.33.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A27 could potentially damage control cables (2V4033A and 2V4034A) to the Power Relief Solenoid Valve (2-PSV-1-31C-A) which prevents the ability to relieve pressure on #4 Steam Generator when needed. A fire in this room could also damage four cables (B12F, B65F, B67F and 2PL4904S) resulting in the loss of the 125V Vital Battery Board III (0-BD-236-3-F). The fire safe shutdown requirement for this operator action is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an Operator Manual Action (OMA) at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.33.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A27 could potentially damage control cables (2V7537A or 2V7539A) to the Power Relief Solenoid Valve (2-PSV-1-24B-A), a control cable (2PM1621) to the Pressure Modifier (2-PM-1-24), a control cable (2PM1619) to the Pressure Indicator Controller (2-PIC-1-24A) or a control cable (2PL3786A) to the Control Air Compressor A-A (0-MTR-32-60) which prevents the ability to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement for this operator action is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

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The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.33.5 Staffing Requirements for a Fire in Room 757.0-A27

For a fire in 757.0-A27, eight Unit 2 actions are performed by three AUOs, one Unit 1 and one "common" action is performed by one AUO, one common action is performed by one AUO, and three Unit 1 actions are performed by two AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 757.0-A27.

8.3.34 Room 757.0-A28 (Auxiliary Control Instrument Room 2B)

8.3.34.1 Fire Prevention

The Auxiliary Control Instrument Room 2B, 757.0-A28, is constructed of reinforced concrete. The walls, floors, ceiling, doors, dampers, and penetration seals have a fire resistance rating identified in Part VI, Section 3. The room has a floor area of 114 ft² and a nominal ceiling height of 14-feet.

The combustible loading in room 757.0-A28 results in a fire severity classification of moderately severe. The combustible material in the room consists of plastics associated with an electrical panels and boxes, lighting, and insulation on cables in trays. Insulation on cable in trays makes up approximately 70% of the combustibles in this room. The only assumed ignition source in this room is a control panel, 2-L-11B.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.34.2 Detection, Control, and Extinguishment

The Auxiliary Control Instrument Room 2B is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in the nearby rooms 757.0-A2 and 757.0-A24 for fire brigade use.

8.3.34.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A28 could potentially damage control cables (2V4011B and 2V4012B) to the Power Relief Solenoid Valve, 2-PSV-1-6C-B, which prevents the ability to relieve pressure via Power Relief Valve 2-PCV-1-5 on #1 Steam Generator when needed.

The fire safe shutdown requirement for this operator action is to have an air source for 2-PCV-1-5 within 60 minutes to maintain pressure control of the #1 Steam Generator.

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Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

8.3.34.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 757.0-A28 could potentially damage control cables (2V7568B and 2V7570B) to the Power Relief Solenoid Valve (2-PSV-1-13B-B), a control cable (2PM1499) to the Power Relief Valve Pressure Indicator Controller (2-PIC-1-13A), and a control cable (2PM1501) to the Pressure Modifier (2-PM-1-13) which prevents the ability to modulate valve 2-PCV-1-12 to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement for a fire in 757.0-A28 is to have an air source to 2-PCV-1-12 within 60 minutes to maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.34.5 Staffing Requirements for a Fire in Room 757.0-A28

For a fire in 757.0-A28, four Unit 1 actions are performed by two AUOs and six Unit 2 actions are performed by three AUOs, for a total of five AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 757.0-A28.

8.3.35 Room 772.0-A1 (480V Board Room 1A)

8.3.35.1 Fire Prevention

The 480V Board Room 1A (772.0-A1) is constructed of reinforced concrete. The walls and floors have a fire resistance rating identified in Part VI, Section 3. Openings in these barriers are provided with fire doors, dampers and penetration seals that are identified in Part VI, Section 3. Room 772.0-A1 has a floor area of 2,202 ft² and a nominal ceiling height of 13 feet. The combustibles in 772.0-A1 consist of plastics associated with the electrical panels, boards, and lights; oil in a hoist, and insulation on cables in trays. Insulation on cable trays accounts for over 90% of the combustibles in this room. The combustible loading in the room results in a fire severity classification of moderately severe.

The floor has an equipment hatch with a non-rated cover that is protected by a water curtain, as justified and documented in 2.6 of this Part. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.35.2 Detection, Control, and Extinguishment

The 480V Board Room 1A (772.0-A1) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available for fire brigade use in 772.0-A7.

8.3.35.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A1 potentially damages cable (2V4035A) to the Power Relief Solenoid Valve (2-PSV-1-31C-A). Damage to this cable prevents the ability to operate the pressure control valve (PCV) to maintain the pressure in #4 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.35.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A1 potentially damages a cable (2V7539A) to Power Relief Solenoid Valve (2-PSV-1-24B-A) or damages cables or equipment supporting the Control Air Compressor A (0-MTR-32-60-A). Damage to these components prevents the ability to modulate the pressure control valve to maintain the pressure in #3 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.35.5 Staffing Requirements for a Fire in Room 772.0-A1

For a fire in 772.0-A1, five Unit 2 actions are performed by three AUOs, one Unit 1 action and two "common" actions are performed by one AUO, one "common" action is performed by one AUO, and 12 Unit 1 actions are performed by three AUOs for a total of eight AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A1.

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8.3.36 Room 772.0-A2 East (480V Board Room 1B East)

8.3.36.1 Fire Prevention

The 480V Board Room 1-B, 772.0-A2 East, a subdivision of 772.0-A2 is constructed of reinforced concrete. Walls, floor, ceiling, and penetration seals in 772.0-A2 are fire resistance rated for 2 hours or greater. Doors and dampers are fire resistance rated for 3 hours except for one door. This door is not a qualified fire door; however, the door has been evaluated as equivalent for use as a fire door. Room 772.0-A2 has a floor area of 2,171 ft² and a nominal ceiling height of 13-feet. The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced suppression system to compensate for the intervening combustibles is documented in Section 2.4 of this Part.

The combustible loading in the room results in a fire severity classification of severe. The combustibles in 772.0-A2 consist of plastics associated with the electrical boards, panels, boxes and lights; HVAC ducts insulation; and insulation on the cables in trays. Over 90% of the combustibles in this room are insulation on cables in trays.

There are a number of assumed ignition sources in 772.0-A2 including inverters, multiplexer, battery chargers, and motor control centers. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.36.2 Detection, Control, and Extinguishment

The 480V Board Room is provided with ionization smoke detectors throughout that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A preaction sprinkler system is provided throughout except for the portion of the room (A6-A8/Q-R) that contains one set of vital battery inverters and charger. The portion of Room 772.0-A2 without sprinklers has an area of 315 ft². The in situ combustible load in the area without sprinkler protection consists of the insulation on cables in a single vertical tray and the insulation on the internal wiring of the inverters, chargers, and transfer switches. In addition, there is one conduit that is wrapped with Thermo-Lag 770. Justification for partial suppression in this room is documented in Section 3.1.8 of this Part. A standpipe and hose station system is also available from room 772.0-A7 for fire brigade use.

If a fire starts and is not extinguished, the fire barriers contain the fire and prevent propagation to adjacent rooms. Therefore, a fire in this room does not present an exposure hazard to the access paths to the manual actions performed in 757.0-A24 and 757.0-A21.

8.3.36.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close SG 1 Power Relief Valve (2-PCV-1-5) to control secondary pressure. A fire that is contained within room 772.0-A2 East could potentially damage cables 2V4010B and 2V4011B for the SG 1 Power Relief Solenoid

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Valve (2-PSV-1-6C-B) and result in the implementation of this OMA. The operator must operate valve 2-ISIV-1-408E2 at the local station 2-L-1001 (N₂) to open/close 2-PCV-1-5. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.36.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. A fire that is contained within room 772.0-A2 East could potentially damage various cables for the C & A Building Vent Board 2B1-B (2-MCC-214-B1-B) and the Essential Raw Cooling Water Supply Header 2B (ERCW-HDR-2B) which fails the Control Air Compressor B-B (0-MTR-32-86-B) requiring implementation of this OMA. The operator must operate valve 2-ISIV-1-405E2 at local station 2-L-1001 (N₂) to open/close 2-PCV-1-12. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.36.5 Staffing Requirements for a Fire in Room 772.0-A2 East

For a fire in 772.0-A2 East, five Unit 2 actions are performed by three AUOs, fourteen Unit 1 actions are performed by three AUOs, and one Unit 1 action along with one "common" action is performed by one AUO for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 772.0-A2 East.

8.3.37 Room 772.0-A2 West (480V Board Room 1B West)

8.3.37.1 Fire Prevention

The 480V Board Room 1-B, 772.0-A2 West, a subdivision of 772.0-A2 is constructed of reinforced concrete. Walls, floor, ceiling, door, dampers, and penetration seals in 772.0-A2 are fire resistance rated for identified in Part VI, Section 3. Room 772.0-A2 has a floor area of 2,171 ft² and a nominal ceiling height of 13-feet. The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced suppression system to compensate for the intervening combustibles is documented in Section 2.4 of this Part.

The combustible loading in the room results in a fire severity classification of severe. The combustibles in 772.0-A2 consist of plastics associated with the electrical boards, panels, boxes and lights; HVAC ducts insulation; and insulation on the cables in the trays. Over 90% of the combustibles in this room come from insulation on cable trays.

There are a number of assumed ignition sources in 772.0-A2 including inverters, multiplexer, battery chargers, and motor control centers. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or

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ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.37.2 Detection, Control, and Extinguishment

The 480V Board Room is provided with ionization smoke detectors throughout that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A preaction sprinkler system is provided throughout except for the portion of the room that contains one set of vital battery inverters and charger. The portion of Room 772.0-A2 without sprinklers has an area of 315 ft². The in situ combustible load in the area without sprinkler protection consists of the insulation on cables in a single vertical tray and the insulation on the internal wiring of the inverters, chargers, and transfer switches. A standpipe and hose station system is also available from room 772.0-A7 for fire brigade use.

If a fire starts and is not extinguished, the room's fire barriers contain the fire and prevent propagation to adjacent rooms. Therefore, a fire in this room does not present an exposure hazard to the access path to the manual actions performed in room 757.0-A24.

8.3.37.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. A fire that is contained within room 772.0-A2 West could potentially damage various cables for the 120V AC Vital Power Board 2-I (2-BD-235-1-D). The board failure will cause failure of the Pressure Indicator Controller (2-PIC-1-31A) for SG 4 Pressure Relief Valve and will result in the implementation of this OMA. The operator must operate valve 2-ISIV-1-406E2 at the local station 2-L-1000 (N₂) to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.37.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. A fire that is contained within room 772.0-A2 West could potentially damage various cables for the 120V AC Vital Power Board 2-I (2-BD-235-1-D). The board failure will cause failure of the Pressure Indicator Controller (2-PIC-1-24A) for SG 3 Power Relief Valve and result in the implementation of this OMA. The operator must operate valve 2-ISIV-1-407E2 at the local station 2-L-1000 (N₂) to open/close 2-PCV-1-23. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

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8.3.37.5 Staffing Requirements for a Fire in Room 772.0-A2 West

For a fire in 772.0-A2 West, 17 Unit 1 actions are performed by 4 AUOs, four Unit 2 actions are performed by two AUOs and one Unit 1 action, one Unit 2 action along with two “common” actions are performed by one AUO for a total of 7 AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2 should there be a fire in 772.0-A2 (West).

8.3.38 Room 772.0-A4 (125V Vital Battery Room I)

8.3.38.1 Fire Prevention

The 125V Vital Battery Room I (772.0-A4) is constructed of reinforced concrete. The walls, floor, ceiling and penetration seals have a fire resistance rating identified in Part VI, Section 3. The 125V Vital Battery Room I has a floor area of 344 ft² and a ceiling height of 13-feet. The combustible loading of room 772.0-A4 consists of plastics associated with electrical panels, boxes and battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The combustible loading in the room results in a fire severity classification of low. Over 85% of the combustibles in this room are due to the battery cases.

The potential ignition sources in this room consist of the batteries, two control panels and two junction boxes. The panels and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of associated combustibles) to create and sustain a large fire. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.38.2 Detection, Control, and Extinguishment

The 125V Vital Battery Room I is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed manually actuated sprinkler system provided for the room is activated (valve located on wall in on elevation 757) by the fire brigade. A standpipe and hose station system is also available from room 772.0-A7 for fire brigade use.

Even if the postulated fire starts and is not extinguished, the 3-hour fire rating of the room’s fire barriers contain the fire and do not allow it to present an exposure hazard to adjacent rooms.

8.3.38.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 125V Vital Battery Room I potentially damages cables (2PV824D, 2B441D, B56D, B55D, and B57D needed for 2-BD-235-1-D, which supports controller 2-PIC-1-31A) which prevents the ability to modulate the power relief valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator.

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Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in the OMA 1022 bounding evaluation (Section 8.3.63).

8.3.38.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 125V Vital Battery Room I potentially damages three control cables (B56D, B55D, and B57D), cables 2PV824D and 2B441D supporting the Control Air Compressor A-A (0-MTR-32-60-A), or equipment supporting the #3 Steam Generator Power Relief Valve Modifier (2-PM-1-24) which prevents the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the OMA 1023 bounding evaluation (Section 8.3.64).

8.3.38.5 Staffing Requirements for a Fire in Room 772.0-A4

For a fire in 772.0-A4, four Unit 2 actions are performed by two AUOs, eight Unit 1 actions are performed by three AUOs, one Unit 2 action along with a “common” action is performed by one AUO and one “common” action is performed by one AUO for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A4.

8.3.39 Room 772.0-A5 (480V Transformer Room 1B)

8.3.39.1 Fire Prevention

The 480V Transformer Room 1B (772.0-A5) is constructed of reinforced concrete. The door, walls, floor, and penetration seals have a fire resistance rating identified in Part VI, Section 3. The 480V Transformer Room 1B has a floor area of 1762 ft² and a nominal ceiling height of 13-feet. The combustible loading of room 772.0-A5 results in a fire severity classification of Moderate. The combustible material in the room consists of transformers, plastics associated with panels, cable trays, protective covers, and ERFBS. Approximately 94% of the combustibles in this room are due to the insulation on cables in trays. The assumed ignition sources are the three transformers in room 772.0-A5.

NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.39.2 Detection, Control, and Extinguishment

The 480V Transformer Room 1-B, elevation 772.0' is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The room is also provided with an automatic

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suppression sprinkler system. Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available in room 772.0-A7 for fire brigade use.

Even if the postulated fire starts and is not extinguished, the minimum 2-hour fire rating of the room's walls, floors and door, and penetration seals contain the fire and not allow it to propagate to adjacent rooms. Therefore, a fire in this room does not present an exposure hazard to the access paths to the manual action located in 757.0-A21.

8.3.39.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 480V Transformer Room 1B potentially damages cables 2V4010B, 2V4011B which support the #1 Steam Generator Power Relief Solenoid Valve (2-PSV-1-6C-B). The fire safe shutdown requirement is for the AUO to operate 2-ISIV-1-408E2 at the local N₂ station 2-L-1001 in order to control secondary pressure. This OMA must be completed within 60 minutes and is performed in room 757.0-A21. This action has been validated and completed in 11 minutes and 41 seconds.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

8.3.39.4 Staffing Requirements for a Fire in Room 772.0-A5

For a fire in room 772.0-A5, 1 “common” action is performed by one AUO, 12 Unit 1 actions are performed by four AUOs and four Unit 2 actions are performed by two AUOs for a total of seven AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 772.0-A5.

8.3.40 Room 772.0-A6 (480V Transformer Room 1A)

8.3.40.1 Fire Prevention

The 480V Transformer Room 1A (772.0-A6) is constructed of reinforced concrete with a fire resistance rating identified in Part VI, Section 3. Fire rating for doors are identified in Part VI, Section 3. The room has a floor area of 1,852 ft² and a nominal ceiling height of 13 feet.

The combustible loading in the room results in a fire severity classification of moderate. The combustibles in 772.0-A6 consist of transformer insulating oil and insulation on cables in cable trays. Insulation on cables in trays accounts for over 70% of the combustibles in the room. The assumed ignition sources in this room are electrical boards and transformers. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.40.2 Detection, Control, and Extinguishment

The 480V Transformer Room 1A (772.0-A6) is provided with ionization smoke detection that alarms in the MCR. The room is also provided with an installed automatic sprinkler system. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinklers located in the room activate. A standpipe and hose station system is available in the adjacent room (772.0-A7) for fire brigade use. With fire detection, an enhanced automatic suppression system, and fire resistant barriers, a fire in this area is contained and does not present an exposure hazard to adjacent rooms.

8.3.40.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A6 could result in the loss of the transformer that provides power to the Control Air Compressor Motor A (0-MTR-32-60-A) or damage a control cable associated with the Power Operated Relief Valve (2-PCV-1-23). Either of these results in the use of this OMA to modulate 2-PCV-1-23 to control pressure on the Steam Generator #3.

The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of 2-PCV-1-23, thereby establishing pressure control of the #3 Steam Generator. Emergency air is provided for operation of the 2-PCV-1-23, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. This action has been validated and completed in 12 minutes and 19 seconds.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.40.4 Staffing Requirements for a Fire in Room 772.0-A6

For a fire in 772.0-A6, one Unit 1 action and one “common” action are performed by one AUO, four Unit 2 actions are performed by two AUOs and four Unit 1 actions are performed by two AUOs for a total of five AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A6.

8.3.41 Room 772.0-A8 (Fifth Vital Battery and Board Room)

8.3.41.1 Fire Prevention

The Fifth Vital Battery and Board Room (772.0-A8) is constructed of reinforced concrete with a minimum fire rating for the walls, doors, dampers and the floor identified in Part VI, Section 3. Room 772.0-A8 has a floor area of 480 ft² and a nominal ceiling height of 13-feet.

The combustible loading in the room results in a fire severity classification of low. The combustibles in 772.0-A8 consist of lube oil for motors, polycarbonate in batteries, PVC cell covers, polyethylene of the rack rail insulation and plastic associated junction boxes, electrical jumper cables and the vital battery board. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.41.2 Detection, Control, and Extinguishment

The Fifth Vital Battery and Board Room (772.0-A8) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Room 772.0-A8 is also provided with an installed automatic preaction sprinkler system.

Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. A standpipe and hose station system is also available for fire brigade use in adjacent room 772.0-A7. With fire detection, an automatic suppression system, and fire resistant barriers, a fire in this area is contained and does not present a hazard to adjacent rooms.

8.3.41.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

For a fire in the Fifth Vital Battery and Board Room (772.0-A8), when vital battery is in service for replacement of Channel IV, the potential for damage to cables B202S, B80S, B81S or battery 0-BAT-236-5-S failing the 125V Vital Battery Board IV (0-BD-236-4-G) which prevents the ability to modulate the power relief valve (2-PCV-1-5) to relieve pressure on #1 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-5 (SG 1 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-408E2 at the local station 2-L-1001 to open/close 2-PCV-1-5. This OMA must be completed within 60 minutes and is performed in room 757.0 A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

8.3.41.4 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

For a fire in the Fifth Vital Battery and Board Room (772.0-A8), when vital battery is in service for replacement of Channels I or III the potential for damage to cables B201S, B80S, B81S or battery 0-BAT-236-5-S failing the 125V Vital Battery Board I or III (0-BD-236-1-D or 0-BD-236-3-F) can prevent the ability to modulate the power relief valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-406E2 on 2-L-1000 at the local station to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.41.5 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

For a fire in the Fifth Vital Battery and Board Room (772.0-A8), when vital battery is in service for replacement of Channels I or III the potential for damage to cables B201S, B80S, B81S or battery 0-BAT-236-5-S failing the 125V Vital Battery Board I or III (0-BD-236-1-D or

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0-BD-236-3-F) can prevent the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-407E2 on 2-L-1000 at the local station to open/close 2-PCV-1-23. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.41.6 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

For a fire in the Fifth Vital Battery and Board Room (772.0-A8), when vital battery is in service for replacement of Channel IV, the potential for damage to cables B202S, B80S, B81S or battery 0-BAT-236-5-S failing the 125V Vital Battery Board IV (0-BD-236-4-G) can prevent the ability to modulate the power relief valve (2-PCV-1-12) to relieve pressure on #2 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-405E2 on 2-L-1001 at the local station to open/close 2-PCV-1-12. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.41.7 Staffing Requirements for a Fire in Room 772.0-A8

There are no manual actions for safe shutdown for a fire in 772.0-A8, when the 5th vital battery is not in service as a replacement for Channels I, II, III, or IV, then; three Unit 1 actions are performed by two AUOs and three Unit 2 actions are performed by two AUOs for a total four AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions.

For a fire in 772.0-A8, if 5th vital battery is in service as a replacement for Channel I, then; four Unit 2 actions are performed by two AUOs, eight Unit 1 actions are performed by three AUOs, one Unit 2 action along with a “common” action is performed by one AUO and one “common” action is performed by one AUO for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions.

There are no manual actions for safe shutdown for a fire in 772.0-A8, if 5th vital battery is in service as a replacement for Channel II, then; one “common” action is performed by one AUO, three Unit 2 actions are performed by one AUO and six Unit 1 actions are performed by three AUOs for a total of five AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions.

For a fire in 772.0-A8, if 5th vital battery is in service as a replacement for Channel III, then; three “common” actions are performed by two AUOs, eight Unit 2 actions are performed by three AUOs and three Unit 1 actions are performed by two AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions.

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For a fire in 772.0-A8, if 5th vital battery is in service as a replacement for Channel IV, two “common” actions are performed by one AUO, seven Unit 2 actions are performed by three AUOs and three Unit 1 actions are performed by two AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions.

8.3.42 Room 772.0-A9 (HEPA Filter Plenum Room)

8.3.42.1 Fire Prevention

The HEPA Filter Plenum Room (772.0-A9) is constructed of reinforced concrete with a minimum fire rating for the walls, doors, and the floor identified in Part VI, Section 3. Room 772.0-A9 has a floor area of 480 ft² and a nominal ceiling height of 13-feet.

The combustible loading of the HEPA Filter Plenum Room results in a fire severity classification of low. The combustibles in 772.0-A9 consist of plastic associated with the lights and insulation on cables in the trays. Insulation on cables in trays accounts for over 99% of the combustibles in this room. There are no credible ignition sources in room 772.0-A9. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.42.2 Detection, Control, and Extinguishment

The HEPA Filter Plenum Room (772.0-A9) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Room 772.0-A9 is also provided with an installed automatic sprinkler system.

Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. A standpipe and hose station system is also available for fire brigade use in adjacent room 772.0-A10. With fire detection, an automatic suppression system, and fire resistant barriers, a fire in this area is contained and does not present a hazard to adjacent rooms.

8.3.42.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A9 was assumed to spread to another room (757.0-A13) and damage equipment or control cables for the Auxiliary and Control Air Header B (0-MTR-32-86-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement for a fire in 772.0-A9 is to have an air source for 2-PCV-1-30 within 60 minutes to maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of credible ignition sources in the HEPA Filter Plenum Room (as indicated by the combustible loading calculation and ignition source

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walkdown documentation) there is no credible fire originating in room 772.0-A9 that could result in the implementation of this manual action.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.42.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A9 is assumed to spread to another room (757.0-A13) and damage equipment or control cable for the Auxiliary and Control Air Header A (0-MTR-32-60-A) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on the #3 Steam Generator when needed. The fire safe shutdown requirement for a fire in 772.0-A9 is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of 2-PCV-1-23, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

However, due to the low combustible loading and lack of credible ignition sources in the HEPA Filter Plenum Room (as indicated by the combustible loading calculation and ignition source walkdown documentation) there is no credible fire originating in 772.0-A9 that could result in the need for this manual action.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.42.5 Staffing Requirements for a Fire in Room 772.0-A9

For a fire in 772.0-A9, one Unit 1 action and one “common” action are performed by one AUO, four Unit 1 actions are performed by two AUOs and five Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 772.0-A9.

8.3.43 Room 772.0-A10 (Mechanical Equipment Room)

8.3.43.1 Fire Prevention

Mechanical Equipment Room (772.0-A10) is constructed of reinforced concrete that has a minimum fire resistance identified in Part VI, Section 3 with the fire doors and fire dampers. Room 772.0-A10 has a floor area of 686 ft² and a nominal ceiling height of 13 feet. The combustibles in 772.0-A10 consist of lube oil in the air cooler equipment, plastic associated with lights, and insulation on pipes and cables in trays. Insulation on cable trays accounts for over 99% of the combustibles in this room. The combustible loading in the room results in a fire severity classification of Moderately Severe.

NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

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8.3.43.2 Detection, Control, and Extinguishment

Mechanical Equipment Room (772.0-A10) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system is also available in the room for fire brigade use.

8.3.43.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A10 could potentially damage the control cable to the #4 Steam Generator Power Relief Solenoid Valve (2-PSV-1-31C-A, 2V4035A). Damage to cable 2V4035A prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA SG PORV Nitrogen Station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.43.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A10 could potentially damage the Control Air Compressor A-A (0-MTR-32-60-A, cable 2PP756A fails upstream power supply to compressor) and the control cable to SG 3 Power Relief Solenoid Valve (2-PSV-1-24B-A, 2V7539A). Damage to this equipment could prevent the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the emergency nitrogen station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.43.5 Staffing Requirements for a Fire in Room 772.0-A10

For a fire in 772.0-A10, one Unit 1 action and one “common” action are performed by one AUO, three Unit 1 actions are performed by two AUOs and five Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to perform all of the Unit 1 and Unit 2 actions, should there be a fire in 772.0-A10.

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8.3.44 Room 772.0-A11 (480V Transformer Room 2B)

8.3.44.1 Fire Prevention

The 480V Transformer Room 2B, 772.0-A11, is constructed of reinforced concrete. The walls, doors, floor and penetration seals have a fire resistance rating identified in Part VI, Section 3. There are no fire dampers in the room. 772.0-A11 has a floor area of 1,874 ft² and a nominal ceiling height of 13 feet.

The combustibles in 772.0-A11 consist of the oil in the transformers, plastic associated with hand switches and insulation on the cables in the trays. Cable insulation accounts for over 72% of the combustibles in this room. The combustible loading results in a fire severity classification of Moderately Severe.

The potential ignition sources in room 772.0-A11 are the transformers. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.44.2 Detection, Control, and Extinguishment

The 480V Transformer Room 2B Room (772.0-A11) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, automatic sprinklers in the room activate. A standpipe and hose station system is available in the adjacent room (772.0-A10) for fire brigade use.

8.3.44.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A11 could damage multiple cables needed for Control Air Compressor (0-MTR-32-86-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-12) to relieve pressure on #2 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.44.4 Staffing Requirements for a Fire in Room 772.0-A11

For a fire in 772.0-A11, one Unit 1 action and one "common" action are performed by one AUO, three Unit 1 actions are performed by two AUOs and four Unit 2 actions are performed by three AUOs for a total six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 772.0-A11.

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8.3.45 Room 772.0-A12 (480V Transformer Room 2A)

8.3.45.1 Fire Prevention

The 480V Transformer Room 2A (772.0-A12) is constructed of reinforced concrete. The fire resistance rating walls, floor and penetrations seals are identified in Part VI, Section 3. There are no dampers in the room. The room has a floor area of 1783 ft² and a nominal ceiling height of 13-feet.

The combustible loading in room 772.0-A12 results in a fire severity classification of Moderately Severe. The combustible material in the room consists of oil in the transformers, plastic associated with a panel and insulation on cables in trays. Insulation on cable trays accounts for approximately 78% of the combustibles in room 772.0-A12. The potential ignition sources in this room are the transformers.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.45.2 Detection, Control, and Extinguishment

The 480V Transformer Room 2A is provided with ionization smoke detectors that alarm in the Main Control Room (MCR) and an automatic preaction sprinkler system. Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available in a nearby room (772.0-A10) for fire brigade use.

8.3.45.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A12 could potentially damage a control cable to the 480V Shutdown Board 2A1-A (2-BD-212-A1-A) which prevents the ability to modulate Power Relief Valve 2-PCV-1-23 to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes to maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in the 1023 bounding evaluation (Section 8.3.64).

8.3.45.4 Staffing Requirements for a Fire in Room 772.0-A12

For a fire in 772.0-A12, one Unit 1 action and one "common" action are performed by one AUO, seven Unit 2 actions are performed by five AUOs and four Unit 1 actions are performed by two AUOs for a total of eight AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 772.0-A12.

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8.3.46 Room 772.0-A13 (125V Vital Battery Room IV)

8.3.46.1 Fire Prevention

The 125V Vital Battery Room IV, 772.0-A13, is constructed of reinforced concrete. Walls, floors, ceiling, doors, dampers, and penetration seals in 772.0-A13 are fire resistance rated identified in Part VI, Section 3. Room 772.0-A13 has a floor area of 341 ft² and a nominal ceiling height of 13-feet. The combustibles in 772.0-A13 consist of plastics associated with electrical panels, boxes and battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The combustible loading in the room results in a fire severity classification of low. Over 85% of the combustibles in this room are due to the battery cases.

The potential ignition sources in this room consist of the batteries, two control panels and two junction boxes. The panels and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of associated combustibles) to create and sustain a large fire. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.46.2 Detection, Control, and Extinguishment

The 125V Vital Battery Room IV is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts would be quickly detected and personnel would be dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed manually actuated sprinkler system provided for the room is activated (valve located on wall in on elevation 757) by the fire brigade. preaction A standpipe and hose station system is also available from room 772.0-A10 for fire brigade use.

Even if the postulated fire starts and is not extinguished, the 3-hour fire rating of the room's fire barriers contain the fire and does not allow it to present an exposure hazard to adjacent rooms.

8.3.46.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A13 could potentially damage cables (B70G, B71G and B72G) failing the 125V Vital Battery Board IV (0-BD-236-4-G) which prevents the ability to relieve pressure via Power Relief Valve 2-PCV-1-5 on #1 Steam Generator when needed.

The fire safe shutdown requirement for this operator action is to have an air source for 2-PCV-1-5 within 60 minutes to maintain pressure control of the #1 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

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8.3.46.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 125V Vital Battery Room IV (772.0-A13) potentially damages cables B70G, B71G and B72G failing the 125V Vital Battery Board IV (0-BD-236-4-G) which prevents the ability to modulate the power relief valve (2-PCV-1-12) to relieve pressure on #2 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-405E2 on 2-L-1001 at the local station to open/close 2-PCV-1-12.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.46.5 Staffing Requirements for a Fire in Room 772.0-A13

For a fire in 772.0-A13, two “common” actions are performed by one AUO, seven Unit 2 actions are performed by three AUOs and three Unit 1 actions are performed by two AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 772.0-A13.

8.3.47 Room 772.0-A14 (125V Vital Battery Room III)

8.3.47.1 Fire Prevention

The 125V Vital Battery Room III (772.0-A14) is constructed of reinforced concrete. The walls, floor, ceiling and penetration seals have a fire resistance rating identified in Part VI, Section 3. The 125V Vital Battery Room III has a floor area of 341 ft² and a nominal ceiling height of 13-feet. The combustible loading of room 772.0-A14 consists of plastics associated with electrical panels, boxes and battery cases. Adequate ventilation is provided to preclude explosive concentrations of hydrogen. The combustible loading in the room results in a fire severity classification of low. Over 85% of the combustibles in this room are due to the battery cases.

The potential ignition sources in this room consist of the batteries, two control panels and two junction boxes. The panels and the junction boxes are relatively small and do not constitute credible ignition sources (circuits are properly protected and insignificant quantity of associated combustibles) to create and sustain a large fire. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.47.2 Detection, Control, and Extinguishment

The 125V Vital Battery Room III is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed manually actuated sprinkler system provided for the room is activated (valve located on wall in on elevation 757.0) by the fire brigade. A standpipe and hose station system is also available from room 772.0-A10 for fire brigade use.

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Even if the postulated fire starts and is not be extinguished, the 3-hour fire rating of the room's fire barriers contains the fire and does not allow it to present an exposure hazard to adjacent rooms.

8.3.47.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 125VDC Vital Battery Board Room III (772.0-A14) potentially damages cables B65F, B66F and B67F failing the 125V Vital Battery Board III (0-BD-236-3-F) which prevents the ability to modulate the power relief valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-406E2 on 2-L-1000 at the local station to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.47.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 125VDC Vital Battery Board Room III (772.0-A14) potentially damages cables B65F, B66F and B67F failing the 125V Vital Battery Board III (0-BD-236-3-F) which prevents the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, when needed. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. The operator must align N2 supply and operate 2-ISIV-1-407E2 on 2-L-1000 at the local station to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes and is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.47.5 OMA 1148 – TRANSFER 480V POWER FOR 0-XSW-236-3-S FROM 2-BD-212-A2-A NORMAL FEED TO ALTERNATE POWER FROM 2-BD-212-B1-B.

A fire in room 772.0-A14 could damage cables B65F, B67F and B66F or 0-BAT-236-3-F failing the 125V Vital Battery Board III (0-BD-236-3-F). The fire safe shutdown requirement of this OMA is to transfer 0-XSW-236-3-S from normal (2-BD-212-A2-A) to alternate (2-BD-212-B1-B) to assure continued operation of the 120VAC vital inverters. (This will establish SG #3 cool down by supply power to 2-PM-1-24). This OMA must be completed within 60 minutes and is performed in room 772.0-A15.

OMA 1148 is feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The Operator has 60 minutes before the OMA must be completed. The analysis provided an estimated travel and performance time of 8 minutes. The demonstrated transit and performance time was 8 minutes 55 seconds. The fire that results in the fire-induced damage requiring implementation of this OMA is contained within room 772.0-A14 and does not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room and operate 0-XSW-236-3-S to accomplish this action (8 minutes) provides 52-minutes (>500%) margin and the validated time of 8 minutes 55 seconds, provides 51 minutes 8 seconds (>500% margin). An AUO would have sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 772.0-A14. Therefore, the fire does not affect the functionality and accessibility of the equipment needed for this OMA.

e. Available Indications

Local indication for performing this OMA is adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed to complete these actions.

h. Personnel Protection Equipment

Only standard PPE is needed to perform this action.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.47.6 Staffing Requirements for a Fire in Room 772.0-A14

For a fire in 772.0-A14, three “common” actions are performed by two AUOs, eight Unit 2 actions are performed by three AUOs and three Unit 1 actions are performed by two AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A14.

8.3.48 Room 772.0-A15 East (480V Board Room 2B East)

8.3.48.1 Fire Prevention

The 480V Board Room 2B, 772.0-A15 East, a subdivision of 772.0-A15 is constructed of reinforced concrete. Doors, dampers, penetration seals and barriers (walls, floors, ceiling etc.) in 772.0-A15 are fire resistance rated identified in Part VI, Section 3. Room 772.0-A15 has a floor area of 2153 ft² and a nominal ceiling height of 13-feet. The combustibles in 772.0-A15 consist of plastics associated with the electrical boards, panels, boxes and lights and insulation on the HVAC ducts and on the cables in the trays.

The combustible loading in the room results in a fire severity classification of severe. Over 91% of the combustibles in the room are in the form of cable insulation in trays.

The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Section 2.4 of this Part.

There are a number of assumed ignition sources in 772.0-A15 including inverters, multiplexer, battery chargers, and a Motor Control Center (MCC). NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.48.2 Detection, Control, and Extinguishment

The 480V Board Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available from room 772.0-A10 for fire brigade use.

The preaction sprinkler system covers all but that portion of the room between column lines A8-A10/Q-R. Given the small amount of combustibles in the area without automatic suppression, and separation between redundant FSSD components in this room, an adequate level of fire protection is provided. The justification for lack of full area automatic suppression coverage is documented in Section 3.1.5 of this part.

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Even if the postulated fire starts and is not extinguished, the minimum 2-hour fire rating of the room's walls, floors and ceiling and door, fire dampers and penetration seals contain the fire and does not allow it to propagate to adjacent rooms.

8.3.48.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 480V Board Room 2-B potentially damages cable B13G or supporting equipment 125V DC Transfer Switch, 0-XSW-236-79DC1-S or Charger (0-CHGR-236-4-G), which supports the #1 Steam Generator Power Relief Solenoid Valve (2-PSV-1-6C-B). The fire safe shutdown requirement is for the AUO to operate 2-ISIV-1-408E2 at the local station 2-L-1001 (N₂) in order to control secondary pressure. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in the OMA 1016 bounding evaluation (Section 8.3.62).

8.3.48.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 480V Board Room 2-B potentially damages cable B13G or supporting equipment 125V DC Transfer Switch (0-XSW-236-79DC1-S) or charger (0-CHGR-236-4-G) which supports the #2 Steam Generator Power Relief Solenoid Valve (2-PSV-1-13B-B). There may also be failed supporting equipment to the Essential Raw Cooling Water Supply Header 2B (ERCW-HDR-2B) which supports the Control Air Compressor B-B (0-MTR-32-86-B). The fire safe shutdown requirement is for the AUO to operate 2-ISIV-1-405E2 at the local station 2-L-1001 (N₂) in order to control secondary pressure. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in the OMA 1024 bounding evaluation (Section 8.3.65).

8.3.48.5 Staffing Requirements for a Fire in Room 772.0-A15 East

For a fire in 772.0-A15 (East), one Unit 2 action and three “common” actions are performed by one AUO, 9 Unit 2 actions are performed by three AUOs, five Unit 1 actions are performed by three AUOs and four Unit 2 actions and two common actions are performed by one AUO for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A15 (East).

8.3.49 Room 772.0-A15 West (480V Board Room 2B West)

8.3.49.1 Fire Prevention

The 480V Board Room 2-B, 772.0-A15 (West), a subdivision of 772.0-A15 is constructed of reinforced concrete. Doors, dampers, penetration seals and barriers (walls, floors, ceiling etc.) in 772.0-A15 are fire resistance rated identified in Part VI, Section 3. Room 772.0-A15 has a floor area of 2153 ft² and a nominal ceiling height of 13-feet. The combustibles in 772.0-A15 consist of plastics associated with the electrical boards, panels, boxes and lights and insulation on the HVAC ducts and on the cables in the trays.

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The combustible loading in the room results in a fire severity classification of severe. Over 91% of the combustibles in the room are in the form of cable insulation in trays.

The room contains intervening combustibles in the form of insulation on cables in trays and ERFBS. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Section 2.4 of this Part.

There are a number of assumed ignition sources in 772.0-A15 including inverters, multiplexer, battery chargers, and a Motor Control Center (MCC). NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.49.2 Detection, Control, and Extinguishment

The 480V Board Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is also available from room 772.0-A10 for fire brigade use.

The preaction sprinkler system covers all but that portion of the room between column lines A8-A10/Q-R. Given the small amount of combustibles in the area without automatic suppression, and separation between redundant FSSD components this room, an adequate level of fire protection is provided. The justification for lack of full area automatic suppression coverage is documented in Section 3.1.5 of this Part.

Even if the postulated fire starts and is not extinguished, the minimum 2-hour fire rating of the room's walls, floors and ceiling and door, fire dampers and penetration seals contain the fire and does not allow it to propagate to adjacent rooms.

8.3.49.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 480V Board Room 2-B potentially damages cables 2V4010B or 2V4011B which supports the #1 Steam Generator Power Relief Solenoid Valve (2-PSV-1-6C-B) which is necessary for Power Relief valve 2-PCV-1-5 to relieve pressure on the #1 Steam Generator when needed. The fire safe shutdown requirement is for the AUO to operate 2-ISIV-1-408E2 at the local station 2-L-1001 (N2) in order to control secondary pressure. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

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8.3.49.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the 480V Board Room 2-B potentially damages charger (0-CHGR-236-3-F) in supporting #2 Steam Generator Power Relief Solenoid Valve (2-PSV-1-13C-A). There may also be failed supporting equipment to the Essential Raw Cooling Water Supply Header 2B (ERCW-HDR-2B) which supports the Control Air Compressor B-B (0-MTR-32-86-B). These components are needed for #2 Steam Generator power relief valve 2-PCV-1-12 which is needed to maintain pressure control of the #2 Steam Generator. The fire safe shutdown requirement is for the AUO to operate 2-ISIV-1-405E2 at the local station 2-L-1001 (N2) in order to control secondary pressure. This OMA must be completed within 60 minutes and is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.49.5 OMA 1495 – Operate PCV for MDAFW Pump A from ACR

A fire in room 772.0-A15 (West) could damage cables 2PV828F or PV240F which could prevent the ability to operate the A Motor Driven Auxiliary Feedwater Pump (MDAFW) Outlet Pressure Control Valve (2-PCV-3-122-A). The fire safe shutdown requirement for a fire in 772.0-A15 (West) is to control discharge pressure on the MDAFW Pump by transferring from normal to auxiliary control and operating the PCV from auxiliary control room. Discharge pressure of the MDAFW pump is required to be controlled in within 20 minutes. The operator must transfer from normal to auxiliary control (OMA 1495) using transfer switch 2-XS-3-122, located on auxiliary control panel 2-L-11A in room 757.0-A27. The operator enters the adjacent Auxiliary Control Room, 757.0-A1, and ensures the PCV is functional by verifying the discharge pressure controller 2-PDIC-3-122C on auxiliary control panel 2-L-10 is in "AUTO".

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMA 1495 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The Operator has 20 minutes before the OMA must be completed. The demonstrated time to transit and perform the action was 1 minutes 57 seconds. The fire that results in the fire-induced damage requiring implementation of this OMA will be contained within room 772.0-A15 (West) and will not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the transfer switch and perform the action (3 minutes) provides 17-minutes (>500%) margin. The validated time at 1 minutes 57 seconds, provides 18-minutes 3 seconds (>500% margin). An AUO would have sufficient time to ensure reliability.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety

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injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the transfer switch and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The Transfer Switch in room 757.0-A27 and the Controller in room 757.0-A1 are remote from the fire and are readily accessible, therefore it is ensured that they are functional and accessible.

e. Available Indications

Based on a review of actions documented in Reverification and Revalidation of Appendix R Manual Operator Actions, available local indications and MCR indications for ensuring Isolation of Normal Makeup are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is needed to complete this action.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.49.6 OMAs 558, 622 – Control Power for 1-BD-211-A-A and 2-BD-211-A-A

A fire in room 772.0-A15 (West) could damage battery charger 0-CHGR-236-3-F and transfer switch 0-XSW-236-79DC2-S failing the 125V Vital Battery Board III (0-BD-236-3-F). The fire safe shutdown requirement of OMAs 558 and 622 is to transfer control power from 0-BD-236-3-

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F to 0-BD-236-1-D for normal control power bus for 1-BD-211-A-A and 2-BD-211-A-A. OMAs 558 and 622 are performed in room 757.0-A2 and must be completed within 45 minutes.

OMAs 558 and 622 are feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The Operator has 45 minutes before the OMAs 558 and 622 must be completed. The analysis provided an estimated travel and performance time of 15 minutes. The demonstrated transit and performance time was 2 minutes 23 seconds. The fire that results in the fire-induced damage requiring implementation of these OMAs are contained within room 772.0-A15 (West) and does not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 757.0-A2 and operate knife switch in the control power transfer panel to accomplish this action (5 minutes) provides 40-minutes (>500%) margin and the validated time of 2 minutes 23 seconds, provides 42 minutes 37 seconds (>500% margin). An AUO would have sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 772.0-A15 (West). Therefore, the fire does not affect the functionality and accessibility of the equipment needed for this OMA.

e. Available Indications

Local indications for performing these OMAs are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

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h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.49.7 OMAs 1665, 1666 – Control Power for 2-BD-212-A1-A and 2-BD-212-A2-A

A fire in room 772.0-A15 (West) could damage battery charger 0-CHGR-236-3-F and transfer switch 0-XSW-236-79DC2-S failing the 125V Vital Battery Board III (0-BD-236-3-F). The fire safe shutdown requirement of OMAs 1665 and 1666 is to transfer control power from 0-BD-236-3-F to 0-BD-236-1-D for normal control power bus for 2-BD-212-A1-A and 2-BD-211-A2-A. OMAs 1665 and 1666 are performed in room 757.0-A21 and must be completed within 45 minutes.

OMAs 1665 and 1666 are feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The Operator has 45 minutes before the OMAs 1665 and 1666 must be completed. The analysis provided an estimated travel and performance time of 8 minutes. The demonstrated transit and performance time was 7 minutes 41 seconds. The fire that results in the fire-induced damage requiring implementation of these OMAs are contained within room 772.0-A15 (West) and does not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 757.0-A21 and operate knife switch in the control power transfer panel to accomplish this action (8 minutes) provides 37-minutes (>400%) margin and the validated time of 7 minutes 41 seconds, provides 37 minutes 19 seconds (>400% margin). An AUO would have sufficient time to ensure reliability.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 772.0-A15 (West). Therefore, the fire does not affect the functionality and accessibility of the equipment need for this OMA.

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e. Available Indications

Local indications for performing these OMAs are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.49.8 OMA 1664 – OPERABILITY OF PRZ PORV 2-PCV-68-340A-A

A fire in room 772.0-A15 (West) could damage battery charger 0-CHGR-236-3-F and transfer switch 0-XSW-236-79DC2-S failing the 125V Vital Battery Board III (0-BD-236-3-F). Battery 0-BAT-236-3-F is evaluated in calculation EDQ00023620070003 to power 2-PCV-68-340A-A up to 24 hours if other loads are stripped with 60 minutes. The fire safe shutdown requirement of these OMA is to open all load breakers on 0-BD-236-3-F except for breaker 310 for 2-PCV-68-340A-A. 2-PCV-68-340A-A will be operable for 24 hours. OMA 1664 must be completed within 60 minutes and is performed in room 757.0-A23.

OMA 1664 is feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The Operator has 60 minutes before the OMA 1664 must be completed. The analysis provided an estimated travel and performance time of 8 minutes. The demonstrated transit and performance time was 8 minutes 41 seconds. The fire that results in the fire-induced damage requiring implementation of these OMAs are contained within room 772.0-A15 (West) and does not present an exposure hazard to the operator on the access path or the control location.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 757.0-A23 and open all load breakers on 0-BD-236-3-F except for breaker 310 to accomplish this action (8 minutes) provides 52-minutes (>500%) margin and the validated time of 8 minutes 41 seconds, provides 51 minutes 19 seconds (>500% margin). An AUO would have sufficient time to ensure reliability.

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c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within 772.0-A15 (West). Therefore, the fire does not affect the functionality and accessibility of the equipment needed for this OMA.

e. Available Indications

Local indication for performing this OMA is adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

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8.3.49.9 OMAs 1669, 1670 – Control 2-LCV-3-156 and 2-LCV-3-164

A fire in room 772.0-A15 (West) could damage cables 2PV828F, 2B443F, 2PL7035S, 2PL7036F and 2PV827F which could disable 120V AC Vital Board 2-BD-235-3-F which provides power to operate MDAFW Pump Steam Generator #1 (2-LCV-3-164) or #2 (2-LCV-3-156) Level Control valves. The fire safe shutdown requirement for a fire in 772.0-A15 (West) is to close 2-ISV-32-3751 (1670) and 2-ISV-32-3753 (1669), control air isolation valve to 2-LCV-3-156 and 2-LCV-3-164 and open petcock to vent air from valve operator. These actions must be completed within 20 minutes and are performed in 737.0-A1B.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMAs 1669 and 1670 are both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 20 minutes to complete these OMA. The analyzed time estimated to travel and perform each action is 4 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 4 minutes 13 seconds which provides 15 minutes 47 seconds of margin. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the actions (4 minutes) provides 16 minutes (400%) margin. The demonstrated validation time was 4 minutes 13 seconds which provides 15 minutes 47 second (374%) of margin. There is more than adequate time available to ensure reliability.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of the OMA. If they were not available, 8-hour emergency battery pack lighting is available; therefore, there is adequate lighting to access the local panel and perform the OMA. Access paths and control location are unaffected by the fire or other adverse environmental conditions.

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d. Equipment Functionality and Accessibility

The control air isolation valves for these manual actions are not affected by the fire and remain functional and accessible. The fire that results in the fire-induced damage requiring implementation of these OMAs is contained within 772.0-A15 (West). Therefore, the fire does not affect the functionality and accessibility of the equipment needed for these OMAs.

e. Available Indications

The MCR operator has adequate indications available and there are no local indications needed for the operation of the transfer switches.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.49.10 OMAs 1667, 1668 – Operate SG #1 and #2 Level for MDAFW Pump A

A fire in room 772.0-A15 (West) could damage cables 2PV828F which provides 120vac power to the 2-L-11A instrument panel. Loss of power could prevent remote operation of the A Motor Driven Auxiliary Feedwater Pump (MDAFW) SG #1 & SG #2 Level Control Valves (2-LCV-3-156 and 2-LCV-3-164). The fire safe shutdown requirement for a fire in 772.0-A15 (West) is to manually control AFW flow to SG # 1 and #2 by handwheeling 2-ISV-3-827 and 2-ISV-3-828 in room 737.0-A1B within 20 minutes.

[These actions are listed in Part VI with a time earlier than 20 minutes since the action is also performed to accomplish an important to FSSD goal.]

OMAs 1667 and 1668 are feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The analysis provided an estimated travel and performance time of 4 minutes. The fire that results in the fire-induced damage requiring implementation of these OMAs are contained within room 772.0-A15 (West) and does not present an exposure hazard to the operator on the access

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path or the control location. The Validation Walkdown for this action demonstrated that the time to travel and to perform the action was 9 minutes which provides 11 minutes of margin. There is adequate time available to perform the action which shows that the actions are feasible.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel to the room 737.0-A1B and manually close 2-ISV-3-827 and 2-ISV-3-828 to accomplish this action (4 minutes) provides 16-minutes (400%) margin. The required for FSSD time limit to prevent steam generator overfill is 20 minutes. The validated time of 9 minutes provides 11 minutes (122%) margin. Based on the information above there is sufficient time available to perform these OMAs reliably.

[This action also has an important to safe shutdown aspect not requiring NRC review with a 13 minute allowable OMA time to minimize the possibility of (i.e., prevent) an inadvertent safety injection (SI) signal resulting from injecting excessive cold water into the steam generators and over cooling the primary system. The plant procedure (AOI-30.2) includes both steps to prevent the inadvertent SI signal and steps to mitigate the inadvertent SI should it occur.]

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided (Ref. 2.6); therefore, there is adequate lighting to access the controls and to perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contain within 772.0-A15 (West). Therefore, the fire does not affect the functionality and accessibility of the equipment need for this OMA.

e. Available Indications

Local indications for performing these OMAs are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is necessary to perform these OMAs.

h. Personnel Protection Equipment

Only standard PPE is needed to perform these OMAs.

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i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.49.11 Staffing Requirements for a Fire in Room 772.0-A15 West

For a fire in 772.0-A15 (West), 6 “common” actions are performed by one AUO, 20 Unit 2 actions are performed by five AUOs and five Unit 1 actions are performed by two AUOs, and 6 common actions are performed by one AUO for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in 772.0-A15 (West).

8.3.50 Room 772.0-A16 (480V Board Room 2A)

8.3.50.1 Fire Prevention

480-V Board Room 2A (772.0-A16) is constructed of reinforced concrete that has a minimum fire resistance rating identified in Part VI, Section 3. Fire dampers and doors are also identified in Part VI, Section 3. The equipment hatch opening in the floor slab is provided with a nonrated steel cover and is also protected by a water curtain. Room 772.0-A16 has a floor area of 2,190 ft² and a nominal ceiling height of 13 feet. The combustibles in 772.0-A16 consist of plastics associated with the 6-ton hoist, electrical boards, panels, boxes and lights, oil associated with the 6-ton hoist and the insulation on the cables in the trays. Insulation on cable trays accounts for over 91% of the combustibles in this room. The combustible loading in the room results in a fire severity classification of moderately severe.

The justification for the hatch opening through the floor is documented in Section 2.6 of this Part. This hatch is protected with a water curtain. The justification for hose stations with more than 100 foot hose is documented in Section 4.3 of this Part.

NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.50.2 Detection, Control, and Extinguishment

480-V Board Room 2-A (772.0-A16) is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, the automatic sprinkler system provided for the room activates. A standpipe and hose station system in room 772.0-A10 is also available for fire brigade use.

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8.3.50.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A16 could potentially damage the control cable to the #4 Steam Generator Power Relief Solenoid Valve (2-PSV-1-31C-A, 2V4035A). Damage to this cable prevents the ability to modulate the Power Relief Valve (2-PCV-1-30) to relieve pressure on #4 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA SG PORV Nitrogen Station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.50.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 772.0-A16 could potentially damage cables associated with the Control Air Compressor A (0-MTR-32-60-A, 2PL3785A) and an upstream power supply to the compressor (2-BD-212-A1-A – 480V Shutdown Board 2A1-A, 2PL5393A, and 2PL5404A) and the control cable to SG 3 Power Relief Solenoid Valve (2-PSV-1-24B-A, 2V7539A). Damage to this equipment would prevent the ability to modulate the Power Relief Valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator when needed. The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an Operator Manual Action (OMA) at the emergency nitrogen station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.50.5 Staffing Requirements for a Fire in Room 772.0-A16

For a fire in 772.0-A16, two “common” actions are performed by two AUOs, fourteen Unit 2 actions are performed by four AUOs and four Unit 1 actions are performed by two AUOs for a total of eight AUOs. Therefore, the staffing of eight AUOs is sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room 772.0-A16.

8.3.51 Room 782.0-A1 (Control Rod Drive Equipment Room)

8.3.51.1 Fire Prevention

The Unit 1 Control Rod Drive Equipment Room (782.0-A1) is constructed of reinforced concrete and has a fire resistance rating identified in Part VI, Section 3, with the fire dampers. The floor slab in Room 782.0-A1 to 757.0-A10 has an equipment hatch that is covered with a non-fire rated steel cover, two HVAC ducts without fire dampers, and a stairway enclosed by 2 hour non-regulatory fire barriers. 782.0-A1 has a floor area of 2,640 ft² and a nominal ceiling height of 18 feet.

The justification for the HVAC ducts without fire dampers is documented in Section 2.6.3.2.b of this Part.

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The combustible loading results in a fire severity classification of moderate. The combustibles in 782.0-A1 consist of plastics associated with the electrical panels, transformers, lights, oil in the transformers, and the insulation on cables in cable trays. Insulation on cables in trays accounts for over 96% of the combustibles in this room. The potential ignition sources in this room are electrical boards and transformers. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.51.2 Detection, Control, and Extinguishment

The Unit 1 Control Rod Drive Equipment Room (782.0-A1) is provided with ionization smoke detectors that alarm in the MCR. Room 782.0-A1 is also provided with an installed automatic sprinkler system.

Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the alarm. Portable extinguishers are available throughout the plant for extinguishing any small credible fire. If a larger fire occurs, automatic sprinklers in the room activate. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available for fire brigade use in 782.0-A1 and from the room (757.0-A10) below. With fire detection, an automatic suppression system, and fire resistant barriers, a fire in this area is contained within the room.

8.3.51.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 782.0-A1 could damage the Auxiliary and Control Air Header A (ACAS ENDUSER-A) which could result in a loss of air to operate the SG PORV.

The fire safe shutdown requirement is to have an air source for 2-PCV-1-5 within 60 minutes for operation of the PCV and thereby maintaining pressure control of the #1 Steam Generator. Emergency Air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

8.3.51.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 782.0-A1 could potentially damage the Auxiliary and Control Air Header B (ACAS-ENDUSER-B) which prevents the ability to modulate the Power Relief Valve (2-PCV-1-12) to relieve pressure on the #2 Steam Generator.

The fire safe shutdown requirement is to have an air source for 2-PCV-1-12 within 60 minutes for operation of 2-PCV-1-12, thereby establishing pressure control of the #2 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21.

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The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.51.5 Staffing Requirements for a Fire in Room 782.0-A1

For a fire in 782.0-A1, fourteen Unit 1 actions are performed by four AUOs and five Unit 2 actions are performed by three AUOs for a total of seven AUOs. Therefore, a total of eight AUOs is more than sufficient to perform all of the Unit 1 and Unit 2 actions, should there be a fire in 782.0-A1.

8.3.52 Room 782.0-A2 (Pressurizer Heater Transformer Room 1)

8.3.52.1 Fire Prevention

The Pressurizer Heater Transformer Room 1 (782.0-A2) is constructed of reinforced concrete and has a fire resistance rating identified in Part VI, Section 3. Penetration seals and barriers (walls, floors, ceiling etc.) in 782.0-A2 are fire resistance rated as identified in Part VI, Section 3. Room 782.0-A2 has a floor area of 768 ft² and a nominal ceiling height of 18-feet. The combustibles in 782.0-A2 consist of plastics associated with the electrical panels, transformers and lights, oil in the transformers, and insulation on the cables in the trays. The combustible loading in the room results in a fire severity classification of Moderate.

The potential ignition sources in this room consist of transformers and electrical boards. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.52.2 Detection, Control, and Extinguishment

The Pressurizer Heater Transformer Room 1 is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available from room 782.0-A1 for fire brigade use. Even if the postulated fire starts and is not extinguished, the fire barriers contain the fire and does not allow it to propagate to adjacent rooms.

8.3.52.3 OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-5 (SG 1 Power Relief Valve) to control secondary pressure. The operator must operate 2-ISIV-1-408E2 at the local station 2-L-1001 (N₂) to open/close 2-PCV-1-5. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A21.

A fire that is contained within room 782.0-A2 could potentially damage the Auxiliary and Control Air Header A (ACAS-ENDUSER-A) requiring implementation of this OMA. The N₂ Operating Station for 2-PCV-1-5 (2-L-1001) remains usable.

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The Feasibility and Reliability Evaluation for OMA 1016 following a fire in this room is covered in a bounding evaluation (Section 8.3.62).

8.3.52.4 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 (SG 2 Power Relief Valve) to control secondary pressure. The operator must operate 2-ISIV-1-405E2 on 2-L-1001 at the local station (N₂) to open/close 2-PCV-1-12. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A21.

A fire that is contained within room 782.0-A2 could potentially damage the Auxiliary and Control Air Header B (ACAS-ENDUSER-B) requiring implementation of this OMA. The N₂ Operating Station for 2-PCV-1-12 (2-L-1001) remains usable.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.52.5 Staffing Requirements for a Fire in Room 782.0-A2

For a fire in room 782.0-A2, fourteen Unit 1 actions are performed by four AUOs and five Unit 2 actions are performed by three AUOs for a total of seven AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in 782.0-A2.

8.3.53 Room 782.0-A3 (Unit 2 CRD Equipment Room)

8.3.53.1 Fire Prevention

The Unit 2 CRD Equipment Room, 782.0-A3 is constructed of reinforced concrete and has a fire resistance rating identified in Part VI, Section 3. The floor slab in Room 782.0-A3 has an equipment hatch that is covered with a non-fire rated steel cover, two HVAC ducts without fire dampers, and a stairway entry enclosure that is a non-regulatory 2-hour rated fire barrier. Doors, dampers, penetration seals and barriers (walls, floors, ceiling etc.) in 782.0-A3 are fire resistance rated as identified in Part VI, Section 3. Room 782.0-A3 has a floor area of 2657 ft² and a nominal ceiling height of 18-feet. The combustibles in 782.0-A3 consist of plastics associated with the electrical panels, transformers and lights, oil in the transformers, and insulation on the cables in the trays. The combustible loading in the room results in a fire severity classification of moderate.

The potential ignition sources in this room consist of transformers and electrical boards. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.53.2 Detection, Control, and Extinguishment

The Unit 2 Control Rod Drive Equipment Room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Any fire that starts is quickly detected and personnel are dispatched from the nearby MCR to investigate the detector alarm. Portable extinguishers

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are available for extinguishing any small credible fire. If a larger fire occurs, the installed automatic preaction sprinkler system provided for the room activates. A standpipe and hose station system is also available in the room and in 757.0-A16 for fire brigade use.

Even if the postulated fire starts and is not extinguished, the fire rating of the room's barriers contain the fire and does not allow it to propagate to adjacent rooms. Therefore, a fire in this room does not present an exposure hazard to the access path to the manual action located in 757.0-A24, the 6.9kV and 480V Shutdown Board Room B.

8.3.53.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-30 (SG 4 Power Relief Valve) to control secondary pressure. The operator must operate 2-ISIV-1-406E2 at the local station 2-L-1000 (N₂) to open/close 2-PCV-1-30. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A24.

A fire that is contained within room 782.0-A3 could potentially damage the equipment requiring implementation of this OMA. The N₂ Operating Station for 2-PCV-1-30 (2-L-1000) is considered usable. The SG 4 Power Relief Valve fails due to supporting equipment ACAS Enduser B (local instrument panel 2-L-45) which could disable the motive air supply to 2-PCV-1-30.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

8.3.53.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 (SG 3 Power Relief Valve) to control secondary pressure. The operator must operate 2-ISIV-1-407E2 at the local station 2-L-1000 (N₂) to open/close 2-PCV-1-23. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A24.

A fire that is contained within room 782.0-A3 could potentially damage the equipment requiring implementation of this OMA. The N₂ Operating Station for 2-PCV-1-23 (2-L-1000) is considered usable. The SG 3 Power Relief Valve fails due to supporting equipment ACAS Enduser A (local instrument panel 2-L-44) which could disable the motive air supply to 2-PCV-1-23.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.53.5 Staffing Requirements for a Fire in Room 782.0-A3

For a fire in 782.0-A3, eight Unit 2 actions are performed by four AUOs and five Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of 8 AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 782.0-A3.

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8.3.54 Room 782.0-A4 (Unit 2 Pressurizer Heater Transformer Room 2)

8.3.54.1 Fire Prevention

The Unit 2 Pressurizer Heater Transformer Room (782.0-A4) is constructed of reinforced concrete. The walls, floor, door, and penetration seals in 782.0-A4 have a fire resistance rating identified in Part VI, Section 3. The Unit 2 Pressurizer Heater Transformer Room has a floor area of 768 ft² and a nominal ceiling height of 18-feet.

The floor slab separating Room 782.0-A4 from Room 757.0-A14 has a stairway entry enclosure that is a non-regulatory 2-hour rated fire barrier.

The combustible loading of room 782.0-A4 results in a fire severity classification of Moderate. The combustible material in the room consists of plastics associated with electrical panels and junction boxes, insulating oil associated with transformers and insulation on cables routed in cable trays. Over half of the combustibles in this room comes from transformer insulating oil, and approximately one quarter comes from the insulation on cables in trays. The potential ignition sources in this room are transformers and electrical boards. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.54.2 Detection, Control, and Extinguishment

The Unit 2 Pressurizer Heater Transformer room is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The room is also provided with an automatic preaction sprinkler system. Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. The suppression system extinguishes or limits the magnitude of the fire and prevents it from spreading outside the room. A standpipe and hose station system is available in room 782.0-A3 and room 757.0-A16 below for fire brigade use. With fire detection, automatic suppression system, and fire resistance barriers, a fire in this area is contained to the room and does not present an exposure hazard to adjacent rooms.

8.3.54.3 OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 782.0-A4 could potentially result in the loss of the Auxiliary and Control Air Header B (ACAS-ENDUSER-B, 0-FCO-30-148). The fire safe shutdown requirement is to have an air source for 2-PCV-1-30 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #4 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1022 following a fire in this room is covered in a bounding evaluation (Section 8.3.63).

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8.3.54.4 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in room 782.0-A4 could potentially result in loss of the Auxiliary and Control Air Header A (ACAS-ENDUSER-A, 0-FCO-30-280). The fire safe shutdown requirement is to have an air source for 2-PCV-1-23 within 60 minutes for operation of the PCV and thereby maintain pressure control of the #3 Steam Generator. Emergency air is provided for operation of the PCV, which is actuated by an OMA at the SG PORV Nitrogen Station (panel 2-L-1000) in 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.54.5 Staffing Requirements for a Fire in 782.0-A4

For a fire in 782.0-A4, eight Unit 2 actions are performed by four AUOs and five Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of 8 AUOs is more than sufficient to accomplish all of the Unit 1 and 2 manual actions, should there be a fire in Room 782.0-A4.

8.3.55 Room DBIPS-A (Intake Pumping Station Duct Bank A)

8.3.55.1 Fire Prevention

The Duct Bank-Intake Pumping Station A (DBIPS-A) cable chase from Auxiliary Building 713.0-A1B to IPS-CA is an underground electrical conduit bank constructed of reinforced concrete, PVC conduit, and manholes with missile shields, cable trays and sump pumps.

The combustible material in DBIPS-A consists primarily of cable insulation. There are no credible ignition sources or transient combustibles in the DBIPS-A. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.55.2 Detection, Control and Extinguishment

There is no detection or suppression system in the DBIPS-A. However, there is detection and suppression in both Auxiliary Building 713.0-A1B and IPS-CA. The only credible fire scenarios that could ignite the cables inside DBIPS-A start in either 713.0-A1B or IPS-A. However, a fire is detected and suppressed before it enters the DBIPS-A.

8.3.55.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Duct Bank-Intake Pumping Station A (DBIPS-A) could potentially damage one or more cables supporting Control Air Compressor A-A (0-MTR-32-60-A), which prevents the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, which may result in the implementation of this OMA. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 to control the pressure of #3 Steam Generator. The operator must operate 2-ISIV-1-407E2 at the SG PORV Nitrogen Station

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2-L-1000, utilizing N₂ to operate the Steam Generator power relief valve. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A24. However, since there are no credible ignition sources in the DBIPS-A, there are no credible fires originating in the DBIPS-A that results in the performance of this OMA.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this underground electrical duct bank is covered in a bounding evaluation for OMA 1023 (Section 8.3.64).

8.3.55.4 Staffing Requirements for a Fire in Room DBIPS-A

For a fire in DBIPS-A, one “common” action is performed by one AUO, four Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room DBIPS-A.

8.3.56 Room DBIPS-B (Intake Pumping Station Duct Bank B)

8.3.56.1 Fire Prevention

The Duct Bank-Intake Pumping Station B (DBIPS-B) cable chase from Auxiliary Building 713.0-A1B to IPS-CB is an underground electrical conduit bank constructed of reinforced concrete, PCV conduit, manholes with missile shields, cable trays and sump pumps.

The combustible material in DBIPS-B consists primarily of cable insulation. There are no credible ignition sources or transient combustibles in the DBIPS-B. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.56.2 Detection, Control and Extinguishment

There is no detection or suppression system in the DBIPS-B. However, there is detection and suppression in both Auxiliary Building 713.0-A1B, and IPS-CB. The only credible fire scenarios that could ignite the cables inside DBIPS-B start in either 713.0-A1B or IPS-B. However, a fire is detected and suppressed before it enters the DBIPS-B.

8.3.56.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Duct Bank-Intake Pumping Station B (DBIPS-B) could potentially damage one or more cables supporting the Control Air Compressor B-B (0-MTR-32-86-B), which prevents the ability to modulate the power relief valve (2-PCV-1-12) to relieve pressure on the #2 Steam Generator, which may result in the implementation of this OMA. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 to control the pressure of #2 Steam Generator. The operator must operate 2-ISIV-1-405E2 at the SG PORV Nitrogen Station 2-L-1001, utilizing N₂ to operate Steam Generator power relief valve. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A21. However, since there are no credible ignition sources in the DBIPS-B, there are no credible fires originating in the DBIPS-B that results in the performance of this OMA. As additional defense-in-depth, the

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following evaluation of the OMA is provided to document the feasibility and reliability of the action.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in the underground electrical duct bank is covered in the bounding evaluation for OMA 1024 (Section 8.3.65).

8.3.56.4 Staffing Requirements for a Fire in DBIPS-B

For a fire in DBIPS-B, four Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in DBIPS-B.

8.3.57 Room IPS-A (Intake Pumping Station A)

8.3.57.1 Fire Prevention

The Intake Pumping Station – A (IPS-A) is constructed of reinforced concrete. IPS-A is made up of three rooms, ERCW Pump Room A, Screen Wash and HPFP A Pump Room, and ERCW Strainer Room A. The doors and walls for each of these rooms that are adjacent to other fire areas are rated barriers with a fire resistance rating of 3-hours. However, the wall between the ERCW Pump Room A and the Screen Wash Pump Room has two unprotected openings (scupper holes) with justification documented in Section 2.6.2 of this Part. The doors associated with these rooms have a regulatory barrier rating of 3 hours with doors W10A and W10B between ERCW Strainer Room A (Fire Area 58) and ERCW Strainer Room B (Fire Area 59) rated “equivalent”. The ceiling of the ERCW Pump Room A and the Screen Wash and HPFP A Pump Room is an open steel missile barrier that allows air flow into the rooms. The three rooms have a combined floor area of 4,991 ft² and a nominal ceiling height of 13-feet to the missile barrier in ERCW Pump Room A and the Screen Wash and HPFP A Pump Room (Elevation 741.0), and a nominal ceiling height of 16-feet in the ERCW Strainer Room A (Elevation 722.0).

The combustible loading of these rooms results in a fire severity classification of Moderate or less. The combustible material in these rooms consists of plastics associated with lights, electrical panels, transformer, junction boxes and flex conduit, lube oil, grease, hydraulic oil in the crane, and insulation on cables in trays. Approximately half of the combustibles in these rooms is due to insulation on cables in trays. The assumed ignition sources in these rooms are transformers and electrical panels. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.57.2 Detection, Control, and Extinguishment

The ERCW Pump Room A is provided with heat detectors over the ERCW pumps and the ERCW Strainer Room A is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Although the rooms are not provided with suppression and full area detection, the fire area barrier ratings are sufficient given the combustible loadings in the area. The fire area does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger redundant safety related equipment required for a safe plant shutdown.

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Portable extinguishers are available for extinguishing any small credible fire. A standpipe and hose station system is available in the Screen Wash Pumps and HPFP A Pump Room and the ERCW Strainer Room A and is accessible from ERCW Pump Room A for fire brigade use. With fire detection and fire resistant barriers, a fire in this area is contained until the fire brigade responds.

8.3.57.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Intake Pumping Station - A could potentially damage one or more cables supporting the Control Air Compressor A-A (0-MTR-32-60-A) which prevents the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, which may result in the implementation of this OMA. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 to control the pressure of #3 Steam Generator. The operator must operate 2-ISIV-1-407E2 at the SG PORV Nitrogen Station 2-L-1000, utilizing N2 to operate the Steam Generator power relief valve. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in the Intake Pumping Station A is covered in the bounding evaluation for OMA 1023 (Section 8.3.64).

8.3.57.4. Staffing Requirements for a Fire in IPS-A

For a fire in IPS-A, one “common” action is performed by one AUO, four Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room IPS-A.

8.3.58 Room IPS-B (Intake Pumping Station B)

8.3.58.1 Fire Prevention

The Intake Pumping Station – B (IPS-B) is constructed of reinforced concrete. IPS-B is made up of three rooms, ERCW Pump Room B, HPFP B Pump Room, and ERCW Strainer Room B. The walls for each of these rooms that are adjacent to other fire areas are rated barriers with a fire resistance rating of 3-hours. However, the wall between the ERCW Pump Room B and the Screen Wash Pump Room has two unprotected openings (scupper holes) with justification provided in Section 2.6 of this Part. The doors associated with these rooms have a regulatory barrier rating of 3 hours with doors W10A and W10B between ERCW Strainer Room A (Fire Area 58) and ERCW Strainer Room B (Fire Area 59) rated “equivalent”. The ceiling of the ERCW Pump Room B and the HPFP B Pump Room is an open steel missile barrier that allows air flow into the rooms. The three rooms have a combined floor area of 3,567 ft² and a height of 13-feet to the missile barrier in ERCW Pump Room B and HPFP B Pump Rooms (Elevation 741.0), and a ceiling height of 16-feet in ERCW Strainer Room B (Elevation 722.0).

The combustible loading of these rooms results in a fire severity classification of Moderate or less. The combustible material in these rooms consists of plastics associated with lights, electrical panels, lube oil, dry type transformers and insulation on cables in trays. The assumed ignition sources in this room are transformers, motor control centers, heat trace panels, crane, ERCW Pumps and Strainers, and HPFP Pumps. NPG-SPP-18.4.7, “Control of Transient Combustibles” and NPG-SPP-18.4.8, “Control of Ignition Sources (Hot Work)” defines the fire

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preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.58.2 Detection, Control and Extinguishment

The ERCW Pump Room B is provided with heat detectors over the ERCW pumps, while the ERCW Strainer Room B is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). Although the rooms are not provided with suppression and full area detection, the fire area barrier ratings are sufficient given the combustible loadings in the area. The fire area does not contain redundant safe shutdown equipment. Therefore, a fire in this area will not endanger redundant safety related equipment required for a safe plant shutdown. Portable extinguishers are available for extinguishing any small credible fire. A standpipe and hose station system is available in HPFP B Pump Room and the ERCW Strainer Room B for fire brigade use. With fire detection and fire resistant barriers, a fire in this area is contained until the fire brigade responds.

8.3.58.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Intake Pumping Station Room B could potentially damage one or more cables supporting the Control Air Compressor B-B (0-MTR-32-86-B), which prevents the ability to modulate the power relief valve (2-PCV-1-12) to relieve pressure on the #2 Steam Generator, which may result in the implementation of this OMA. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 to control the pressure of #2 Steam Generator. The operator must operate 2-ISIV-1-405E2 at the SG PORV Nitrogen Station 2-L-1001, utilizing N₂ to operate Steam Generator power relief valve. This OMA must be completed within 60 minutes. This action is performed in room 757.0-A21.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation for OMA 1024 (Section 8.3.65).

8.3.58.4 Staffing Requirements for a Fire in IPS-B

For a fire in IPS-B, four Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in IPS-B.

8.3.59 Room IPS-C (East) [Intake Pumping Station C (East)]

8.3.59.1 Fire Prevention

IPS-C of the Intake Pumping Station is a large area that is subdivided into three overlapping areas; IPS-C (East), IPS-C (Middle), and IPS-C (West). The Intake Pumping Station is constructed of reinforced concrete. The south wall, separating IPS-711.0 from the ERCW Strainer Rooms A and B (IPS-A and IPS-B el. 722.0) has a fire resistance rating of 3-hours. The Intake Pumping Station Room C has a floor area of 2,068 ft² and a ceiling height of 17-feet.

The combustible loading of room IPS-C results in a fire severity classification of Moderate of which approximately 83% is due to insulation on cables in trays. The combustible material in the room consists of plastics associated with electrical panels and boards, insulating oil

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associated with transformers and insulation on cables routed in cable trays. The assumed ignition sources in this room are transformers, motor control centers, lighting cabinets, and panels. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.59.2 Detection, Control and Extinguishments

The Intake Pumping Station, elevation 711.0 is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The room is also provided with an automatic preaction sprinkler system. Any fire that starts is quickly detected and personnel are dispatched to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available in the room and in the adjacent ERCW strainer rooms for fire brigade use. The room contains intervening combustibles in the form of insulation on cables in trays. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Section 2.4 of this Part. With fire detection, automatic suppression system, and fire resistant barriers, a fire in this area is contained within the room and does not present an exposure hazard to adjacent rooms. This also contributes to satisfying the requirements of Appendix R (Section III.G.2.b) for FSSD components within 711.0.

8.3.59.3 OMA 1024 – Operate SG Relief Valves to Control Secondary Pressure

A fire in the Intake Pumping Station Room C (East) could potentially damage a control cable supporting the Control Air Compressor B-B (0-MTR-32-86-B), which prevents the ability to provide air to modulate the power relief valve (2-PCV-1-12) to relieve pressure on the #2 Steam Generator. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 to control the pressure of #2 Steam Generator. The operator must operate 2-ISIV-1-405E2 at the SG PORV Nitrogen Station 2-L-1001 (located in room 757.0-A21), to operate Steam Generator power relief valve. This OMA must be completed within 60 minutes.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

8.3.59.4 Staffing Requirements for a Fire in IPS-C (East)

For a fire in IPS-C (East), four Unit 1 actions are performed by three AUOs and four Unit 2 actions are performed by three AUOs for a total of six AUOs. Therefore, a total of eight AUOs is more than sufficient to complete all of the OMAs for Unit 1 and Unit 2, should there be a fire in IPS-C (East).

8.3.60 Room IPS-C (Middle) [Intake Pumping Station C (Middle)]

8.3.60.1 Fire Prevention

IPS-C of the Intake Pumping Station is a large area that is subdivided into three overlapping areas; IPS-C (East), IPS-C (Middle), and IPS-C (West). The Intake Pumping Station is

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constructed of reinforced concrete. The south wall, separating IPS-711.0 from the ERCW Strainer Rooms A and B (IPS-A and -B el. 722.0) has a fire resistance rating of 3-hours. The Intake Pumping Station Room C has a floor area of 2,068 ft² and a nominal ceiling height of 13 to 16-feet.

The combustible loading of room IPS-C results in a fire severity classification of Moderate of which approximately 83% is due to the insulation on the cables in trays. The combustible material in the room consists of plastics associated with electrical panels and boards, insulating oil associated with transformers and insulation on cables routed in cable trays. The assumed ignition sources in this room are transformers, motor control centers, lighting cabinets, and panels. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.60.2 Detection, Control, and Extinguishment

The Intake Pumping Station, elevation 711.0 is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The room is also provided with an automatic preaction sprinkler system. Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available in the room and in the adjacent ERCW strainer rooms for fire brigade use. The room contains intervening combustibles in the form of insulation on cables in trays. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Section 2.4 of this Part. With fire detection, automatic suppression system, and fire resistant barriers, a fire in this area is contained within the room and does not present an exposure hazard to adjacent rooms. This also contributes to satisfying the requirements of Appendix R (Section III.G.2.b) for FSSD components within 711.0

8.3.60.3 OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Intake Pumping Station Room C (Middle) could potentially damage a control cable (2PM3330B) or equipment supporting the Control Air Compressor B-B (0-MTR-32-86-B) which would prevent the ability to provide air to modulate the power relief valve (2-PCV-1-12) to relieve pressure on #2 Steam Generator. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-12 to control the pressure of #2 Steam Generator. The operator must operate 2-ISIV-1-405E2 at the SG PORV Nitrogen Station 2-L-1001 (located in room 757.0-A21), utilizing N₂ to operate the Steam Generator power relief valve. This OMA must be completed within 60 minutes.

The Feasibility and Reliability Evaluation for OMA 1024 following a fire in this room is covered in a bounding evaluation (Section 8.3.65).

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8.3.60.4 Staffing Requirements for a Fire in IPS-C (Middle)

For a fire in IPS-C (Middle), four Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of six AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room IPS-C (Middle).

8.3.61 Room IPS-C (West) [Intake Pumping Station C (West)]

8.3.61.1 Fire Prevention

IPS-C of the Intake Pumping Station is a large area that is subdivided into three overlapping areas; IPS-C (East), IPS-C (Middle), and IPS-C (West). The Intake Pumping Station is constructed of reinforced concrete. The south wall, separating IPS-711.0 from the ERCW Strainer Rooms A and B (IPS-A and -B el. 722.0) has a fire resistance rating of 3-hours. The Intake Pumping Station Room C has a floor area of 2,068 ft² and a nominal ceiling height of 13 to 16-feet.

The combustible loading of room IPS-C results in a fire severity classification of Moderate, of which approximately 83% is due to the insulation on the cables in trays. The combustible material in the room consists of plastics associated with electrical panels and boards, insulating oil associated with transformers and insulation on cables routed in cable trays. The assumed ignition sources in this room are transformers, motor control centers, lighting cabinets, and panels. NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures necessary when transient combustibles or ignition sources are in a room.

8.3.61.2 Detection, Control, and Extinguishment

The Intake Pumping Station, elevation 711.0 is provided with ionization smoke detectors that alarm in the Main Control Room (MCR). The room is also provided with an automatic preaction sprinkler system. Any fire that starts is quickly detected and personnel are dispatched from the MCR to investigate the detector alarm. Portable extinguishers are available for extinguishing any small credible fire. A larger fire activates the installed automatic preaction sprinkler system provided for the room. This extinguishes or limits the magnitude of the fire until the fire brigade arrives. A standpipe and hose station system is available in the room and in the adjacent ERCW strainer rooms for fire brigade use. The room contains intervening combustibles in the form of insulation on cables in trays. The justification for using an enhanced automatic preaction sprinkler system to compensate for these intervening combustibles is documented in Section 2.4 of this Part. With fire detection, automatic suppression system, and fire resistant barriers, a fire in this area is contained within the room and does not present an exposure hazard to adjacent rooms. This also contributes to satisfying the requirements of Appendix R (Section III.G.2.b) for FSSD components within 711.0.

8.3.61.3 OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

A fire in the Intake Pumping Station Room C (West) could potentially damage a control cable (1PL3913A) or equipment supporting the Control Air Compressor A-A (0-MTR-32-60-A) which

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prevents the ability to modulate the power relief valve (2-PCV-1-23) to relieve pressure on #3 Steam Generator, which may result the implementation of this OMA. The fire safe shutdown requirement of this OMA is to open/close 2-PCV-1-23 to control the pressure of #3 Steam Generator. The operator must operate 2-ISIV-1-407E2 at the SG PORV Nitrogen Station 2-L-1000, utilizing N₂ to operate the Steam Generator power relief valve. This OMA must be completed within 60 minutes. This Action is performed in room 757.0-A24.

The Feasibility and Reliability Evaluation for OMA 1023 following a fire in this room is covered in a bounding evaluation (Section 8.3.64).

8.3.61.4 Staffing Requirements for a Fire in IPS-C (West)

For a fire in IPS-C (West), one “common” action is performed by one AUO, four Unit 2 actions are performed by three AUOs and four Unit 1 actions are performed by three AUOs for a total of seven AUOs. Therefore, the staffing of eight AUOs is more than sufficient to accomplish all of the Unit 1 and Unit 2 manual actions, should there be a fire in room IPS-C (West).

8.3.62 Bounding Evaluation for OMA 1016 – Operate Steam Generator Relief Valves to Control Secondary Pressure

This is a bounding evaluation that shows it is both feasible and reliable to complete OMA 1016 following a fire in the following rooms:

Room Number	Part VII Section Number	Room Number	Part VII Section Number
757.0-A10	8.3.25	772.0-A5	8.3.39
757.0-A17	8.3.27	772.0-A8	8.3.41
757.0-A22*	8.3.29	772.0-A13*	8.3.46
757.0-A24	8.3.31	772.0-A15 East	8.3.48
757.0-A28	8.3.34	772.0-A15 West	8.3.49
772.0-A2 East	8.3.36	782.0-A1	8.3.51
		782.0-A2	8.3.52

* This room does not have cross zone smoke detection. Visual fire validation may take up to 3 minutes.

This OMA is performed for a fire in the rooms listed above located on elevations 713.0' thru 782.0' of the Auxiliary Building. This OMA is performed in room 757.0-A21. The operator must operate SG power operated relief valves (PORV) to control secondary pressure and to provide a controlled means of removing decay heat. This action isolates the normal air supply, and enabling a local N₂ supply. Manual air valves are then manipulated to regulate the flow of nitrogen and control the operation of the SG Power Operated Relief Valve (2-PCV-1-5).

OMA 1016 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyzed time estimated to travel and perform the action is 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical

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Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time plus time to perform the action was 14 minutes 57 seconds. There is adequate time available to perform this action even considering the potential fire validation delays indicated by asterisks above.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8 minutes) provides 52 minutes (>500%) margin and the demonstrated validation (14 minutes 57 seconds) provides 45 minutes 3 seconds (>300%) margin. An AUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above. A fire in room 757.0-A24 could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Equipment needed for this manual action is functional and accessible. The fire that results in the fire-induced damage requiring implementation of this OMA is contained within the associated room. Also, based on the fire areas listed above that require the implementation of this OMA, there are no fire areas adjacent to or on the same elevation where this OMA is performed. Therefore, a fire in the areas listed above does not affect the functionality and accessibility of equipment needed for this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is expected to be needed for the Unit 2 actions. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

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h. Personnel Protection Equipment

Only standard PPE is needed to perform this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.63 Bounding Evaluation for OMA 1022 – Operate Steam Generator Relief Valves to Control Secondary Pressure

This is a bounding evaluation that shows it is both feasible and reliable to complete OMA 1022 following a fire in the following rooms:

Room Number	Part VII Section Number	Room Number	Part VII Section Number
713.0-A1A	8.3.4	772.0-A1	8.3.35
713.0-A27	8.3.6	772.0-A2 West	8.3.37
737.0-A5S	8.3.14	772.0-A4*	8.3.38
737.0-A9M	8.3.15	772.0-A8	8.3.41
737.0-A9N	8.3.16	772.0-A9	8.3.42
737.0-A9S	8.3.17	772.0-A10	8.3.43
757.0-A4*	8.3.22	772.0-A14*	8.3.47
757.0-A16	8.3.26	772.0-A16	8.3.50
757.0-A23*	8.3.30	782.0-A3	8.3.53
757.0-A27	8.3.33	782.0-A4	8.3.54

* This room does not have cross zone smoke detection. Visual fire validation may take up to 3 minutes.

This OMA is performed for a fire in the rooms listed above located on elevations 713.0' through 782.0' of the Auxiliary Building. This OMA is performed in room 757.0-A24. This OMA is required for controlling plant cooldown. A nitrogen (N₂) cylinder and supply valve (2-ISIV-1-406E2) are used for SG Power Operator Relief Valve (2-PCV-1-30) control at the N₂ station in room 757.0-A24. This action isolates the normal air supply, and enabling a local N₂ supply. Manual air valves are then manipulated to regulate the flow of nitrogen and control the operation of the SG PORVs. This action is one of two matching OMAs that must be completed within 60 minutes in room 757.0-A24 for SG PORV control.

OMA 1022 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyzed time estimated to travel and perform the action is 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated time for travel from the MCR to the nitrogen station and to perform the actions

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was 13 minutes 57 seconds. Room 757.0-A24 would not be affected by a fire in any of the listed rooms. There is adequate time available to perform this action even considering the potential fire validation delays indicated by asterisks above.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated for travel to the room and to perform the action (8 minutes) provides 52 minutes (>500%) margin. The demonstrated time to travel to and perform the action was 13 minutes 57 seconds which leaves a margin of 46 minutes 3 seconds (>300%). An AUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above. A fire in room's 757.0-A16, 772.0-A10, 772.0-A16 and 782.0-A3 could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

Equipment needed for this manual action is functional and accessible. The postulated fire that results in the fire-induced damage requiring implementation of this OMA is contained within the associated room, none of which are adjacent to the room where this OMA is performed. Therefore, a fire in the areas listed above does not affect the functionality or accessibility of equipment needed to perform this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMA and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is expected to be needed for Unit 2 actions. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

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h. Personnel Protection Equipment

Only standard PPE is needed to perform this OMA. Also, based on the location where this OMA is performed and the fire areas listed above, the AUO would not have to traverse or enter any fire areas to perform this action, therefore standard PPE is sufficient to accomplish this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.64 Bounding Evaluation for OMA 1023 – Operate Steam Generator Relief Valves to Control Secondary Pressure

This is a bounding evaluation that shows it is both feasible and reliable to complete OMA 1023 following a fire in the following rooms:

Room Number	Part VII Section Number	Room Number	Part VII Section Number
713.0-A1A	8.3.4	772.0-A2 West	8.3.37
713.0-A27	8.3.6	772.0-A4*	8.3.38
2ANN	8.3.7	772.0-A6	8.3.40
737.0-A5M	8.3.12	772.0-A8	8.3.41
737.0-A5N	8.3.13	772.0-A9	8.3.42
737.0-A5S	8.3.14	772.0-A10	8.3.43
737.0-A9M	8.3.15	772.0-A12	8.3.45
737.0-A9N	8.3.16	772.0-A14*	8.3.47
737.0-A9S	8.3.17	772.0-A16	8.3.50
757.0-A4*	8.3.22	782.0-A3	8.3.53
757.0-A16	8.3.26	782.0-A4	8.3.54
757.0-A21	8.3.28	DBIPS-A**	8.3.55
757.0-A23*	8.3.30	IPS-A	8.3.57
757.0-A27	8.3.33	IPS-C (WEST)	8.3.61
772.0-A1	8.3.35		

* This room does not have cross zone smoke detection. Visual fire validation may take up to 3 minutes.

** Visual fire validation may take up to 10 minutes for the IPS Duct Bank.

This OMA is performed for a fire in the rooms listed above located on elevations 713.0' thru 782.0' of the Auxiliary Building, the Reactor Building and the Intake Pumping Station. This OMA is performed in room 757.0-A24. The operator must operate SG power operated relief valves (PORVs) to control secondary pressure and to provide a controlled means of removing decay heat. This action isolates the normal air supply, and enabling a local N₂ supply. Manual air valves are then manipulated to regulate the flow of nitrogen and control the operation of the SG PORV (2-PCV-1-23).

OMA 1023 is both feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyzed time estimated to travel and perform the action is 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time and time to perform the action was 13 minutes 57 seconds. Room 757.0-A24 would not be affected by a fire in any of the listed rooms. There is adequate time available to perform this action even considering the potential fire validation delays indicated by asterisks above.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8 minutes) provides 52 minutes (>500%) margin. The demonstrated time to travel to and perform the action was 13 minutes 57 seconds which leaves a margin of 46 minutes 3 seconds (>300%). An AUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above. A fire in room's 757.0-A16, 757.0-A21, 772.0-A10, 772.0-A12, 772.0-A16 and 782.0-A3 could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within the associated room. Also, based on the fire areas listed above that require implementation of this OMA, there are no fire areas adjacent to the location where this OMA is performed. Therefore, a fire in the areas listed above does not affect the functionality and accessibility of equipment needed to perform this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMA and the MCR is provided by the communication system described in Part II, Section 12.8.

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g. Portable Equipment

No portable equipment is expected to be needed for Unit 2 actions. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

Based on the location where this OMA is performed and the fire areas listed above, the AUO does not traverse or enter any fire areas to perform this action, therefore standard PPE is sufficient to accomplish this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.3.65 Bounding Evaluation for OMA 1024 – Operate Steam Generator Relief Valves to Control Secondary Pressure

This is a bounding evaluation that shows it is both feasible and reliable to complete OMA 1024 following a fire in the following rooms:

Room Number	Part VII Section Number	Room Number	Part VII Section Number
737.0-A12	8.3.18	772.0-A11	8.3.44
757.0-A3*	8.3.21	772.0-A13*	8.3.46
757.0-A10	8.3.25	772.0-A15 East	8.3.48
757.0-A17	8.3.27	772.0-A15 West	8.3.49
757.0-A22*	8.3.29	782.0-A1	8.3.51
757.0-A24	8.3.31	782.0-A2	8.3.52
757.0-A26	8.3.32	DBIPS-B**	8.3.56
757.0-A28	8.3.34	IPS-B	8.3.58
772.0-A2 East	8.3.36	IPS-C (East)	8.3.59
772.0-A8	8.3.41	IPS-C (MIDDLE)	8.3.60

* This room does not have cross zone smoke detection. Visual fire validation may take up to 3 minutes.

** Visual fire validation may take up to 10 minutes for the IPS Duct Bank.

This OMA is performed for a fire in the rooms listed above located on elevations 737.0' thru 782.0' of the Auxiliary Building and the Intake Pumping Station. This OMA is performed in room 757.0-A21. The operator must operate the SG power operated relief valves (PORVs) to control secondary pressure and to provide a controlled means of removing decay heat. This action isolates the normal air supply, and enabling a N₂ supply. Manual air valves are then manipulated to regulate the flow of nitrogen and control the operation of the SG PORV (2-PCV-1-12).

OMA 1024 is both feasible and reliable based on NUREG-1852 criteria, as follows:

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a. Adequate Time Available to Perform Actions

The operator has 60-minutes before the OMA must be completed. The analyzed time estimated to travel and perform the action is 8 minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The demonstrated transit time and time to perform the action was 14 minutes 57 seconds. There is adequate time available to perform the action even considering the potential fire validation delays indicated by asterisks above.

b. Adequate Time Available to Ensure Reliability

The analyzed time estimated to travel and perform the action (8 minutes) provides 52 minutes (>500%) margin and the demonstrated validation (14 minutes 57 seconds) provides 45 minutes 3 seconds (>300%) margin. An AUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above. A fire in room's 757.0-A24 and 772.0-A11 could damage the manual reactor trip cable causing reactor trip while the AUOs are being recalled to the MCR. If a 5 minute penalty is added to the demonstrated performance time the 100% margin acceptance criteria is still achieved.

c. Environmental Factors

Normal and Standby lighting is provided for the access routes and at the location of this OMA. If they were unavailable, 8-hour emergency battery pack lighting is provided; therefore, there is adequate lighting to access the local panel and perform the OMA. Because the operator does not have to traverse or enter the fire zone, there are no impediments associated with fire suppression or firefighting activities. There are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

d. Equipment Functionality and Accessibility

The fire that results in the fire-induced damage requiring implementation of this OMA is contained within the associated room. Also, based on the fire areas listed above that require implementation of this OMA, there are no fire areas adjacent to the location where this OMA is performed. Therefore, a fire in the areas listed above does not affect the functionality and accessibility of equipment needed to perform this OMA.

e. Available Indications

Available local indications for monitoring N₂ cylinder pressure and regulator adjustment, as well as MCR SG pressure indications, are adequate.

f. Communications

Adequate communications between the location of the OMAs and the MCR is provided by the communication system described in Part II, Section 12.8.

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g. Portable Equipment

No portable equipment is expected to be needed for Unit 2 actions. Spare N₂ cylinders for SG PORV control are available, if needed. The reliability of the N₂ station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

The AUO needs only standard PPE to perform this OMA. Also, based on the location where this OMA is performed and the fire areas listed above, the AUO does not traverse or enter any fire areas to perform this action, therefore standard PPE is sufficient to accomplish this OMA.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

8.4 Re-Entry into Room of Fire Origin for Unit 2 Important to Safe Shutdown Operator Manual Actions

8.4.1 Room 713.0-A20 (Unit 2 Volume Control Tank Room and Entry Labyrinth)

8.4.1.1 Fire Prevention

The Unit 2 VCT Tank room and Entry Labyrinth are constructed of reinforced concrete. The floor, walls and ceilings that separate them from adjacent rooms of the Auxiliary Building are 2-hour fire resistive barriers. Room 713.0-A20 has a floor area of 381 ft² and a nominal ceiling height of 22-ft for the Tank room and 8-ft for the Labyrinth.

The fire dampers are rated for the barriers. The door is a fire door assembly rated for the barrier. Penetration seals are qualified fire rated seals that provide fire resistive protection that is equivalent to or greater than the barriers.

The in situ combustible loading in the area results in a fire severity classification of insignificant. The combustible material in the Tank room consists of the hydrogen in the Tank. The combustible material in the Labyrinth consists of small amounts of lubricant associated with the valves located in the Labyrinth, the light covers and the step-off pad. There are no credible ignition sources.

NPG-SPP-18.4.7, "Control of Transient Combustibles" and NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" defines the fire preventive measures to preclude introduction of significant quantities of combustible material or ignition sources into the rooms and the compensatory measures required when transient combustibles or ignition sources are required in a room.

8.4.1.2 Detection, Control, and Extinguishment

The VCT room is provided with ionization smoke detectors that alarm in the MCR and an automatic sprinkler system. The Auxiliary Building ventilation system will disperse hydrogen leaks up to 50 scfm and leaks greater than 50scfm are automatically isolated by the excess flow

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valve. The Labyrinth is provided with fire detection, but not suppression. The fire rated barriers of the rooms are more than adequate to contain any postulated fire that might occur in the room. The combination of smoke detection system, automatic sprinklers and fire rated barriers provides assurance that no credible fire in the room would propagate into an adjacent room, nor would a postulated fire in an adjacent room propagate into 713.0-A20.

A standpipe and hose station, located in an adjacent room, is readily available for Fire Brigade use. The combination of insignificant quantities of dispersed combustibles, lack of credible ignition sources, area wide smoke detectors and automatic suppression (in the VCT Tank room), adequate fire barriers, and manual suppression capabilities provides assurance that even if a fire in the room occurs it is quickly detected, contained and extinguished before it causes any significant damage and therefore does not present a significant threat to fire safe shutdown.

8.4.1.3 OMA 1060 (Isolate VCT)

The fire safe shutdown requirement for a fire in 713.0-A20 is to manually close 2-LCV-62-133-B (VCT to Charging Pump Valve) to prevent VCT cover gas ingestion into the charging pump suction. This action is important for fire safe shutdown. A fire that is contained within room 713.0-A20 could potentially damage cables that would prevent remote valve operation. The operator is to close the valve using the local handwheel. This action is performed in conjunction with OMA 1061, opening a breaker to allow operation of the handwheel. This OMA must be completed within 70 minutes.

This OMA is performed in the entry labyrinth to the VCT room after the fire is extinguished. OMA 1060 is both feasible and reliable based on NUREG-1852 criteria, as follows:

a. Adequate Time Available to Perform Action

The AUO has 70-minutes before this action located in room 713.0-A20 must be completed. The analysis estimated the action could be completed within 15-minutes. Verification and validation (Part II, Reference 4.2.27) for common 0-AOI-30.2 C series procedures (Part II, Reference 4.2.60) were performed for dual unit operation and documented per the requirements of a common WBN Technical Instruction. Specifically, Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", (Part II, Reference 4.2.61). The action was validated to be completed in 6 minutes 4 seconds. This action is to be performed in the same room as the fire and assuming the AUO will be delayed for 60 minutes (worst case) because of fire suppression activities this leaves 10 minutes to perform an action that takes 6 minutes 4 seconds to complete. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

For OMA 1060, the operator must traverse approximately 10 feet of the same room as the fire before entering 713.0-A20 to perform the OMA. However, for worst case, the operator would have one hour for the fire to be extinguished and then access room 713.0-A20. This leaves at least 10 minutes to perform the action which was validated to be completed in 6 minutes 4 seconds. This provides 3 minutes 56 seconds. There is time available to ensure reliability.

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c. Environmental Factors

Normal and Standby lighting for the access routes and at the location of these OMAs is assumed to be affected; therefore, 8-hour emergency battery pack lighting is provided. For that reason, there is adequate lighting to access the components and perform the necessary OMAs. The AUO is also expected to carry a portable lantern, which is readily available. The AUO does have to enter the fire zones to perform this OMA, but there are no other adverse environmental factors, such as radiation or temperature, associated with this OMA.

The AUO will have to enter room 713.0-A20 via door A76 to access the valve located in the Labyrinth area of the room. The Labyrinth in room 713.0-A20 is provided with detection but not suppression (the VCT Tank room portion of 713.0-A20 is provided with automatic suppression and detection. The Labyrinth has insignificant amount of in situ combustibles and no ignition sources. It is highly unlikely that a fire could occur and even if it did, the lack of significant concentrations of in situ combustibles or ignition sources would not create a fire that prevents access to the valve located in the Labyrinth. Since there are no ignition sources in the Labyrinth and insignificant quantity of combustibles, there is no credible fire that could occur in the Labyrinth to damage the valve or prevent access to the valve within the allowable time (70 minutes).

d. Equipment Functionality and Accessibility

The Labyrinth does not contain any ignition sources and insignificant combustible load; therefore, no credible fire could occur that could damage the valve or prevent access to the valve within the allowable time frame (70 minutes).

e. Available Indications

Local indications are adequate to verify valve position.

f. Communications

Adequate communications between the location of the OMA and the MCR is provided by the communication system described in Part II, Section 12.8.

g. Portable Equipment

No portable equipment is required for this OMA.

h. Personnel Protection Equipment

The action is to be performed in the room after the fire has been extinguished; therefore the AUO is expected to be wearing a SCBA when responding for a fire in room 713.0-A20.

i. Procedures and Training

The Appendix R manual operator actions procedures (0-AOI-30.2 series) are clear, complete and current. These procedures are part of the ongoing Operator training.

PART VII - DEVIATIONS AND EVALUATIONS

8.4.1.4 Staffing Requirements for a Fire in 713.0-A20

A fire in the Unit 2 VCT room or the Entry Labyrinth results in three AUOs performing six Unit 2 actions and two AUOs performing three Unit 1 actions for a total of five AUOs. Therefore, the minimum staffing of eight AUOs is more than sufficient to perform the actions.

PART VII - DEVIATIONS AND EVALUATIONS

ATTACHMENT 1 SPRINKLER SYSTEM CRITERIA FOR RESOLVING INTERVENING COMBUSTIBLE CONCERNS

1.0 OBJECTIVE

The objective of these criteria is to provide additional protection for the horizontal space in between redundant trains of safe shutdown capability that contains intervening combustible materials. Per Section III.G.2b of Appendix R, redundant safe shutdown capabilities are to be separated by a horizontal distance of more than 20 feet free of intervening combustibles. Additional protection is provided by installing, in the defined areas, supplemental sprinkler protection for floor level combustibles when adequate coverage by ceiling level sprinklers is not verified by these criteria.

2.0 AREAS OF CRITERIA APPLICATION

These criteria has been applied when redundant divisions are separated by a horizontal distance of more than 20 feet, but without a minimum horizontal separation of more than 20 feet free of intervening combustibles. These criteria have been applied to any continuous 30-foot wide path located between the redundant divisions if the divisions are greater than 30-feet apart. If the redundant divisions are greater than 20-feet, but less than 30-feet apart, these criteria have been applied to the entire horizontal space between the divisions.

3.0 ACCEPTANCE CRITERIA FOR EXISTING SPRINKLER HEADS

- 3.1 Existing sprinkler heads, which have been located to produce fully developed spray patterns at the ceiling, will provide acceptable floor coverage if there are no intermediate obstructions in their patterns which are greater than 48-inch wide. When individual obstructions overlap or have less than a 4-inch flue space between them when viewed from immediately below, they shall be considered a single obstruction for determining their cumulative horizontal width. No combination of obstructions may traverse the 4-inch flue space and block more than 2-feet of any 8-feet of flue space.
- 3.2 Lateral discharge from existing sprinkler heads may be utilized for floor coverage if the portion of their discharge pattern that is being relied on has no significant obstructions. Significance shall be evaluated considering the typical shape of a sprinkler spray pattern and the obstruction guidelines of NFPA 13.
- 3.3 Acceptance of existing heads shall be based on visual observations in the plant.

PART VII - DEVIATIONS AND EVALUATIONS

ATTACHMENT 1 SPRINKLER SYSTEM CRITERIA FOR RESOLVING INTERVENING COMBUSTIBLE CONCERNS

4.0 CORRECTIVE ACTIONS

- 4.1 When Section 3.0 is not satisfied, sprinkler heads shall be provided under the obstructions utilizing one of the following options:
- a. Relocate existing heads below intermediate level obstructions if adequate coverage can be maintained at the ceiling level, or,
 - b. Add new heads below intermediate level obstructions. System adequacy shall be demonstrated using NFPA 13 pipe schedules or hydraulic calculation. If necessary, pipe sizes and supply header arrangements shall be changed to satisfy this requirement.
- 4.2 The maximum floor area that can be protected by a single sprinkler head shall be 130 square feet.
- 4.3 When more than one head must be located below obstructions, the distance between heads shall not exceed 15 feet.
- 4.4 When hydraulic calculations are used to verify sprinkler system adequacy, the calculations shall be based upon the hydraulically most remote 1500 ft² area or the area of the largest room, whichever is smaller. The systems shall be capable of discharging a density of 0.16 gpm/ft² assuming all sprinkler heads in the analyzed area are open.
- 4.5 If a system designed in accordance with the NFPA 13 pipe schedules supplies sprinkler heads in two or more rooms that are separated by 2-hour rated construction, the maximum number of heads in each room must satisfy the pipe schedule limits for pipe size with each room considered separately. If this condition is satisfied, the maximum number of heads per pipe size may be exceeded for all the rooms taken together.

The information which follows is a comparison of the Watts Bar Nuclear Plant (WBN) against the guidelines of Appendix A to Branch Technical Position APCS 9.5-1 Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976 (August 23, 1976) (Part II, Reference 4.1.10).

Appendix A guidelines are given in the first (left-hand) column of the following tabulations, retaining the number sequence used in BTP Appendix A. An overview of various aspects of the WBN Fire Protection Program is given in the second column, with details provided in other parts of the FPR or other plant documentation, to demonstrate conformance to the BTP Appendix A guidelines. Alternate approaches are described in the third column. The fourth column provides supplemental information, as appropriate.

PART VIII – CONFORMANCE TO APPENDIX A TO BTP 9.5-1 GUIDELINES

Revision XXX

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>A. <u>Overall Requirements of Nuclear Plant Fire Protection Program</u></p> <p>A.1 <u>Personnel</u></p> <p>Responsibility for the overall fire protection program should be assigned to a designated person in the upper level of management. This person should retain ultimate responsibility even though formulation and assurance of program implementation is delegated. Such delegation of authority should be to staff personnel prepared by training and experience in fire protection and nuclear plant safety to provide a balanced approach in directing the fire protection programs for nuclear power plants. The qualification requirements for the fire protection engineer or consultant who will assist in the design and selection of equipment, inspect, and test the completed physical aspects of the system, develop the fire protecting program, assist in the fire fighting training for the operating plant should be stated. Subsequently, the FSAR should discuss the training and the updated provisions such as fire drills provided for maintaining the competence of the station fire fighting and operating crew, including personnel responsible for maintaining and inspecting the fire protection equipment.</p>	<p>Refer to Part II, Sections 7 and 9 of the FPR.</p>		

PART VIII – CONFORMANCE TO APPENDIX A TO BTP 9.5-1 GUIDELINES

Revision XXX

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>The fire protection staff should be responsible for:</p> <ul style="list-style-type: none">a. Coordination of building layout and systems design with fire area requirements, including consideration of potential hazards associated with postulated design basis fires,b. Design and maintenance of fire detection, suppression, and extinguishing systems.c. Fire Prevention activities.d. Training and manual fire fighting activities of plant personnel and the fire brigade. <p>(Note: NFPA 6 – <u>Recommendations for Organization of Industrial Fire Loss Prevention</u>, contains useful guidance for organization and operation of the entire loss prevention program.)</p> <p>A.2 <u>Design Bases</u></p> <p>The overall fire protection program should be based upon evaluation of potential fire hazards throughout the plant and the effect of postulated design basis fires relative to maintaining ability to perform safety shutdown functions and minimize releases to the environment.</p>	<p>Refer to Part II, Sections 7, 8, 9, 10 and 11 of the FPR for details.</p> <p>Not applicable to Watts Bar.</p> <p>The overall fire protection program is designed to maintain the plant's ability to achieve and maintain safe shutdown and minimize radioactive release to the environment in the event of a fire. It reflects good fire protection engineering practice and is guided by plant fire hazard analyses and by credible fire postulations.</p>		<p>See Part X of the FPR.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>A.3 <u>Backup</u></p> <p>Total reliance should not be placed on a single automatic fire suppression system. Appropriate backup fire suppression capability should be provided.</p> <p>A.4 <u>Single Failure Criterion</u></p> <p>A single failure in the fire suppression system should not impair both the primary and backup fire suppression capability. For example, redundant fire water pumps with independent power supplies and controls should be provided.</p> <p>Postulated fires or fire protection system failures need not be considered concurrent with other plant accidents or the most severe natural phenomena.</p> <p>The effects of lightning strikes should be included in the overall plant fire protection program.</p>	<p>Provisions for fire suppression for the various plant areas avoid total reliance on any single system, automatic or manual. Appropriate backup fire suppression capability is provided. Refer to Part II, Section 12 of the FPR for details.</p> <p>A single failure of the fire protection system will not render both the primary and backup systems inoperative.</p> <p>The plant fire protection water supply system is provided with redundant pumps with independent power supplies and controls. During an Appendix R fire, some fire pumps may not be available (i.e., a fire could damage the circuitry to some of the pumps); however, a sufficient number of pumps are available to meet suppression system (including hose stream) demands for each fire assuming all required equipment is functional at the time of the fire. Refer to Part II, Section 12.1 of the FPR for details.</p> <p>Postulated fires or fire protection system failures are not considered concurrent with other plant accidents or the most severe natural phenomena except loss of off-site power.</p> <p>Lightning protection is incorporated in the facility design as documented in Part II, Section 12 of the FPR.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>A.5 <u>Fire Suppression Systems</u></p> <p>Failure or inadvertent operation of the fire suppression systems should not incapacitate safety-related systems or components. Fire suppression systems that are pressurized during normal plant operation should meet the guidelines specified in APCSB Branch Technical Position 3-1, "Protection Against Postulated Piping Failures in Fluid Systems Outside Containment."</p>	<p>Selection of fire suppression systems for areas containing safety-related equipment is such that failure or inadvertent suppression system operation will not incapacitate redundant essential equipment. For example, those areas requiring water suppression are provided with preaction systems to reduce the probability of false discharge occurring as a result of a single failure or inadvertent operation.</p>		<p>Refer to Part II of the FPR for a discussion of the fire suppression systems.</p>
<p>A.6 <u>Fuel Storage Areas</u></p> <p>The fire protection program (plans, personnel, and equipment) for buildings storing new reactor fuel and for adjacent fire zones which could affect the fuel storage zone should be fully operational before fuel is received at the site. Schedule for implementation of modifications, if any, will be established on a case-by-case basis.</p>	<p>A fire protection program is operational while fuel is on site. Modifications are scheduled on a case-by-case basis.</p>		
<p>A.7 <u>Fuel Loading</u></p> <p>The fire protection program for an entire reactor unit should be fully operational prior to initial fuel loading in that reactor unit.</p>	<p>A fire protection program for the plant will be in effect before fuel load.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Schedule for implementation of modifications, if any, will be established on a case-by-case basis.</p>	<p>Modifications are scheduled and approved through site established procedures.</p>		
<p>A.8 <u>Multiple-Reactor Sites</u></p> <p>On multiple-reactor sites where there are operating reactors and construction of remaining units is being completed, the fire protection program should provide continuing evaluation and include additional fire barriers, fire protection capability, and administrative controls necessary to protect the operating units from construction fire hazards. The superintendent of the operating plant should have the lead responsibility for site fire protection.</p>	<p>The fire protection program provides continuing evaluations and administrative controls necessary to protect one unit from fire hazards associated with the other unit's activities and to ensure that operation (normal and accident conditions) of one unit is not impacted by the other unit's activities. Site fire protection lead responsibilities are identified in Part II of the FPR.</p>		
<p>A.9 <u>Simultaneous Fires</u></p> <p>Simultaneous fires in more than one reactor need not be postulated, where separation requirements are met. A fire involving more than one reactor unit need not be postulated except for facilities shared between units.</p>	<p>The current evaluation ensures safe shutdown for fires in all areas containing equipment required for safe shutdown in the event of a fire. Simultaneous fires are not postulated.</p>		
<p>B. <u>Administrative Procedures, Controls and Fire Brigade</u></p>			
<p>B.1 Administrative procedures consistent with the need for maintaining the performance of the fire protection systems and personnel in nuclear power plants should be provided.</p>	<p>Administrative procedures are provided with the intent of maintaining the performance of plant fire protection systems and personnel.</p>		

PART VIII – CONFORMANCE TO APPENDIX A TO BTP 9.5-1 GUIDELINES

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Guidance is contained in the following publications:</p> <p>NFPA 4 - Organization for Fire Services</p> <p>NFPA 4A - Organization for Fire Department</p> <p>NFPA 6 - Industrial Fire Loss Prevention</p> <p>NFPA 7 - Management of Fire Emergencies</p> <p>NFPA 8 - Management Responsibility for Effects of Fire on Operations</p> <p>NFPA 27 - Private Fire Brigades</p>		<p>The organization and qualifications of the fire brigade at WBN are identified in Part II, Section 9 of the FPR and represents WBN's method of compliance with fire brigade requirements. Refer also to Part X of the FPR.</p>	<p>WBN has reviewed the identified codes for applicability. The codes are considered not applicable. WBN's method for addressing the technical issues covered by the codes are as documented in PartX of the FPR.</p>
<p>B.2 Effective administrative measures should be implemented to prohibit bulk storage or combustible materials inside or adjacent to safety-related buildings or systems during operation or maintenance periods. Regulatory Guide 1.39, "Housekeeping Requirements for Water-Cooled Nuclear Power Plants," provides guidance on housekeeping, including the disposal of combustible materials.</p>		<p>Plant housekeeping procedures restrict the storage of combustibles in the vicinity of safety-related equipment. Plant procedures define good housekeeping requirements, including the control, handling and disposal of combustible material.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>B.3 Normal and abnormal conditions or other anticipated operations such as modifications (e.g., breaking fire stops, impairment of fire detection and suppression systems) and refueling activities should be reviewed by appropriate levels of management and appropriate special actions and procedures such as fire watches or temporary fire barriers implemented to assure adequate fire protection and reactor safety. In particular:</p> <p>a. Work involving ignition sources such as welding and flame cutting should be done under closely controlled conditions. Procedures governing such work should be reviewed and approved by persons trained and experienced in fire protection. Persons performing and directly assisting in such work should be trained and equipped to prevent and combat fires. If this is not possible, a person qualified in fire protection should directly monitor the work and function as a fire watch.</p> <p>b. Leak testing and similar procedures, such as air flow determination, should use one of the commercially available aerosol techniques. Open flames or combustion generated smoke should not be permitted.</p>	<p>Operations and conditions which may impair fire protection features or refueling activities are reviewed and approved by the appropriate levels of management prior to the start of work. Work areas involving welding, etc., are made fire safe and fire watches are established as required. Refer to Part II, Section 13 of the FPR.</p> <p>Prior to the start of work, a hot work (welding, cutting, etc.) permit is issued and the work area is made "fire safe." A fire watch is established in accordance with plant procedures, which require adequate training of personnel assigned as fire watches. Refer to Part II, Section 13 of the FPR for details.</p> <p>Open flames or combustion generated smoke are not permitted for leak testing.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>c. Use of combustible material, e.g., HEPA and charcoal filters, dry ion exchange resins or other combustible supplies, in safety-related areas should be controlled. Use of wood inside buildings containing safety-related systems or equipment should be permitted only when suitable noncombustible substitutes are not available. If wood must be used, only fire retardant treated wood (scaffolding, lay down blocks) should be allowed into safety-related areas only when they are to be used immediately.</p> <p>Their possible and probable use should be considered in the fire hazard analysis to determine the adequacy of the installed fire protection systems.</p> <p>B.4 Nuclear power plants are frequently located in remote areas at some distance from public fire departments. Also, first response fire departments are often volunteer. Public fire department response should be considered in the overall fire protection program. However, the plant should be designed to be self-sufficient with respect to the fire fighting activities and rely on the public only for supplemental or backup capability.</p>	<p>The use of combustible materials in safety-related areas is kept at the minimum extent practicable. The methods for controlling combustibles are included in plant procedures. The use of wood, with appropriate considerations, is kept to the minimum extent practicable.</p> <p>Only pressure treated fire retardant wood is allowed without specific fire protection staff prior approval.</p> <p>The types of detectors (smoke & thermal) and types of suppression (sprinklers, spray, CO₂) and location of standpipe and hoses stations have been considered in the fire hazard analysis and are adequate for the possible and probable use of combustible materials.</p> <p>The primary firefighting activities at WBN are provided by the plant fire brigade. However, the contracted off-site fire department will respond to the plant to provide assistance as requested. See Part II, Section 9 of the FPR.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>B.5 The need for good organization, training, and equipping of fire brigades at nuclear power plant sites requires effective measures be implemented to assure proper discharge of these functions. The guidance is Regulatory Guide 1.101, "Emergency Planning for Nuclear Power Plants," and should be followed as applicable.</p> <p>a. Successful fire fighting requires testing and maintenance of the fire protection equipment, emergency lighting, and communication as well as practice as brigades for the people who must utilize the equipment. A test plan that lists the individuals and their responsibilities in connection with routine tests and inspections of the fire detection and protection systems should be developed.</p> <p>The test plan should contain the types, frequency, and detailed procedures for testing. Procedures should also contain instructions on maintaining fire protection during those periods when the fire protection system is impaired or during periods of plant maintenance, e.g., fire watches or temporary hose connections to water systems.</p>	<p>Plant procedures provide for maintaining the performance of plant fire protection systems and personnel, including the periodic inspection and testing of systems, and the alternate provisions to be made during temporary impairment of systems. Refer to Part II of the FPR.</p>	<p>The organization, training, and equipping of the fire brigade is based on the guidelines provided in the NRC letter, dated August 19, 1977 - Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls, and Quality Assurance, which is used as an alternative to Regulatory Guide 1.101.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. Basic training is a necessary element to effective fire fighting operation. In order for a fire brigade to operate effectively, it must operate as a team. All members must know what their individual duties are. They must be familiar with the layout of the plant and equipment location in order to permit effective fire fighting operations during times when a particular area is filled with smoke or insufficiently lighted. Such training can only be accomplished by conducting drills several times a year (at least quarterly) so that all members of the fire brigade have had the opportunity to train as a team, testing itself in the major areas of the plant. The drills should include the simulated use of equipment in each area and should be preplanned and post-critiqued to establish the training objective of the drills and determine how well these objectives have been met. These drills should periodically (at least annually) include local fire department participation where possible. Such drills also permit supervising personnel to evaluate the effectiveness of communications within the fire brigade and with the on-scene fire team leader, the reactor operator in the control room, and the off-site command post.</p>	<p>Training of the fire brigade includes classroom instruction and drills. Initial classroom instruction includes indoctrination to the plant with identification of the fire brigade's responsibilities and study of the location of firefighting equipment and plant layout, including access and egress from specific plant areas. Classroom instruction is reinforced and complemented with quarterly drills. See Part II, Section 9 of the FPR for more details.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>c. To have proper coverage during all phases of operation, members of each shift crew should be trained in fire protection. Training of the plant fire brigade should be coordinated with the local fire department so that responsibilities and duties are delineated in advance. This coordination should be part of the training course and implemented into the training of the local fire department staff. Local fire department should be educated in the operational precautions when fighting fires on nuclear power plant sites. Local fire departments should be made aware of the need for radioactive protection of personnel and the special hazards associated with a nuclear power plant site.</p> <p>d. NFPA 27, "Private Fire Brigade," should be followed in organization, training, and fire drills. This standard also is applicable for the inspection and maintenance of fire fighting equipment.</p>	<p>At least one drill per year is held on a back shift for each rotating shift fire brigade. Periodically, drills may include the local fire department such that responsibilities are delineated and local fire department staff is educated in specific precautions that must be taken and the special hazards associated with the plant. See Part II, Section 9 of the FPR for more details.</p>	<p>Organization, training, and drills for the fire brigade are provided. TVA operates a fire training facility at the Nickajack location and the WBN fire brigade is required to complete the comprehensive program. As discussed in Part X, NFPA 27 is an outdated code; therefore, refer to Part II of the FPR.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Among the standards referenced in this document, the following should be utilized: NFPA 194, "Standard for Screw Threads and Gaskets for Fire Hose Couplings", NFPA 196, "Standard for Fire Hose" NFPA 197, "Training Standard on Initial Fire Attacks," NFPA 601, "Recommended Manual of Instructions and Duties for the Plant Watchman on Guard." NFPA booklets and pamphlets listed on page 27-11 of Volume 8, 1971-72 are also applicable for good training references. In addition, courses in fire prevention and fire suppression which are recognized and/or sponsored by the fire protection industry should be utilized.</p> <p>C. <u>Quality Assurance Program</u></p> <p>Quality Assurance (QA) programs of applicants and contractors should be developed and implemented to assure that the requirements for design, procurement, installation, testing, and administrative controls for the fire protection program for safety-related areas as defined in this Branch Position are satisfied. The program should be under the management control of the QA organization. The QA program criteria that apply to the fire protection program should include the following:</p>	<p>The fire protection QA program at WBN is part of the TVA QA program. See Part II, Section 6 and Part II, Reference 4.2.66.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>C.1 <u>Design, Control and Procurement Document Control</u></p> <p>Measures should be established to assure that all design-related guidelines of the branch Technical Position are included in design and procurement documents and that deviations there from are controlled.</p>	<p>The QA program includes procedures that cover design, control, and procurement documents. Design changes including procurement are reviewed for impacts to maintain compliance to fire protection program requirements. Deviations to requirements must be justified and documented appropriately.</p>		
<p>C.2 <u>Instructions, Procedures, and Drawings</u></p> <p>Inspections, tests, administrative controls, fire drills, and training that govern the fire protection program should be prescribed by documented instructions, procedures, or drawings and should be accomplished in accordance with these documents.</p>	<p>The QA program includes procedures that cover inspection, tests, administrative controls, fire drills, and training that govern the fire protection program.</p>		
<p>C.3 <u>Control of Purchased Material, Equipment and Services</u></p> <p>Measures should be established to assure that purchased material, equipment, and services conform to the procurement documents.</p>	<p>The QA program includes procedures to assure that purchased material, equipment, and services conform to procurement documents.</p>		
<p>C.4 <u>Inspection</u></p> <p>A program for independent inspection of activities affecting fire protection should be established and executed by, or for, the organization performing the activity to verify conformance with documented installation drawings and test procedures and accomplishing the activities.</p>	<p>The QA program provides for independent inspection of activities affecting fire protection to verify conformance with documented installation drawings and test procedures for accomplishing the activities.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>C.5 <u>Test and Test Control</u></p> <p>A test program should be established and implemented to assure that testing is performed and verified by inspection and audit to demonstrate conformance with design and systems readiness requirements. The tests should be performed in accordance with written test procedures; test results should be properly evaluated and acted on.</p>	<p>The QA program assures that testing is performed and verified by inspection and audit to demonstrate conformance to design and systems readiness requirements. Testing is conducted in accordance with procedures. Test results are evaluated and acted upon as necessary.</p>		
<p>C.6 <u>Inspection, Test, and Operating Status</u></p> <p>Measures should be established to provide for the identification of items that have satisfactorily passed required tests and inspections.</p>	<p>The QA program includes provisions for the identification of items that have satisfactorily passed required tests and inspections.</p>		
<p>C.7 <u>Nonconforming Items</u></p> <p>Measures should be established to control items that do not conform to specified requirements to prevent inadvertent use of installation</p>	<p>The QA program includes procedures regarding control of nonconforming material, parts, or components.</p>		
<p>C.8 <u>Corrective Action</u></p> <p>Measures should be established to assure that conditions adverse to fire protection such as failures, malfunctions, deficiencies, deviations, defective components, uncontrolled combustible material, and nonconformances are promptly identified, reported, and corrected.</p>	<p>The QA program includes a procedure to assure that conditions adverse to fire protection are properly identified, reported, and corrected.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>C.9 <u>Records</u></p> <p>Records should be prepared and maintained to furnish evidence that the criteria enumerated above are being met for activities affecting the fire protection program.</p>	<p>The QA program provides for the proper collection and storage of QA records.</p>		
<p>C.10 <u>Audits</u></p> <p>Audits should be conducted and documented to verify compliance with the fire protection program including design and procurement documents, instructions, procedures, drawings, inspection, and test activities.</p>	<p>The QA program provides for audits which ensure compliance with the Fire Protection Program.</p>		
<p>D. <u>General Guidelines for Plant Protection</u></p>			
<p>D.1 <u>Building Design</u></p> <p>a. Plant lay-outs should be arranged to:</p> <p>1. Isolate safety-related systems from unacceptable fire hazards, and</p>	<p>Plant lay-outs are arranged so that:</p> <p>Safety-related systems are isolated from exposure fire hazards through the use of rated fire barriers, spacial separation, automatic suppression or any combination of the above deemed adequate.</p>		<p>General fire protection principles (e.g., isolation, separation, detection, suppression, etc.) have been applied in protecting safety-related systems from unacceptable fire hazards. This is not to be confused with the <u>specific</u> fire protection principles that are applied to equipment required for FSSD (i.e., Appendix R).</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>2. Alternatives:</p> <p>(a) Redundant safety-related systems that are subject to damage from a single fire hazard should be protected by a combination of fire retardant coatings and fire detection and suppression systems, or</p> <p>(b) A separate system to perform the safety function should be provided.</p> <p>b. In order to accomplish 1.a above safety-related systems and fire hazards should be identified throughout the plant. Therefore, a detailed fire hazard analysis should be made. The fire hazards analysis should be reviewed and updated as necessary.</p> <p>Additional fire hazards analysis should be done after any plant modifications.</p> <p>c. Alternative guidance for constructed plants is shown in section F.3, Cable Spreading Room.</p>	<p>Redundant safety-related functions necessary to shutdown in the case of a fire are separated from each other or protected as required to preclude damage by a single fire hazard. This is done by a combination of fire retardant coatings, fire detection, and/or fire suppression systems and spacial separation.</p> <p>To verify separation and isolation of critical equipment and components, a fire hazard analysis has been performed to identify safe shutdown systems and associated fire hazards, and is updated in accordance the design process and changes made during the operating cycle are submitted to the NRC in accordance with the FSAR update process. See Part VI.</p> <p>Plant modifications are reviewed to ensure conformance with fire protection requirements and to identify potential impact on the fire hazard analysis of the area involved.</p>		<p>Not applicable.</p> <p>See F.3 of this section.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>d. Interior wall and structural components, thermal insulation materials and radiation shielding materials and sound-proofing should be noncombustible. Interior finishes should be noncombustible or listed by a nationally recognized testing laboratory, such as Factory Mutual or Underwriters' Laboratory, Inc., for flame spread, smoke, and fuel contribution of 25 or less in its use configuration (ASTM E-84 Test, "Surface Burning Characteristics of Building Materials").</p>		<p>The facility is designed in accordance with General Design Criterion 3 (Part II, Reference 4.1.7), which requires that noncombustible and fire-resistant materials be used throughout the facility. Noncombustible materials are used to the extent practicable. The fire protection standard and methodology that was in effect at that time for testing carpeting (interior finishes) was ASTM E-84 and NFPA 255 (Part II, References 4.3.1 and 4.4.41). In 1990, the standard and methodology for testing carpeting changed to ASTM E-648 and NFPA 253 (Part II, References 4.3.1b and 4.4.40). In light of the noted standard/methodology change, TVA installed carpeting in the control room that was tested in accordance with NFPA 253 and has a critical radiant flux (CRF) factor of $\geq 0.45 \text{ W/cm}^2$. The noted CRF of 0.45 W/cm^2 is consistent with our insurer's (Nuclear Electric Insurance Limited) loss prevention standard and is also consistent with previous NRC approvals such as that documented in the Safety Evaluation Report for Texas Utilities' Comanche Peak Steam Electric Station (NUREG-0797, Supplement No. 26, Section 9.5.1.7b) (Part II, Reference 4.1.38). Additionally, our insurer has given us permission to install carpet with a smoke development rating of ≤ 450 when tested in accordance with ASTM E-662 and NFPA 258 (Part II, References 4.3.1c and 4.4.42). The small anti-static mat installed at Panel 1-M-13 is provided to prevent static discharge to the panel. A non-combustible mat was not commercially available for this installation.</p>	<p>Fuel contribution values of 50 or less are acceptable based on BTP guidelines.</p> <p>The Radiation Protection Control Point Building installed under DCN 51766 was built with Polycarbonate "Lexan" (plexiglass) windows. These windows exceed the maximum ASTM E-84 Flame Spread Rating of ≤ 25. However, for several reasons discussed here, the plexiglass windows were determined to be the best solution. This building is elevated approximately 8 feet above the 757.0' floor and based on an experience at Sequoyah Nuclear Plant (where there was a "near-miss" incident) glass windows posed a safety concern should a window(s) fall out. Secondly, the available alternative materials also did not meet the ASTM E-84 or they did meet the ASTM E-84 but were clouded where they could not be seen through (defeating the purpose of the building). Also, volume of material is virtually negligible relative to the volume of the 757.0' Refueling Floor. Finally and most importantly, the building itself is not used for Safe Shutdown and the plexiglass windows have no affect on the Safe Shutdown Analysis.</p>

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>e. Metal deck roof construction should be noncombustible (see the building materials directory of the Underwriters' Laboratory, Inc.) or listed as Class I by Factory Mutual System Approval Guide.</p> <p>Where combustible material is used in metal deck roofing design, acceptable alternatives are:</p> <ol style="list-style-type: none"> 1. Replace combustibles with noncombustible materials, 2. Provide an automatic sprinkler system, or 3. Provide ability to cover roof exterior and interior with adequate water volume and pressure. <p>f. Suspended ceilings and their supports should be of noncombustible construction. Concealed spaces should be devoid of combustibles.</p> <p>Adequate fire detection and suppression systems should be provided where full implementation is not practicable.</p>	<p>Metal deck roof construction at WBN is noncombustible.</p> <p>Fire detection and suppression systems are provided as described in Part II of the FPR.</p>	<p>Suspended ceilings and supports are noncombustible to the extent practicable. If not noncombustible, the material has been included in combustible loading calculations. No significant combustibles are located in concealed spaces.</p>	

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>iii. Closing the opening and providing the capability to maintain a water curtain in case of a fire.</p> <p>i. Floor drains, sized to remove expected fire fighting water flow should be provided in those areas where fixed water fire suppression systems are installed. Drains should also be provided in other areas where hand hose lines may be used if such fire fighting water could cause unacceptable damage to equipment in the area.</p> <p>Equipment should be installed on pedestals, or curbs should be provided as required to contain water and direct it to floor drains. (See NFPA 92M, "Waterproofing and Draining of Floors.")</p> <p>Drains in areas containing combustible liquids should have provisions for preventing the spread of the fire throughout the drain system.</p> <p>Water drainage from areas which may contain radioactivity should be sampled and analyzed before discharge to the environment.</p>	<p>Means of drainage is provided in the main buildings. In areas containing fire suppression systems or hose stations, drainage provided removes expected fire protection water flows or controls accumulations such that water could not cause unacceptable damage to equipment in the area.</p> <p>Areas with equipment containing significant amounts of combustible liquids have containment curbing to prevent inadvertent oil flows to surrounding areas and the drainage system. A lube oil collection system is provided for the RCPs.</p> <p>Water drainage from areas which may contain radioactivity is sampled and analyzed before discharge to the environment.</p>	<p>Additional drainage can be achieved by opening doors and diverting the water into adjacent areas (rooms).</p>	<p>Pads or curbs are provided where required. NFPA 92M-1972 is considered not applicable. WBN's method for addressing the technical issues covered by the code is as documented in Part II, Section 12 of the FPR.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>In operating plants or plants under construction if accumulation of water from the operation of new fire suppression systems does not create unacceptable consequences, drains need not be installed.</p> <p>j. Floors, walls, and ceilings enclosing separate fire areas should have minimum fire rating of three hours.</p> <p>Penetrations in these fire barriers, including conduits and piping, should be sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself.</p>	<p>See above.</p>	<p>Fire area barriers are 2-hour or 3-hour rated. WBN fire area and room compartmentation does not always comply with the specific fire barrier rating guidelines contained in Appendix A. The differences are judged acceptable given the extensive use of suppression systems at WBN, the low combustible loading in many areas of the plant, the detailed and rigorous Appendix R analysis performed, the conservative nature of the plant design evaluations and the fire hazard analysis performed.</p> <p>Penetrations in these barriers, including conduit and piping, are generally sealed or evaluated to provide a fire-resistance rating equivalent to the required rating of the barrier, but not more than 3-hours. Refer to Section 12.10, "Penetration Seals," of Part II. Section 12.10 lists applicable references to the documents which form the basis for WBN's design and use of penetration seals.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Door openings should be protected with equivalent rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory. Such doors should be normally closed and locked or alarmed with alarm and annunciation in the control room.</p> <p>Penetrations for ventilation systems should be protected by a standard "fire door damper" where required. (Refer to NFPA 80, "Fire Doors and Windows.")</p> <p>The fire hazard in each area should be evaluated to determine barrier requirements. If barrier fire resistance cannot be made adequate, fire detection and suppression should be provided, such as: (i) water curtain in case of fire, (ii) flame retardant, (iii) additional fire barriers.</p>	<p>A fire hazard analysis was performed and appropriate barriers, suppression, detection, etc., are provided. See FPR Part VI (for FHA) and FPR Part VII (for Deviations and Evaluations).</p>	<p>Normally, doors, frames, and hardware in required regulatory fire barriers have a fire rating equivalent to that required of the barrier, and have been tested and approved by a nationally recognized laboratory. Fire doors have been evaluated per the requirements of NFPA 80-1975 (Part II, Reference 4.4.30). Refer to Part X of the FPR. Fire doors are normally provided with closing mechanisms. Closing mechanisms and latches provided on doors are inspected to ensure proper functioning. Special purpose doors (e.g., flood, heavy equipment, etc.) installed in fire barriers have been evaluated by a fire protection engineer for acceptability.</p> <p>Ventilation openings through required regulatory fire barriers are typically protected by fire dampers having a rating equivalent to that required of the barrier. Even though WBN is not committed to NFPA 90A-1975 (Part II, Reference 4.4.31), fire dampers have been evaluated per the requirements of NFPA 90A-1975. Refer to Part II, Section 12 and Part X of the FPR.</p>	<p>Security hardware incorporated into a fire door assembly does not adversely impact the fire rating of the assembly per the guidance of Generic Letter 86-10 (Part II, Reference 4.1.16).</p> <p>Non-UL listed fire doors are identified in Table 14.8.1 of Part II and also on the compartment drawings (47W240-series), and have been evaluated as equivalent to fire rated doors.. Refer to Part II, Section 12 of the FPR.</p> <p>Ventilation openings without dampers were considered in the Safe Shutdown Analysis. Refer to Part II, Section 12 of the FPR.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>D.2 <u>Control of Combustibles</u></p> <p>a. Safety-related systems should be isolated or separated from combustible materials. When this is not possible because of the nature of the safety system or the combustible material, special protection should be provided to prevent a fire from defeating the safety system function. Such protection may involve a combination of automatic fire suppression, and construction capable of withstanding and containing a fire that consumes all combustibles present. Examples of such combustible materials that may not be separable from the remainder of its system are:</p> <ol style="list-style-type: none"> Emergency diesel generator fuel oil day tanks. Turbine-generator oil and hydraulic control fluid systems. Reactor coolant pump lube oil system. 	<p>Safety-related systems are separated from combustible materials. This separation consists of spatial separation or rated fire barriers where possible, or a combination of these along with fire detection and suppression as required based on the Fire Hazards Analysis and Appendix R.</p> <p>The emergency diesel generator fuel oil day tanks are located in the room with its associated diesel. This room is provided with automatic suppression and detection as described under item F.9 of this section. The two FLEX diesel generators are in individual rooms that are separated from FSSD areas by 3-hour fire rated barriers. The 185 gallon fuel tank in each room is a double walled tank. Each room is provided with automatic detection and suppression.</p> <p>The turbine lube oil reservoir is provided with fixed water spray systems.</p> <p>The reactor coolant pumps in containment are provided with fire suppression systems with closed water spray heads. They also have integral oil collection systems as required by Section III.0 of 10 CFR Part 50, Appendix R.</p>	<p>The 225 kVA diesel generator skids on the Auxiliary Building roof are provided with a double wall 185 gallon fuel tank.</p>	<p>Refer to the "Fire Hazard Analyses," for combustible loadings and fire protection provisions in each fire zone. The four emergency diesel generators are separated from each other by 3-hr rated, reinforced concrete barriers.</p> <p>Beyond-Design-Basis event scenarios require plant modifications to address mitigation strategies for Beyond-Design-Basis accidents. Additional 225 kVA Diesel Generators are Installed on el 786.0 of the Auxiliary Building for Beyond-Design-Basis accidents. These diesels are not safety related or App. R equipment and are not required for safe shutdown.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. Bulk gas storage (either compressed or cryogenic), should not be permitted inside structures housing safety-related equipment. Storage of flammable gas such as hydrogen, should be located outdoors or in a separate detached building so that a fire or explosion will not adversely affect any safety-related systems or equipment. (Refer to NFPA 50A, "Gaseous Hydrogen Systems.")</p> <p>Care should be taken to locate high pressure gas storage containers with the long axis parallel to building walls. This will minimize the possibility of wall penetration in the event of a container failure. Use of compressed gases (especially flammable and fuel gases) inside buildings should be controlled. (Refer to NFPA 6, "Industrial Fire Loss Prevention.")</p>	<p>The hydrogen trailer port is located out in the Yard and is well separated from safety-related structures. Plant procedures control the use of compressed gases inside safety-related buildings.</p>	<p>Bulk storage of flammable gasses is located outdoors to avoid exposure to essential equipment, systems, or structures. The system is provided with excess flow valves such that in an accident the hydrogen concentration would stay below 4% by volume. Refer to Part X, Section 3.2.7 of the FPR.</p> <p>WBN has not reviewed NFPA 6 for compliance since it has been superseded by NFPA 1. The codes are considered not applicable. Procedures require containers to be secured to structures or vehicle racks. Safe permitted use of compressed gases inside buildings is controlled by operational procedures. Refer to Part II, Section 11.0 of the FPR.</p>	<p>Storage for operational quantities of nitrogen and breathing air are provided in designated rooms in the AB. Post Accident Sampling room has some quantities of operational gases including hydrogen required for PAS system functions. These gas containers are commercially designed and manufactured to meet appropriate compressed gas cylinder industry standards and are mounted to address seismic concerns. The combination of container design and mounting will provide restraint to minimize possible wall penetration in the event of container failure.</p>

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>c. Automatic water sprinkler systems should be provided for cable trays outside the cable spreading room. Cables should be designed to allow wetting down with deluge water without electrical faulting. Manual hose stations and portable hand extinguishers should be provided as backup.</p> <p>Safety-related equipment in the vicinity of such cable trays, that does not itself require water fire protection, but is subject to unacceptable damage from sprinkler water discharge, should be protected from sprinkler system operation or malfunction. When safety-related cables do not satisfy the provisions of Regulatory Guide 1.75, all exposed cables should be covered with an approved fire retardant coating and a fixed automatic water fire suppression system should be provided.</p>	<p>Cables are designed to allow wetting without faulting.</p>	<p>Automatic water suppression systems are provided in some areas to protect redundant safety-related cables. Refer to Part VI of the FPR</p> <p>Fire hose and extinguishers are generally available for manual firefighting. Refer to Part II, Section 10.0 of the FPR.</p> <p>To address unacceptable damage to redundant safety-related equipment from sprinkler water discharge, electrical conduit is sealed if its physical configuration and location is such that automatic suppression water can be conducted into redundant electrical equipment and impact safe shutdown.</p> <p>Cables in safety-related or seismic category 1 areas are generally covered with an approved fire retardant coating or are qualified to the requirements of IEEE 383-1974. Flame retardant coating is applied to non-IEEE-383 cables in accordance with Design Criteria WB-DC-30-4 (Part II, Reference 4.2.29).</p>	<p>Automatic water suppression systems are provided in most areas of safety-related buildings. Ceiling level sprinklers provide general area coverage and additional sprinklers are provided under large obstructions (e.g., HVAC ducts).</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>d. Cable and cable tray penetration of fire barriers (vertical and horizontal) should be sealed to give protection at least equivalent to the fire barrier. The design of fire barriers for horizontal and vertical cable trays should, as a minimum, meet the requirements of ASTM E-119, "Fire Test of Building Construction and Materials," including the hose stream test. Where installed penetration seals are deficient with respect to fire resistance, these seals may be protected by covering both sides with an approved fire retardant material. The adequacy of using such material should be demonstrated by suitable testing.</p> <p>e. Fire breaks should be provided as deemed necessary by the fire hazards analysis. Flame or flame retardant coatings may be used as a fire break for grouped electrical cables to limit spread of fire in cable venting. (Possible cable derating owing to use of such coating materials must be considered during design.)</p> <p>f. Electric cable constructions should, as a minimum, pass the current IEEE No. 383 flame test. (This does not imply that cables passing this test will not require additional fire protection.)</p>	<p>Cable and cable tray penetration of fire barriers (vertical and horizontal) are sealed with fire barrier penetration seals to give protection equivalent to the barrier where required. These penetration designs have been tested and have been reviewed and approved as being equal to the required rating of the fire barrier. Electrical penetration openings are sealed with a configuration that has been tested to nationally recognized penetration seal testing criteria (e.g., IEEE 634, ASTM E814, etc.) (Part II, Reference 4.3.2). See FPR Part II, Section 12.10.6.</p> <p>Configurations of cable routings are either such that no breaks are necessary or penetration seals are provided where cables pass through fire barriers. Power cables are evaluated for cable derating requirements.</p>		<p>Fire breaks are not necessary at WBN for fire protection purposes.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>For cable installation in operating plants and plants under construction that do not meet the IEEE No. 383 flame test requirements, all cables must be covered with an approved flame retardant coating and properly derated.</p> <p>g. To the extent practical, cable construction that does not give off corrosive gases while burning should be used. (Applicable to new cable insulations.)</p> <p>h. Cable trays, raceway, conduit, trenches or culverts should be used only for cables. Miscellaneous storage should not be permitted, nor should piping for flammable or combustible liquids or gases be installed in these areas.</p> <p>Installed equipment in cable tunnels or culverts, need not be removed if they present no hazard to the cable runs as determined by the fire hazards analysis.</p> <p>i. The design of cable tunnels, culverts, and spreading rooms should provide for automatic or manual smoke venting as required to facilitate manual fire fighting capability.</p>	<p>Electric cables used at WBN satisfy the requirements of IEEE 383-1974 flame test, or may be coated with an approved fire retardant coating. In specific areas, where cables have been coated with fire retardant materials, a derating factor has been applied.</p> <p>New cable insulation is IEEE-383-qualified cable, if possible.</p> <p>Cable trays, raceway, conduit and trenches are only used for cables.</p> <p>Plant ventilation systems are generally used for smoke removal, or manual smoke venting can be performed with portable smoke ejectors located on site.</p>	<p>Less than 10 uncoated non-IEEE 383 cables are allowed in a tray. New cables are required to be IEEE-383 qualified, if possible.</p> <p>Specialty cables such as fiber optic cable may not be IEEE 383 qualified, but are reviewed and accepted for use without fire retardant coating.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>j. Cables in the control room should be kept to the minimum necessary for operation of the control room. All cables entering the control room should terminate there.</p> <p>Cables should not be installed in floor trenches or culverts in the control room. Existing cabling installed in concealed floor and ceiling spaces should be protected with an automatic total flooding Halon system.</p> <p>D.4 <u>Ventilation</u></p> <p>a. The products of combustion which need to be removed from a specific fire area should be evaluated to determine how they will be controlled. Smoke and corrosive gases should generally be automatically discharged directly outside to a safe location.</p> <p>Smoke and gases containing radioactive materials should be monitored in the fire area to determine if release to the environment is within the permissible limits of the plant technical specifications.</p>	<p>Electrical circuits in the control room are limited to those associated with lighting, instrumentation, and control. Cables entering the control room terminate there.</p> <p>Cables are not installed in floor trenches or culverts in the control room. The areas under the control room panels are extensions of the panels, not floor trenches. Areas beneath the US and SM work stations are considered to be a part of the work station.</p> <p>Plant ventilation systems are generally used for smoke removal, but smoke corrosive gases are not automatically discharged. Manual venting can be accomplished with portable smoke ejectors; discharge to the outside can be performed in most areas, either directly or using expandable duct.</p> <p>Non-recirculating ventilation systems are provided for fire areas which may contain airborne radioactive materials. Smoke from fires which might occur in areas containing radioactive materials is monitored for radioactivity.</p>	<p>No automatic suppression is provided. Portable extinguishers are provided, and hose stations are available to serve the control room.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. Any ventilation system designed to exhaust smoke or corrosive gases should be evaluated to ensure that inadvertent operation or single failures will not violate the controlled areas of the plant design. This requirement includes containment functions for protection of the public and maintaining habitability for operations personnel.</p> <p>c. The power supply and controls for mechanical ventilation systems should be run outside the fire area served by the system.</p> <p>d. Fire suppression systems should be installed to protect charcoal filters in accordance with Regulatory Guide 1.52, "Design Testing and Maintenance Criteria for Atmospheric Cleanup Air Filtration."</p> <p>e. The fresh air supply intakes to areas containing safety-related equipment or systems should be located remote from the exhaust air outlets and smoke vents of other fire areas to minimize the possibility of contaminating the intake air with the products of combustion.</p>	<p>General building fresh air intakes are remote from exhaust air outlets to minimize the possibility of contaminating the intake air with the products of combustion.</p>	<p>Ventilation systems at WBN are not specifically designed to exhaust smoke or corrosive gases. The fixed ventilation systems, in conjunction with portable fans and flexible ductwork, may be used to exhaust smoke from a room during and after manual firefighting activities to control and/or extinguish the fire.</p> <p>To the extent practicable, power supply and controls for ventilation systems are installed outside the areas they serve, or equipment isolation or protection is provided. Refer to Part VI of the FPR.</p> <p>An automatic, fixed pipe, thermally actuated closed nozzle water spray system is provided for each charcoal filter unit. See Part II, Section 12.3. The systems are designed to deliver 0.25 gpm/ft² across the face of the charcoal filter. Adequate hose stations and extinguishers are also provided.</p> <p>The air intake dampers and exhaust fans for the 480V shutdown board rooms are located on the roof of the Auxiliary Building.</p>	<p>An evaluation performed for Reg Guide 1.52 has concluded the temperature rise due to the collection of radioisotopes during an accident will not cause ignition of the charcoal. The fire suppression system is provided for general hazard fire protection.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>f. Stairwells should be designed to minimize smoke infiltration during a fire. Staircases should serve as escape routes and access routes for fire fighting. Fire exit routes should be clearly marked. Stairwells, elevators, and chutes should be enclosed in masonry towers with minimum fire rating of three hour and automatic fire doors at least equal to the enclosure construction, at each opening into the building. Elevators should not be used during fire emergencies.</p> <p>Where stairwells or elevators cannot be enclosed in three-hour fire rated barrier with equivalent fire doors, escape, and access routes should be established by Prefire Plan and practiced in drills by operating and fire brigade personnel.</p> <p>g. Smoke and heat vents may be useful in specific areas such as cable spreading rooms and diesel fuel oil storage areas and switchgear rooms. When natural-convection ventilation is used, a minimum ratio of one-square foot of venting area per 200ft² of floor area should be provided. If forced-convection ventilation is used, 300 cfm should be provided for every 200 square feet of floor area. See NFPA 204 for additional guidance on smoke control.</p>	<p>Stairwells in the Control Building and EDGB are enclosed and designed to minimize smoke infiltration.</p> <p>Access and egress points are shown in the Prefire Plans and are included as part of the drills practiced by operating and fire brigade personnel.</p> <p>The 225 kva DG rooms on the Auxiliary Building el 786 (roof) are provided with natural-convection ventilation. Ventilation area exceeds the listed requirements.</p>	<p>Stairwell Numbers 3, 5, and 6 in the Auxiliary Building are open and are provided with water curtains which are installed in the locations defined in Section 2.6.3.1 of Part VII. Separate stairwells are provided inside the intake pumping station for access to the strainer rooms so that one fire will not block all access routes for firefighting. Stairwell enclosures, when provided, are equivalent minimum two-hour fire-rated barriers and the doors are self-closing.</p> <p>NFPA 204-1968 has been superseded by NFPA 204M. This code is not applicable to WBN since it is primarily applicable to single story structures. Smoke is removed either by the use of the existing ventilation ductwork and fan system, or manually by the fire brigade using portable fans and flexible ductwork. Refer to Part X of the FPR. The diesel generator day tanks are in rooms that have doors that open to the outside. The cable spreading room has two doors that open into the Turbine Building. Portable smoke ejectors are available on site for supplemental ventilation.</p>	

PART VIII – CONFORMANCE TO APPENDIX A TO BTP 9.5-1 GUIDELINES

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Self-contained breathing apparatus, using full face positive pressure masks, approved by NIOSH (National Institute for Occupational Safety and Health - approval formerly given by the U.S. Bureau of Mines) should be provided for fire brigade, damage control, and control room personnel.</p> <p>Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir, if practical. Service or operating life should be a minimum of one-half hour for the self-contained units.</p> <p>At least two extra air bottles should be located onsite for each self-contained breathing unit. In addition, an onsite-6-hour supply of reserve air should be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air should be used. Special care must be taken to locate the compressor in areas free of dust and contaminants.</p>	<p>NIOSH-approved self-contained full-face positive pressure breathing apparatus is available for the fire brigade, damage control, and control room personnel. The operating life of the self-contained units is a minimum of one-half hour.</p>	<p>At least one (1) one hour air bottle is available for each self-contained breathing unit. An additional (16) one hour bottles are available onsite to provide a minimum 16-hour supply of reserve air for the self-contained breathing units provided for use by the fire brigade, damage control, and control room personnel.</p>	<p>Not applicable.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>i. Where total flooding gas extinguishing systems are used, area intake and exhaust ventilation dampers should close upon initiation of gas flow to maintain necessary gas concentration. (See NFPA 12, "Carbon Dioxide Systems," and 12A, "Halon 1301 Systems.")</p> <p>D.5 <u>Lighting and Communication</u></p> <p>Lighting and two-way voice communication are vital to safe shutdown and emergency response in the event of fire. Suitable fixed and portable emergency lighting and communication devices should be provided to satisfy the following requirements:</p> <p>a. Fixed emergency lighting should consist of sealed beam units with individual 8-hour minimum battery power supplies.</p> <p>b. Suitable sealed beam battery powered portable hand lights should be provided for emergency use.</p> <p>c. Fixed emergency communication should use voice powered headsets at preselected stations.</p>	<p>The carbon dioxide systems have been evaluated against NFPA 12-1973 (Part II, Reference 4.4.9). Refer to Part X of the FPR, and Item A.5.</p> <p>Emergency lighting and communication are provided as follows:</p> <p>Fixed emergency lighting consisting of units with individual 8-hour minimum battery power supplies are provided for access and egress routes to FSSD equipment with manual action requirements.</p> <p>Battery powered portable hand lights are also available for emergency use as a compensatory action to the installed 8 hour battery packs. Refer to Part II, Section 12 of the FPR.</p> <p>An alternate (emergency) communication system (sound powered phones with head sets) is provided. Refer to Part II, Section 12 of the FPR.</p>	<p>Diesel generator backed standby lighting is used for manual actions in the Turbine Building. Refer to Part VII of the FPR.</p> <p>Primary communications for FSSD is by radios.</p>	<p>Halon 1301 extinguishing systems are not used in safety-related areas at WBN.</p> <p>See the Fire Protection Plan (FPR Part II, Section 12) for descriptions of the emergency lighting and communications systems.</p> <p>Refer to Part VII, Section 2.7 for engineering evaluation of the Containment lighting and Turbine Building standby lighting.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>d. Fixed repeaters installed to permit use of portable radio communication units should be protected from exposure fire damage.</p>		<p>UHF/VHF cabinet and power cables are separated from the 400MHz cabinets and power cables such that no single fire can prevent the use of both systems.</p>	
<p>E. <u>Fire Detection and Suppression</u></p>			
<p>E.1 <u>Fire Detection</u></p>			
<p>a. Fire detection systems should, as a minimum comply with NFPA 72D, "Standard for the Installation, Maintenance, and Use of Proprietary Protective Signaling Systems."</p> <p>Deviations from the requirements of NFPA 72D should be identified and justified.</p>	<p>Fire detection systems that are required for regulatory compliance have been evaluated against NFPA 72D-1975 (Part II, Reference 4.4.28). The spacing and location of fire detectors have been evaluated against NFPA 72E-1974 (Part II, Reference 4.4.29). Refer to Part X of the FPR.</p> <p>See Part X of the FPR.</p>		
<p>b. Fire detection system should give audible and visual alarm and annunciation in the control room. Local audible alarms should also sound at the location of the fire.</p>	<p>The fire detection system gives audible and visual alarms and annunciates in the Main Control Room and indicates detector zone location at selected local panels.</p>		
<p>c. Fire alarms should be distinctive and unique. They should not be capable of being confused with any other plant system alarms.</p>	<p>The fire alarm is distinctive and unique from those of other alarm systems.</p>		
<p>d. Fire detection and actuation systems should be connected to the plant emergency power supply.</p>	<p>The fire detection system and actuation circuits are connected to the plant emergency power supply.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>E.2 <u>Fire Protection Water Supply Systems</u></p> <p>a. An underground yard fire main loop should be installed to furnish anticipated fire water requirements.</p> <p>NFPA 24, "Standard for Outside Protection," gives necessary guidance for such installation. It references other design codes and standards developed by such organizations as the American National Standards Institute (ANSI) and the American Water Works Association (AWWA).</p> <p>Visible location marking signs for underground valves is acceptable. Alternative valve position indicators should also be provided.</p>	<p>The fire protection water distribution system provides sufficient fire protection water to plant fire protection systems.</p> <p>The fire protection water distribution system has been evaluated against NFPA 24-1973(Part II, Reference 4.4.17). Refer to Part X of the FPR.</p> <p>Underground valves are identified on fire protection system flow drawings which, when combined with the use of curb boxes in the field, provide sufficient identification of the locations of underground valves.</p>		<p>The Fire (Protection) Water Distribution System consists of the piping and appurtenances on TVA property between a source of fire protection water and the base of the riser (flange of flange and spigot piece or base tee) for automatic sprinkler systems, fixed water spray systems, standpipe systems, and other water based fire suppression systems. The fire protection water distribution system may be referred to as the underground fire loop, yard loop, or yard fire main loop in Columns 2 and 3 to more closely correlate with the wording in the various paragraphs of Appendix A Section E.2a.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Lined steel or cast iron pipe should be used to reduce internal tuberculation. Such tuberculation deposits in an unlined pipe over a period of years can significantly reduce water flow through the combination of increased friction and reduced pipe diameter. Means for treating and flushing the system should be provided.</p> <p>Approved visually indicating sectional control valves, such as post indicator valves, should be provided to isolate portions of the main for maintenance or repair without shutting off the entire system.</p> <p>The fire main system piping should be separate from service or sanitary water system piping.</p> <p>For operating plants, fire main system piping that can be isolated from service or sanitary water system piping is acceptable.</p>	<p>Cement lined pipe is used for the common outside loop and unlined steel pipe is used for the outside Train A and B headers and inside loop. Hydraulic calculations on the system take into account the reduced pipe diameter and increased friction. The water is also treated and periodic flushing is performed.</p>	<p>The fire protection water distribution system is equipped with wrench-operated curb-box (non-indicating) valves and post indicator (indicating) valves such that portions of the loop may be isolated without impairing operation of the rest of the system.</p> <p>The high pressure fire protection system is shared with the raw service water (RSW) system. Automatic isolation valves are provided to isolate the raw cooling water supply from the HPFP system when any fire pump is started as a result of a fire in safety-related areas. Specific RSW loads are automatically isolated from the fire protection water system when the fire pump(s) start as a result of a fire in safety-related areas to reduce the <u>maximum designed</u> RSW load to 105 gpm during the fire event.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. A common yard fire main loop may serve multi-unit nuclear power plant sites, if cross-connected between units.</p> <p>For operating plants, fire main system piping that can be isolated from service or sanitary water system piping is acceptable.</p> <p>Sectional control valves should permit maintaining independence of the individual loop around each unit. For such installations, common water supplies may also be utilized.</p> <p>The water supply should be sized for the largest single expected flow. For multiple reactor sites with widely separated plants (approaching one mile or more), separate yard fire main loops should be used. Sectionalized systems are acceptable.</p>	<p>A common fire protection water distribution system services both units and is cross-connected between units.</p> <p>Sectional isolation valves are provided such that maintenance may be performed on the loop or portions of the loop for one unit without affecting the firefighting capability of either unit.</p> <p>The electric HPFP pumps take suction from Chickamauga Reservoir, which is considered an unlimited water supply. The diesel fire pump takes suction from the Unit 1 cooling tower basin, which is also considered an unlimited water supply for fire protection purposes.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>c. If pumps are required to meet system pressure or flow requirements, a sufficient number of pumps should be provided so that 100% capacity will be available with one pump inactive (e.g., three 50% pumps or two 100% pumps). The connection to the yard fire main loop from each fire pump should be widely separated, preferably located on opposite sides of the plant. Each pump should have its own driver with independent power supplies and control. At least one pump (if not powered from the emergency diesel) should be driven by non-electrical means, preferable diesel engine. Pumps and drivers should be located in rooms separated from the remaining pumps and equipment by a minimum three-hour fire wall.</p> <p>Alarms indicating pump running, driver availability, or failure to start should be provided in the control room.</p> <p>Details of the fire pump installation should, as a minimum, conform to NFPA 20, "Standard for the Installation of Centrifugal Fire Pumps."</p>	<p>There are four electric pumps rated at 1590 gpm at 300 feet-head located in the IPS. A diesel fire pump rated at 2500 gpm and 125 psig is located in the yard adjacent to the Unit 1 cooling tower. The fire pumps are connected to the yard loop in such a manner that a single impairment of one feed from the pumping station will not jeopardize the firefighting capability of the plant.</p> <p>For safety-related portions of the plant, two electric pumps, or the diesel pump, provide 100% of the firefighting water requirements in safety-related areas. See Part II of the FPR.</p> <p>The diesel fire pump installed in the Yard conforms with NFPA 20-1993 (Part II, Reference 4.4.16). See Part X of the FPR.</p>	<p>During specific Appendix R fire events, the fire may damage single or multiple fire pumps. The diesel fire pump is always available for fires in safety-related plant locations. Calculations have been performed to demonstrate that the flow and pressure requirements of the fire protection systems are met by the number of available fire pumps. Specific RSW loads are automatically isolated from the fire protection water system when the fire pump(s) start as a result of a fire in safety-related areas to reduce the <u>maximum designed</u> RSW load to 105 gpm during the fire event.</p> <p>The four fire pumps in the IPS are electric motor-driven and each is supplied power from a separate emergency diesel generator. The two Train A pumps are separated from the two Train B pumps by an equivalent 3-hour fire barrier. In addition, a diesel fire pump rated at 2500 gpm at 125 psig is located in the yard.</p> <p>Each pump is equipped with alarms indicating pump running and power available, which annunciate in the MCR.</p> <p>The electric fire pumps are ASME Section III, Seismic Category I pumps, and as such, are not UL listed nor FM-approved. The electric fire pump installation does not comply with NFPA 20-1974 (Part II, Reference 4.4.15). Refer to Part X of the FPR.</p>	<p>Adequate firefighting water requirements are considered to be the calculated flow and pressure to provide flow and pressure to meet suppression system design bases, including hose stream allowance and unisolated RSW loads simultaneously. HPFP water requirements for safety-related areas are satisfied by two of the four electric pumps, or by the diesel fire pump. See Part VII of the FPR.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>d. Two separate reliable water supplies should be provided. If tanks are used, two 100% (minimum of 300,000 gallons each) system capacity tanks should be installed. They should be so interconnected that pumps can take suction from either or both. However, a leak in one tank or its piping should not cause both tanks to drain. The main plant fire water supply capacity should be capable of refilling either tank in a minimum of eight hours. Common tanks are permitted for fire and sanitary or service water storage. When this is done, however, minimum fire water storage requirements should be dedicated by means of a vertical standpipe for other water services.</p> <p>e. The fire water supply (total capacity and flow rate) should be calculated on the basis of the largest expected flow rate for a period of two hours, but not less than 300,000 gallons. This flow rate should be based (conservatively on 1,000 gpm for manual hose streams plus the greater of:</p>	<p>The electric fire pumps take suction from Chickamauga Reservoir which is considered an unlimited water supply. The diesel fire pump takes suction from the Unit 1 cooling tower basin which is also considered an unlimited water supply for fire protection purposes.</p> <p>Chickamauga Reservoir is considered an unlimited water supply. The Unit 1 cooling tower basin is also considered an unlimited water supply for fire protection purposes.</p>	<p>The flow rate and pressure of the system is based on providing 500 gpm for hose streams while flowing water at design capacity to the most hydraulically remote location for each sprinkler or deluge system protecting safety-related areas. Specific RSW loads are automatically isolated from the fire protection water system when the fire pump(s) start as a result of a fire in safety-related areas to reduce the <u>maximum designed</u> RSW load to 105 gpm during the fire event.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<ol style="list-style-type: none"> 1. All sprinkler heads opened and flowing in the largest designed fire area; or 2. the largest open head deluge system(s) operating. <p>f. Lakes or fresh water ponds of sufficient size may qualify as sole source of water for fire protection, but require at least two intakes to the pump supply. When a common water supply is permitted for fire protection and the ultimate heat sink, the following conditions should also be satisfied:</p> <ol style="list-style-type: none"> 1. The additional fire protection water requirements are designed into the total storage capacity; and 2. Failure of the fire protection system should not degrade the function of the ultimate heat sink. 	<p>Two intakes are provided for the electric pumps in the IPS for all normal and flood levels. For water levels below minimum, flow is provided to the sump through a submerged line. Therefore, the pumps are capable of operating during any lake condition from minimum level (resulting from loss of downstream dam) to maximum design basis flood level. Ultimate heat sink requirements are provided by the ERCW pumps located in the intake pumping station and separated from other equipment by 3-hour fire barriers. (Refer to Part VII of the FPR for a discussion of unprotected openings.) Therefore, failure of the fire protection system will not degrade the ultimate heat sink.</p>	<p>One intake is provided for the diesel fire pump from the Unit 1 cooling tower basin, with a supply line connection to the underground fire protection water distribution system. A second intake can be achieved by the fire trucks serving as a backup pump taking suction from the Unit 1 and/or 2 cooling tower basin and supplying water through a separate line connecting to the underground fire protection water distribution system.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>g. Outside manual hose installation should be sufficient to reach any location with an effective hose stream. To accomplish this, hydrants should be installed approximately every 250 feet on the yard main system. The lateral to each hydrant from the yard main should be controlled by a visually indicating or key-operated (curb) valve. A hose house, equipped with hose and combination nozzle, and other auxiliary equipment recommended in NFPA 24, "Outside Protection," should be provided as needed but at least every 1,000 feet.</p> <p>Threads compatible with those used by local fire departments should be provided on all hydrants, hose couplings, and standpipe risers.</p>	<p>Key-operated curb valves or PIV's are provided for each hydrant off the yard loop. Refer to Part X of the FPR.</p> <p>National standard fire hose threads are used throughout the plant. These are compatible with local fire departments.</p>	<p>Fire hydrant spacing ranges up to 700 feet between hydrants. A sufficient number of hydrants are installed to provide two streams for every part of the interior of each building not covered by standpipe protection and to provide hose stream protection for the exterior part of each building by the use of lengths of hose normally attached to the hydrants. There are sufficient hydrants to concentrate the required flow about any important building with no hose line exceeding 500 feet in length.</p> <p>Hose equipment houses are not relied on at WBN. In lieu of firefighting equipment houses, the fire brigade equips and maintains mobile apparatus equipped with hose, combination nozzles, and adequate auxiliary equipment to effectively perform firefighting activities using the fire hydrants in the Yard.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>E.3 <u>Water Sprinklers and Hose Standpipe Systems</u></p> <p>a. Each automatic sprinkler system and manual hose station standpipe should have an independent connection to the plant underground water main.</p> <p>Headers fed from each end are permitted inside buildings to supply multiple sprinkler and standpipe systems. When provided, such headers are considered an extension of the yard main system. The header arrangement should be such that no single failure can impair both the primary and backup fire protection systems.</p> <p>Each sprinkler and standpipe system should be equipped with OS&Y (outside screw and yoke) gate valve, or other approved shutoff valve, and water flow alarm. Safety-related equipment that does not itself require sprinkler water fire protection, but is subject to unacceptable water discharge should be protected by water shields or baffles.</p>	<p>Each automatic sprinkler system and hose station standpipe is connected to the yard main or to headers within the buildings, except for each Reactor Building and the Intake Pumping Station (IPS).</p> <p>These headers are fed from each end of the building. No single failure can impair both the primary and backup fire protection systems.</p> <p>Each sprinkler and standpipe system is provided with an approved shutoff valve; sprinkler systems are provided with water flow alarms. Additionally, the activation of fire pumps annunciates in the control room. Spray shields are provided where necessary to protect safety-related equipment from water discharge.</p>	<p>In the Reactor Building a single header has separate connections for the RCP system, Annulus system, standpipes for the Annulus, and standpipes for containment. At the IPS separate connections are also provided for the sprinkler system and the standpipes.</p> <p>Redundant safety-related equipment is not subject to damage by sprinkler discharge.</p>	<p>Generally, where installed, fixed suppression systems are considered the primary system. Manual suppression systems (standpipe and hose stations) are considered backup. Where no fixed suppression is installed, the standpipe and hose station or adjacent fire hydrants are considered the primary system and other independent standpipe and hose stations or yard hydrants are the backup.</p> <p>The automatic fire suppression systems for charcoal type filter units and associated standpipe systems can be impaired by a single failure but the area sprinkler systems are not affected by the same failure.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. All valves in the fire water systems should be electrically supervised. The electrical supervision signal should indicate in the control room and other appropriate command locations in the plant (see NFPA 26, "Supervision of Valves").</p> <p>When electrical supervision of fire protection valves is not practicable, an adequate management supervision program should be provided. Such a program should include locking valves open with strict key control; tamper proof seals; and periodic, visual check of all valves.</p> <p>c. Automatic sprinkler systems should, as a minimum, conform to requirements of appropriate standards such as NFPA 13, "Standard for Installation of Sprinkler Systems" and NFPA 15, "Standard for Water Spray Fixed Systems.</p>	<p>Automatic sprinkler systems that are required for regulatory compliance have been evaluated against NFPA 13-1975 (Part II, Reference 4.4.12). Refer to Part X of the FPR.</p>	<p>WBN does not comply with NFPA 26-1958 (Part II, Reference 4.4.19). Refer to Part X of the FPR. See below.</p> <p>WBN uses administrative controls to prevent improper use of fire protection valves that ensures the water supply to protected safety-related areas. A valve surveillance program ensures proper valve alignment on a periodic basis. Isolation valves in the flow path are locked or sealed and inspected periodically for proper alignment. Keys to the locks are restricted to authorized (normally operations) personnel.</p>	<p>There are no true water spray systems that are required for regulatory compliance which must be evaluated against NFPA 15-1973 (Part II, Reference 4.4.14).</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>d. Interior manual hose installation should be able to reach any location with at least one effective hose stream. To accomplish this, standpipes with hose connections equipped with a maximum of 75 feet of 1-1/2-inch woven jacket lined fire hose and suitable nozzles should be provided in all buildings, including containment, on all floors and should be spaced at not more than 100-foot intervals.</p> <p>Individual standpipes should be of at least 4-inch diameter for multiple hose connections and 2-1/2-inch diameter for single hose connections. These systems should follow the requirements of NFPA No. 14 for sizing, spacing, and pipe support requirements (NELPIA). Hose stations should be located outside entrances to normally unoccupied areas and inside normally occupied areas. Standpipes serving hose stations in areas housing safety-related equipment should have shutoff valves and pressure reducing devices (if applicable) outside the area.</p>	<p>Hose stations are located outside of entrances to normally occupied areas where practical. Standpipe isolation capability outside the fire area is provided for areas containing safety-related equipment.</p>	<p>Manual hose stations with 100 feet of 1-1/2-inch approved fire hose are located throughout the plant. The hoses are provided with nozzles rated for use on Class A, B, or C type fires. Refer to Part VII, Section 4.3 of the FPR for discussion of hose stations with hose lengths greater than 100 feet.</p> <p>Standpipe systems are sized to supply a minimum of 500 gpm with a minimum residual pressure of 65 psi. Some standpipe risers are less than 4-inch diameter pipe. Refer to Part X of the FPR.</p> <p>Hose stations have been evaluated against NFPA 14-1974 (Part II, Reference 4.4.13) for use by trained fire brigade members only. Refer to Part X of the FPR.</p> <p>Pressure reducing devices are not provided. The fire brigade is trained to properly handle high pressure hose streams around safety-related equipment.</p>	<p>Interior manual hose stations are provided for fire brigade use only. They are not provided for occupant use, since only the fire brigade has been trained in the use of hose stations.</p>

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>Provisions should be made to supply water at least to stand pipes and hose connections for manual fire fighting in areas within hose reach of equipment required for safe plant shutdown in the event of a Safe Shutdown Earthquake (SSE).</p> <p>The standpipe system serving such hose stations should be analyzed for SSE loading and should be provided with supports to assure system pressure integrity. The piping and valves for the portion of hose standpipe systems affected by this functional requirement should at least satisfy ANSI B31.1, "Power Piping." The water supply for this condition may be obtained by manual operator actuation of valve(s) in a connection to the hose standpipe header from a normal Seismic Category I water system such as Essential Service Water System. The cross connection should be (a) capable of providing flow to at least two hose stations (approximately 75 gpm/hose station), and (b) designed to the same standards as the seismic Category I water system; it should not degrade the performance of the Seismic Category I water system.</p>	<p>Provisions are made to supply water at least to standpipes and hose connections for manual firefighting in areas within hose reach of equipment required for safe plant shutdown in the event of a Safe Shutdown Earthquake.</p> <p>The piping and valves of these hose standpipe systems satisfy the applicable sections of ANSI B31.1 "Power Piping." Piping located in Category I structures have been analyzed to meet the requirement of pressure boundary requirements during a seismic event.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>e. The proper type of hose nozzles to be supplied to each area should be based on the fire hazard analysis. The usual combination spray/straight stream nozzle may cause unacceptable mechanical damage (for example, the delicate electronic equipment in the control room) and be unsuitable. Electrically safe nozzles should be provided at locations where electrical equipment or cabling is located.</p> <p>f. Certain fires such as those involving flammable liquids respond well to foam suppression. Consideration should be given to use of any of the available foams for such specialized protection application. These include the more common chemical and mechanical low expansion foams, high expansion foam and the relatively new aqueous film forming foam (AFFF).</p> <p>E.4 <u>Halon Suppression Systems</u></p> <p>Details omitted.</p>	<p>Hose nozzles provided for interior use are electrically safe and are UL-listed for use on Class A, B, and C fires.</p>		<p>AFFF closed-head foam-water preaction suppression systems do not protect systems, components, or cables required for fire safe shutdown. NFPA 11B-1977 (Part II, Reference 4.4.8) is not applicable to WBN. Refer to Part X of the FPR.</p> <p>Total flooding Halon systems are not used in any safety-related structures at WBN.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>E.5 <u>Carbon Dioxide Suppression Systems</u></p> <p>The use of CO₂ extinguishing systems should, as a minimum, comply with the requirements of NFPA 12, "Carbon Dioxide Extinguishing Systems."</p> <p>Particular consideration should also be given to:</p> <ol style="list-style-type: none"> Minimum required CO₂ concentration and soak time; toxicity of CO₂; possibility of secondary thermal shock (cooling) damage; offsetting requirements for venting during CO₂ injection to prevent over pressurization versus sealing to prevent loss of agent; design requirements from overpressurization; and possibility and probability of CO₂ systems being out-of-service because of personnel safety consideration. CO₂ systems are disarmed whenever people are present in an area so protected. Areas entered frequently (even though duration time for any visit is short) have often been found with CO₂ systems shut off. 	<p>The CO₂ extinguishing systems that are required regulatory compliance have been evaluated against NFPA 12-1973. Items a through f were considered and factored into the design. Refer to Part X of the FPR.</p>	<p>The equipment in the room of CO₂ discharge is considered not operational due to the fire and thus thermal shock is not a concern.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>E.6 <u>Portable Extinguishers</u></p> <p>Fire extinguishers should be provided in accordance with guidelines of NFPA 10 and 10A, "Portable Fire Extinguishers Installation, Maintenance, and Use." Dry chemical extinguishers should be installed with due consideration given to cleanup problems after use and possible adverse effects on equipment installed in the area.</p> <p>F. <u>Guidelines for Specific Plant Areas</u></p> <p>F.1 <u>Primary and Secondary Containment</u></p> <p>a. <u>Normal Operation</u></p> <p>Fire protection requirements for the primary and secondary containment areas should be provided on the basis of specific identified hazards. For example:</p> <ul style="list-style-type: none"> • Lubricating oil or hydraulic fluid system for the primary coolant pumps: • Cable tray arrangements and cable penetrations; or: • Charcoal filters. 	<p>Fire protection features suitable for the specific identified hazard are provided. Refer to Part VI of the FPR.</p>	<p>Portable fire extinguishers are provided for use only by trained personnel. Fire brigade members and Fire Watch personnel have been trained in the use and location of portable extinguishers. WBN does not comply with NFPA 10-1975 (Part II, Reference 4.4.7) for spacing and location since portable extinguishers are not provided for occupant use. Portable extinguishers of a size and type compatible with specific hazards are strategically located throughout the plant. Refer to Part X of the FPR.</p>	

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>Fire suppression systems should be provided based on the fire hazards analysis.</p> <p>Fixed fire suppression capability should be provided for hazards that could jeopardize safe plant shutdown. Automatic sprinklers are preferred.</p> <p>An acceptable alternate is automatic gas (Halon or CO₂) for hazards identified as requiring fixed suppression protection.</p> <p>An enclosure may be required to confine the agent if a gas system is used. Such enclosures should not adversely affect safe shutdown, or other operating equipment in containment.</p> <p>Automatic fire suppression capability need not be provided in the primary containment atmospheres that are inerted during normal operation. However, special fire protection requirements during refueling and maintenance operations should be satisfied as provided below.</p>			

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>Fire detection systems should alarm and annunciate in the control room. The type of detection used and the location of the detectors should be most suitable to the particular type of fire that could be expected from the identified hazard. A primary containment general area fire detection capability should be provided as backup for the above described hazard detection. To accomplish this, suitable smoke detection (e.g., visual obscuration, light scattering, and particle counting) should be installed in the air recirculation system ahead of any filters.</p> <p>b. <u>Refueling and Maintenance</u></p> <p>Refueling and maintenance operations in containment may introduce additional hazards such as contamination control materials, decontamination supplies, wood planking, temporary wiring, welding, and flame cutting (with portable compressed fuel gas supply). Possible fires would not necessarily be in the vicinity of fixed detection and suppression systems.</p> <p>Management procedures and controls necessary to assure adequate fire protection are discussed in section 3.a.</p>	<p>Administrative procedures limit the amount and control the type of combustible materials within the area and control hot work activities.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Equivalent protection from portable systems should be provided if it is impractical to install standpipes with hose stations.</p> <p>Adequate self-contained breathing apparatus should be provided near the containment entrances for fire fighting and damage control personnel. These units should be independent of any breathing apparatus or air supply systems provided for general plant activities.</p> <p>F.2 <u>Control Room</u></p> <p>The control room is essential to safe reactor operation. It must be protected against disabling fire damage and should be separated by floors, walls, and roofs having minimum fire resistance ratings of three hours. Control room cabinets and consoles are subject to damage from two distinct fire hazards:</p>	<p>Standpipes are provided.</p>	<p>Self-contained breathing apparatus are provided at strategic locations in the plant. Fire brigade and appropriate operations personnel are trained in the use and location of self-contained breathing apparatus. Refer to Part II, Section 9 and Part V, Section 2 of the FPR.</p> <p>The Control Building is separated from other fire areas by 3-hour fire barriers and is evaluated under Appendix R Sections III.G.3 and III.L criteria. Refer to Part VII, Section 2 of the FPR for a discussion of non-rated metal hatch covers between the mechanical equipment rooms and the Turbine Building. The control room is separated from adjacent rooms on the same elevation in the Control Building. The Control Room and the cable spreading room are considered the same fire area. This is judged acceptable given the extensive use of suppression in the Cable Spreading Room. The low combustible loading and automatic suppression and detection in adjacent areas, the independent ACR, the detailed Appendix R evaluation performed for the Control Building and/or the conservative fire hazards analysis performed for the Control Building.</p>	<p>The doors (C55 & C56) into the Main Control Room are not fire rated doors, but are hollow-metal and bullet resistant. The construction of the doors is similar to B-Label (1½-hour) fire rated doors.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>a. Fire originating within a cabinet or console; and</p> <p>b. Exposure fire involving combustibles in the general room area.</p> <p>Hose stations adjacent to the control room with portable extinguishers in the control room are acceptable.</p> <p>Nozzles that are compatible with the hazards and equipment in the control room should be provided for the manual hose station. The nozzles chosen should satisfy electrical safety and minimize physical damage to electrical equipment from hose stream impingement.</p> <p>Fire detection in the control room cabinets and consoles should be provided by smoke and heat detectors in each fire area. Alarm and annunciation should be provided in the control room. Fire alarms in other parts of the plant should also be alarmed and annunciated in the control room.</p> <p>Breathing apparatus for control room operators should be readily available. Control room floors, ceiling, supporting structures, and walls, including penetrations and doors, should be designed to a minimum fire rating of three hours. All penetration seals should be airtight.</p>	<p>Fire extinguishers are provided in the main control room. Standpipe hose stations are located in both stairwells at each end of the main control room.</p> <p>The hose stations have electrically approved nozzles for the hazards.</p> <p>Ionization smoke detectors are provided in selected cabinets in the MCR. General area fire alarms in the MCR and other areas of the plant, alarm and annunciate in the constantly attended MCR to alert the operators of a fire.</p> <p>Breathing apparatus are provided for the control room. The Control Building is separated from other plant areas by three-hour rated barriers. Refer to Part VII, Section 2.6 of the FPR for a discussion of non-rated metal hatch covers between the mechanical equipment rooms and the Turbine Building.</p>	<p>As described above, the control room is separated from adjacent rooms on the same elevation in the Control Building by 1-hour (minimum) fire barriers. Sealing of MCR floor/cable spreading room ceiling penetrations is not necessary because these rooms are considered the same fire area. (See above for detailed explanation.)</p>	

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>The control room ventilation intake should be provided with smoke detection capability to automatically alarm locally and isolate the control room ventilation system to protect operators by preventing smoke from entering the control room. Manually-operated venting of the control room should be available so that operators have the option of venting for visibility. Manually operated ventilation systems are acceptable.</p> <p>Cables should not be located in concealed floor and ceiling spaces. All cables that enter the control room should terminate in the control room. That is, no cabling should be simply routed through the control room from one area to another.</p>	<p>Smoke detection is supplied in the control room ventilation intake. This detection provides for local alarms. Control room ventilation air intakes are provided with remotely controlled dampers to prevent smoke from entering the control room. Manual venting of the control room can be conducted by portable smoke ejectors available onsite and by opening the doors.</p> <p>Lighting wiring terminates in the lighting fixtures. Instrumentation and control wiring terminates inside the panels or control boards. Cable is not routed through the control room from one area to another.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.3 <u>Cable Spreading Room</u></p> <p>a. The preferred acceptable methods are:</p> <ol style="list-style-type: none"> Automatic water system such as closed head sprinklers, open head deluge, or open directional spray nozzles. Deluge and open spray systems should have provisions for manual operation at remote station; however, there should also be provisions to preclude inadvertent operation. Location of sprinkler heads or spray nozzles should consider cable tray sizing and arrangements to assure adequate water coverage. <p>Cables should be designed to allow wetting down with deluge water without electrical faulting.</p> <p>Open head deluge and open directional spray systems should be zoned so that a single failure will not deprive the entire area of automatic fire suppression capability.</p>	<p>Automatic preaction sprinkler system is provided. One level of sprinklers is near the ceiling. The sprinkler heads in the intermediate level are under the grating and staggered between the upper-level heads.</p> <p>Cables are designed to allow wetting without faulting.</p>		<p>Actuation of the sprinkler system has been evaluated against NFPA 13-1975 and the detection system against NFPA 72D-1975 and 72E-1974. The detector circuits are Class A, supervised. Refer to Part X of the FPR.</p> <p>Not applicable.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Open head deluge and open directional spray systems should be zoned so that a single failure will not deprive the entire area of automatic fire suppression capability.</p> <p>2. Manual hoses and portable extinguishers should be provided as backup.</p> <p>3. Each cable spreading room of each unit should have divisional cable separation, and be separated from each other and the rest of the plant by a minimum three-hour rated fire wall. (Refer to NFPA 251 (Part II, Reference 4.4.39) or ASTM E-119 for fire test resistance rating.)</p> <p>4. At least two remote and separate entrances are provided to the room for access by fire brigade personnel.</p> <p>5. Aisle separation provided between tray stacks should be at least three feet wide and eight feet high.</p>	<p>Portable extinguishers located inside and immediately outside the cable spreading room are available. A hose station located outside this area provides a backup to the fixed suppression system.</p> <p>Doors to the Turbine Building at each end and doors to enclosed stairways at each end of the cable spreading room are provided for fire brigade access.</p>	<p>The cable spreading room is common to both units and contains circuits for certain redundant safe shutdown features. As a result, alternative shutdown capability has been provided independent of the Control Building. See section III.G.3 of 10 CFR 50 Appendix R requirements. The Control Building which includes the cable spreading room is separated from the adjacent buildings by three-hour rated barriers.</p>	<p>Not applicable.</p> <p>See Part VII of the FPR.</p> <p>Not a design criterion for WBN.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>b. For cable spreading rooms that do not provide divisional cable separation of F.3, (a) 3, in addition to meeting F.3, (a) 1, 2, 4, and 5 above, the following should be provided:</p> <ol style="list-style-type: none"> 1. Divisional cable separation should meet the guidelines of Regulatory Guide 1.75, "Physical Independence of Electrical Systems," 2. All cabling should be covered with a suitable fire retardant coating. 3. As an alternate to F.3 (a) 1 above, automatically initiated gas system (Halon or CO₂) may be used for primary fire suppression, provided a fixed water system is used as a backup. 4. Plants that cannot meet the guidelines of Regulatory Guide 1.75, in addition to meeting F.3 (a) 1, 2, 4, and 5 above, an auxiliary shutdown system with all cabling independent of the cable spreading room should be provided. 	<p>The auxiliary control room is independent of the cable spreading room.</p>	<p>The cable separation criterion is documented in WB-DC-30-4 Separation/Isolation. (Part II, Reference 4.2.29)</p> <p>IEEE 383 cables are used or non-IEEE-383 cables installed in cable trays in the cable spreading room are generally provided with fire retardant coating.</p>	<p>Flame retardant coating is applied to non-IEEE-383 cables in accordance with Design Criteria WB-DC-30-4 (Part II, Reference 4.2.29).</p> <p>Not applicable.</p>

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>F.4 <u>Plant Computer Room</u></p> <p>Safety-related computers should be separated from other areas of the plant by barriers having a minimum three-hour fire resistant rating. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Manual hose stations and portable water and Halon fire extinguishers should be provided.</p>			<p>The plant computer and computer room are not required for fire safe shutdown. The room is separated from adjacent fire areas by 3-hour barriers and from adjacent rooms within the Control Building by 2-hour barriers. In addition, the wall to the Auxiliary Building is 3-hour rated. The room is provided with an automatic total flooding CO₂ system that is actuated by a cross-zoned detection system. Extinguishers and hose stations are available.</p>

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>F.5 <u>Switchgear Rooms</u></p> <p>Switchgear rooms should be separated from the remainder of the plant by minimum three-hour rated fire barriers to the extent practicable. Automatic fire detection should alarm and annunciate in the control room and alarm locally. Fire hose stations and portable extinguishers should be readily available.</p> <p>Acceptable protection for cables that pass through the switchgear room is automatic water or gas agent suppression. Such automatic suppression must consider preventing unacceptable damage to electrical equipment and possible necessary containment of agent following discharge.</p>	<p>The detection system annunciates in the main control room. Fire hose station and portable extinguishers are provided.</p>	<p>Each trained 6.9kV and 480V switchgear room is separated from each other and from other rooms in the Auxiliary Building by a minimum of 2-hour fire barriers and from the Control Building by 3-hour fire barriers. Each room is provided with automatic preaction suppression system that is actuated by cross-zoned detection. The suppression systems have been evaluated against NFPA 13-1975 and the detection system is installed as a Class A, supervised system that has been evaluated against NFPA 72D-1975. Water spray shields have been provided for safety-related equipment, as necessary. The Appendix R evaluation demonstrates that a fire in these areas will not endanger other safety-related equipment required for plant safe shutdown. On this basis and based on the detailed fire hazards analysis performed, the use of 2 hour barriers has been judged to be acceptable. Refer to Parts VI and X of the FPR.</p>	<p>Cables of redundant components required for fire safe shutdown are protected per the requirements of Appendix R Section III.G.2.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.6 <u>Remote Safety-Related Panels</u></p> <p>The general area housing remote safety-related panels should be provided with automatic fire detectors that alarm locally and annunciate in the control room. Combustible materials should be controlled and limited to those required for operation. Portable extinguishers and manual hose stations should be provided.</p> <p>F.7 <u>Station Battery Rooms</u></p> <p>Battery rooms should be protected against fire explosions. Battery rooms should be separated from each other and other areas of the plant by barriers having a minimum fire rating of three hours inclusive of all penetrations and openings. (See NFPA 69, "Standard on Explosion Prevention Systems.") Ventilation systems in the battery rooms should be capable of maintaining the hydrogen concentration well below 2% by volume. Standpipes and hose and portable extinguishers should be provided.</p>	<p>Train Instrument Rooms, ACR, and 480V Shutdown Board Rooms are generally provided with detection and suppression systems. Plant procedures control the amount of combustibles in the plant. Portable fire extinguishers and hose stations are provided.</p> <p>The required Unit 1 vital battery rooms I through IV are separated from all other plant areas by three-hour rated fire barriers. Vital battery room V is separated by 2-hour barriers. The 250V and 24/48V battery rooms are in the Control Building and are separated by 3-hour barriers from the Auxiliary Building. A ceiling vent is provided in each battery room with a direct exhaust to outside the building to maintain the concentration of hydrogen below 2 percent by volume within the battery rooms. WBN does not comply with any other section of NFPA 69-1973 (Part II, Reference 4.4.27). Portable extinguishers, standpipes, and hose stations are available.</p>		<p>Vital Battery V is a spare that can be used for any of the other 4 vital batteries.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Alternatives:</p> <ol style="list-style-type: none"> Provide a total fire rated barrier enclosure of the battery room complex that exceeds the fire load contained in the room, or Reduce the fire load to be within the fire barrier capability of 1-1/2 hours, or, Provide a remote manual actuated sprinkler system in each room and provide the 1-1/2 hour fire barrier separation. <p>F.8 <u>Turbine Lubrication and Control Oil Storage and Use Areas</u></p> <p>A blank fire wall having a minimum resistance rating of three hours should separate all areas containing safety-related systems and equipment from the turbine oil system. When a blank wall is not present, open head deluge protection should be provided for the turbine hazards and automatic open head water curtain protection should be provided for wall openings.</p>	<p>The 5th vital battery and board room is separated from other plant areas by 2-hour barriers, which exceed the hazards to which they could be exposed.</p>	<p>The turbine oil reservoir hazards are protected by fixed water spray systems. Cable tray and door penetrations through the wall that separates the Turbine Building from the Control Building are sealed with equivalent 3-hour seals and are provided with water curtain protection from a pre-action sprinkler system on the Turbine Building side. The limited mechanical penetrations between the turbine oil hazards and the Auxiliary Building are sealed with equivalent 3-hour seals. These penetrations are located above elevation 713 and the Turbine Building floor at this location is 708 thus limiting the access of any turbine lubrication and control oil to each of the penetration seals.</p>	<p>Not applicable.</p> <p>Detection and manually actuated sprinkler system is provided for vital battery and battery board rooms (I-IV). In addition, a preaction sprinkler system is provided for the 5th Vital Battery and Board Room.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.9 <u>Diesel Generator Areas</u></p> <p>Diesel generators should be separated from each other and other areas of the plant by fire barriers having a minimum fire resistance rating of three hours.</p> <p>Automatic fire suppression such as AFFF foam, or sprinklers should be installed to combat any diesel generator or lubricating oil fires.</p> <p>Automatic fire detection should be provided to alarm and annunciate in the control room and locally. Drainage for fire fighting water and means for local manual venting of smoke should be provided.</p> <p>Day tanks with total capacity up to 1100 gallons are permitted in the diesel generator area under the following conditions:</p>	<p>The Diesel Generator Building is remotely located and is not adjacent to any other safety-related building or structure. Each diesel generator and its associated equipment are separated from each other by 3-hour fire barriers.</p> <p>Each area is provided with automatic fire detection which alarms and annunciates in the control room and alarms locally. Drainage is available in the diesel generator rooms. Portable smoke ejectors are available for use by the fire brigade.</p>	<p>The 225kVA Diesel Generators, Auxiliary Building roof, el. 786, are provided with separation, from each other and safety related/fire safe shutdown equipment, equivalent to a 3-hour barrier.</p> <p>Each diesel generator and its associated electrical board room are protected by an automatic, total flooding CO₂ suppression system that has been evaluated against NFPA 12-1973. The pipe gallery and corridor are protected by a preaction sprinkler system.</p>	<p>Additional 225 kVA Diesel Generators are Installed on El 786.0 of the Auxiliary Building for Beyond-Design-Basis accidents. Detection and suppression are provided to limit economic loss. There is no regulatory requirement to provide suppression and detection.</p> <p>Each diesel generator room has two 550-gallon day tanks, one for each diesel engine.</p> <p>225 kVA Diesel Generators each have a double wall 185 gallon tank.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>a. The day tank is located in a separate enclosure, with a minimum fire resistance rating of three hours, including doors or penetrations. These enclosures should be capable of containing the entire contents of the day tanks. The enclosure should be ventilated to avoid accumulation of oil fumes.</p> <p>b. The enclosure should be protected by automatic fire suppression systems such as AFFF or sprinklers.</p> <p>When day tanks cannot be separated from the diesel generator one of the following should be provided for the diesel generator areas:</p> <p>a. Automatic open head deluge or open head spray nozzle system(s).</p> <p>b. Automatic closed head sprinklers.</p> <p>c. Automatic AFFF that is delivered by a sprinkler deluge or spray system.</p> <p>d. Automatic gas system (Halon or CO₂) may be used in lieu of foam or sprinklers to combat diesel generator and/or lubricating oil fires.</p>	<p>The two 550-gallon day tanks are located in the same room as its associated diesel generator and the room is provided with a total flooding CO₂ suppression system.</p>		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.10 <u>Diesel Fuel Oil Storage Areas</u></p> <p>Diesel fuel oil tanks with a capacity greater than 1100 gallons should not be located inside the buildings containing safety-related equipment. They should be located at least 50 feet from any building containing safety-related equipment, or if located within 50 feet, they should be housed in a separate building with construction having a minimum fire resistance rating of three hours. Buried tanks are considered as meeting the three-hour fire resistance requirements. See NFPA 30, "Flammable and Combustible Liquids Code," for additional guidance.</p> <p>When located in a separate building, the tank should be protected by an automatic fire suppression system such as AFFF or sprinklers.</p> <p>Tanks, unless buried, should not be located directly above or below safety-related systems or equipment regardless of the fire rating of separating floors or ceilings.</p>	<p>The above ground diesel fuel oil storage tanks are located in a remote yard area more than 50 feet from any safety-related building or structure. These tanks are located within a diked area that will contain leaks or spills of fuel oil. WBN complies with NFPA 30-1973 (Part II, Reference 4.4.21) for storage and handling of flammable and combustible liquids as transient combustible materials.</p>	<p>The seven-day fuel oil storage tanks for each diesel generator are buried under the floor of the diesel generator building. The only portions of the tanks that are not buried are the man-way access openings to each tank within the diesel rooms and in the common corridor outside the diesel rooms. The access openings have been provided with a cover plate and are in separate pits covered by removable steel plate covers. The impact of these manway access openings have been addressed in Part VII, Section 4.4 of the FPR.</p>	<p>Two additional 225 kVA Diesel Generators are installed on El 786.0 (roof - 3 hour fire barrier section) of the Auxiliary Building for Beyond-Design-Basis accidents. Each 225 kVA diesel skid contains a built in double wall 185 gallon fuel tank. All penetrations are water tight.</p> <p>Not applicable.</p> <p>The 225 kVA diesel generator fuel oil tanks are double wall 185 gallon tanks. All penseals are water tight. The roof where these fuel tanks are located is concrete, well ventilated, and tested for liquid resistance continually.</p>

PART VIII – CONFORMANCE TO APPENDIX A TO BTP 9.5-1 GUIDELINES

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Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>In operating plants where tanks are located directly above or below the diesel generators and cannot reasonably be moved, separating floors and main structural members should, as a minimum, have a fire resistance rating of three hours. Floors should be liquid-tight to prevent leaking of possible oil spills from one level to another. Drains should be provided to remove possible oil spills and fire fighting water to a safe location.</p> <p>One of the following acceptable methods of fire protection should also be provided:</p> <ul style="list-style-type: none">a. Automatic open head deluge or open head spray nozzle system(s);b. Automatic closed head sprinklers; orc. Automatic AFFF that is delivered by a sprinkler system or spray system.	<p>The new 225 kVA Diesel Generator Rooms A and B on the Auxiliary Building Room, el. 786 roof, are not safety related and are not needed for fire safe shutdown. These Diesel Generators are for a Beyond-Design-Bases event. The roof (floor) is 3-hour fire rated and is liquid-tight. The metal roof drains for rain runoff will also address any fuel oil runoff.</p>		<p>Not applicable.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.11 <u>Safety-Related Pumps</u></p> <p>Pump houses and rooms housing safety-related pumps should be protected by automatic sprinkler protection unless a fire hazards analysis can demonstrate that a fire will not endanger other safety-related equipment required for safe plant shutdown. Early warning fire detection should be installed with alarm and annunciation locally and in the control room. Local hose stations and portable extinguishers should also be provided.</p> <p>Equipment pedestals or curbs and drains should be provided to remove and direct water away from safety-related equipment.</p> <p>Provisions should be made for manual control of the ventilation system to facilitate smoke removal if required for manual fire fighting operation.</p>	<p>Full or partial detection and suppression provided in safety-related pump rooms, except as justified by the fire hazards analysis. The fire hazards analyses for areas housing safety-related pumps which are not provided with full area detection and suppression indicate that fire barrier ratings are sufficient given the combustible loadings in these areas. These areas are separate fire areas and the capability to achieve safe shutdown has been demonstrated through analysis. Therefore, fire in these areas will not endanger other safety-related equipment required for safe plant shutdown. Standpipes, hose stations, and portable fire extinguishers are also provided. Refer to Part VI and VII of the FPR.</p> <p>Floor drains, pedestals and curbs are provided to accommodate the removal of water away from safety-related equipment.</p> <p>Generally, normal ventilation systems are used for area smoke venting. In addition, portable smoke ejectors are available for use by the site fire brigade.</p>		
<p>F.12 <u>New Fuel Area</u></p> <p>Hand portable extinguishers should be located within this area. Also, local hose stations should be located outside but within hose reach of this area. Automatic fire detection should alarm and annunciate in the control room and alarm locally.</p>	<p>Standpipe and hose stations and portable fire extinguishers are located in the area and in adjacent rooms within hose reach.</p> <p>Fire detection in room 729.0-A5 alarms and annunciates in the MCR and locally.</p>	<p>Detection is not provided in the Refueling Room. Refer to Part VII, Section 4.5 of the FPR.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>Combustibles should be limited to a minimum in the new fuel area. The storage area should be provided with a drainage system to preclude accumulation of water.</p> <p>The storage configuration of new fuel should always be maintained as to preclude criticality for any water density that might occur during fire water application.</p> <p>F.13 <u>Spent Fuel Pool Area</u></p> <p>Protection for the spent fuel pool area should be provided by local hose stations and portable extinguishers. Automatic fire detection should be provided to alarm and annunciate in the control room and to alarm locally.</p> <p>F.14 <u>Radwaste Building</u></p> <p>The Radwaste Building should be separated from other areas of the plant by fire barriers having at least three-hour ratings. Automatic sprinklers should be used in all areas where combustible materials are located. Automatic fire detection should be provided to annunciate and alarm in the control room and alarm locally.</p>	<p>In situ combustibles in the new fuel areas are limited to a minimum and these areas are provided adequate drainage to preclude the accumulation of water.</p> <p>The storage configuration of the new fuel precludes criticality for water density that might occur during fire protection water application.</p> <p>Standpipes, hose stations and portable fire extinguishers are provided in the area.</p>	<p>Detection is not provided in the spent fuel pool area. Refer to Part VII, Section 4.5 of the FPR.</p> <p>Radwaste areas are part of the Auxiliary Building (Rooms 729.0-A3 and 729.0-A4). This area is separated from the Railroad Bay by 2-hour barriers. Detection (which annunciates in the main control room) and suppression are provided.</p>	<p>The area containing the spent fuel pool pumps, coolers, and heat exchangers is provided with automatic detection and suppression. Refer to Part VII of the FPR.</p> <p>There is no Radwaste Building.</p>

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>During a fire, the ventilation system in these areas should be capable of being isolated. Water should drain to liquid Radwaste Building sumps.</p> <p>Acceptable alternative fire protection is an automatic fire detection to alarm and annunciate in the control room, in addition to manual hose stations and portable extinguishers consisting of hand-held and large wheeled units.</p> <p>F.15 <u>Decontamination Areas</u></p> <p>The decontamination areas should be protected by automatic sprinklers if flammable liquids are stored. Automatic fire detection should be provided to annunciate and alarm in the control room and alarm locally. The ventilation system should be capable of being isolated. Local hose stations and hand portable extinguishers should be provided as backup to the sprinkler system.</p>	<p>Rooms 729.0-A3 & 729.0-A4 have fire dampers with fusible links in the ventilation system ducts at each point the ducts enters the rooms. The drains for these rooms go to either the Tritiated Drain Collector Tank or the Floor Drain Collector Tank, both of which are in the Auxiliary Building.</p> <p>The decontamination room (713.0-A27) is provided with automatic suppression and detection that provides alarms at a constantly attended location and locally. In addition, hose stations (in adjacent room) and portable fire extinguishers are available.</p>	<p>Manual hose stations (located in room 729.0-A5) and hand held portable extinguishers are available.</p> <p>The cask decontamination room (728.0-A7) has hose station and portable extinguishers available in the area. The ventilation system can be isolated. Flammable liquids are not stored in this room.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.16 <u>Safety-Related Water Tanks</u></p> <p>Storage tanks that supply water for safe shutdown should be protected from the effects of fire. Local hose stations and portable extinguishers should be provided. Portable extinguishers should be located in nearby hose houses. Combustible materials should not be stored next to outdoor tanks. A minimum of 50 feet of separation should be provided between outdoor tanks and combustible materials where feasible.</p> <p>F.17 <u>Cooling Towers</u></p> <p>Cooling towers should be of noncombustible construction or so located that a fire will not adversely affect any safety-related systems or equipment. Cooling towers should be of noncombustible construction when the basins are used for the ultimate heat sink or for the fire protection water supply.</p> <p>Cooling towers of combustible construction, so located that a fire in them could adversely affect safety-related systems or equipment should be protected with an open head deluge system installation with hydrants and hose houses strategically located.</p>	<p>The refueling water storage tanks are located outdoors. Combustible materials are controlled within 50 feet of outdoor tanks per the administrative control program. The volume control tanks are located inside the Auxiliary Building in rooms that have a 2-hour rating and are provided with automatic preaction sprinkler system actuated by cross-zoned detection system.</p> <p>The cooling towers are of noncombustible construction (except for the drift eliminators and replacement fills) and are located so that a fire will not affect safety-related systems or equipment.</p> <p>Yard hydrants are available to support manual fire suppression activities around the cooling towers.</p>	<p>Yard hydrants are strategically located for providing protection to the refueling water storage tanks and adequate fire hose is maintained on a mobile apparatus. Portable extinguishers are provided. (See FPR, Part II, Sections 12.2 and 12.4.1.</p>	<p>A mobile apparatus is used in lieu of hose houses.</p>

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>F.18 <u>Miscellaneous Areas</u></p> <p>Miscellaneous areas such as records storage areas, shops, warehouses, and auxiliary boiler rooms should be so located that a fire or effects of a fire, including smoke, will not adversely affect any safety-related systems or equipment</p> <p>Fuel oil tanks for auxiliary boilers should be buried or provided with dikes to contain the entire tank contents.</p> <p>G. <u>Special Protection Guidelines</u></p> <p>G.1 <u>Welding and Cutting, Acetylene Oxygen Fuel Gas Systems</u></p> <p>This equipment is issued in various areas throughout the plant. Storage locations should be chosen to permit fire protection by automatic sprinkler systems. Local hose stations and portable equipment should be provided as backup. The requirements of NFPA 51 and 51B are applicable to these hazards. A permit system should be required to utilize this equipment. (Also refer to 2f herein.)</p>	<p>Miscellaneous areas are located or protected such that the effects of fire or smoke will not adversely affect safety-related systems or equipment.</p> <p>The auxiliary boilers are fed from the fuel oil tanks that are located in the yard. These tanks are in a diked area. The diked area will contain the contents of one tank.</p>	<p>Oxygen and acetylene are controlled by administrative procedures in safety-related areas of the plant. Welding and cutting operations are controlled by operational procedures. Portable extinguishers and yard hydrants are strategically located for use. WBN adequately addresses the functional requirements of NFPA 51B-1976 (Part II, Reference 4.4.26). Refer to Part X of the FPR.</p>	

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
<p>G.2 <u>Storage Areas for Dry Ion Exchange Resins</u></p> <p>Dry ion exchange resins should not be stored near essential safety-related systems. Dry unused resins should be protected by automatic wet pipe sprinkler installations. Detection by smoke and heat detectors should alarm and annunciate in the control room and alarm locally.</p> <p>Local hose stations and portable extinguishers should provide backup for these areas. Storage areas of dry resin should have curbs and drains. (Refer to NFPA 92M, "Waterproofing and Draining of Floors.")</p>	<p>Extinguishers and hose stations are available. See the response to D.1.i regarding NFPA 92M.</p>	<p>The ion exchange resins at WBN have an entrained moisture content of 50-60 percent and are therefore not considered a fire hazard.</p>	
<p>G.3 <u>Hazardous Chemicals</u></p> <p>Hazardous chemicals should be stored and protected in accordance with the recommendations of NFPA 49, "Hazardous Chemicals Data." Chemical storage areas should be well ventilated and protected against flooding conditions since some chemicals may react with water to produce ignition.</p>		<p>Hazardous chemicals are controlled in accordance with administrative procedures in safety-related buildings or structures, or in areas that will expose safety-related equipment. The ammonia and hydrazine storage is in the Turbine Building. The Turbine Building ventilation system provides adequate ventilation. The acid and caustic storage tanks are located in a remote building and are provided with adequate ventilation. NFPA 49-1975 (Part II, Reference 4.4.23) is only applicable to chemistry lab work at WBN. Refer to Part X of the FPR.</p>	

<u>Appendix A Guidelines</u>	<u>Plant Conformance</u>	<u>Alternatives</u>	<u>Remarks</u>
<p>G.4 <u>Materials Containing Radioactivity</u></p> <p>Materials that collect and contain radioactivity such as spent ion exchange resins, charcoal filters, and HEPA filters should be stored in closed metal tanks or containers that are located in areas free from ignition sources or combustibles. These materials should be protected from exposure to fires in adjacent areas as well. Consideration should be given to requirements for removal of isotopic decay heat from entrained radioactive materials.</p>	<p>Materials containing or collecting radioactivity are stored in closed metal containers in the radwaste area. Rated fire barriers are provided to preclude exposure to fire in adjacent areas. Requirements for control of decay heat are developed for specific storage materials.</p>		

Based on the criteria established in 10 CFR Part 50.48(A) and General Design Criteria 3 of Appendix A to 10 CFR Part 50, WBN's Fire Protection Program is applicable to and consistent with Section III-G, -J, -O and III.L of 10 CFR Part 50 Appendix R where necessary. The information which follows is a tabular listing of the WBN Fire Protection Program compliance with these applicable requirements of Appendix R.

Appendix R requirements are listed in the first (left-hand) column of the table, retaining the numbering sequence of Appendix R. The second column describes the WBN Fire Protection Program's compliance with the applicable sections listed above (Section III-G, -J, -O and III.L of 10 CFR Part 50 Appendix R where necessary). The third column describes alternative approaches and references deviation requests and/or engineering evaluations. The fourth column provides supplemental information.

PART IX - APPENDIX R COMPLIANCE MATRIX

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>I. INTRODUCTION AND SCOPE (Details deleted)</p> <p>II. GENERAL REQUIREMENTS</p> <p>II.A Fire Protection Program</p> <p>A fire protection program shall be established at each nuclear power plant which shall establish the fire protection policy for the protection of structures, systems and components important to safety at each plant, and the procedures, equipment, and personnel required to implement the program at the plant site.</p> <p>The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety.</p>			<p>The Fire Protection Program at WBN is formulated to: a) prevent fires from occurring through plant design and administrative control, b) detect fires quickly, control, and extinguish promptly those fires that do occur, and c) to ensure through separation of essential components that a single fire that is not promptly extinguished could not jeopardize plant safe shutdown. This is described in the Fire Protection Plan.</p> <p>Plant procedures delineate the individuals who have been delegated authority over the fire protection program.</p>

PART IX - APPENDIX R COMPLIANCE MATRIX

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>The fire protection program shall extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:</p> <ul style="list-style-type: none"> • To prevent fires from starting; • To detect rapidly, control, and extinguish promptly, those fires that do occur; and • To provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant. 			

Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>II.B Fire Hazards Analysis</p> <p>A fire hazards analysis shall be performed by qualified fire protection and reactor systems engineers to (1) consider potential in situ and transient fire hazards; (2) determine the consequences of fire in any location in the plant on the ability to safely shut down the reactor or on the ability to minimize and control the release of radioactivity to the environment; and (3) specify measures for fire prevention, fire detection, fire suppression, and fire containment and alternative shutdown capability as required for each fire area containing structures, systems, and components important to safety in accordance with NRC guidelines and regulations.</p>			<p>A fire hazard analysis was performed for WBN which considered potential fire hazards and their possible effect on safe shutdown capability (see Fire Hazards Analysis, Part VI of the FPR and Calculation EDQ00099920090012, Part II Reference 4.2.18).</p>
<p>II.C Fire Prevention Features</p> <p>C.1 In situ fire hazards shall be identified and suitable protection provided.</p>			<p>The System Descriptions, N3-13-4001, N3-26-4001, and N3-39-4001 address the individual fire hazards of the areas protected based on the equipment (e.g., pump oil, exposed cabling, and transformer oil) as called for by WB-DC-40-62, Sec. 3.1.1.3. The combustible loading calculation (Part II, Reference 4.2.10) records the quantity of this combustible material in the specified areas.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
C.2 Transient fire hazards associated with normal operation, maintenance, repair, or modification activities shall be identified and eliminated where possible. Those transient fire hazards that cannot be eliminated shall be controlled and suitable protection provided.			A combustibles control program is utilized to minimize transient combustibles. Refer to Section 10.0, "Control of Combustibles," of Part II, "Fire Protection Plan," and to NPG-SPP-18.4.7, "Control of Transient Combustibles" (Part II, Reference 4.2.68).
C.3 Fire detection systems, portable extinguishers, and standpipe and hose stations shall be installed.			Fire detection and suppression systems are installed as described in Part II, Fire Protection Plan, and Part VI, Fire Hazards Analysis, of the FPR.
C.4 Fire barriers or automatic suppression systems or both shall be installed as necessary to protect redundant systems or components necessary for safe shutdown.			The suppression systems and fire barriers are described in Part II, Fire Protection Plan, and Part VI, Fire Hazards Analysis, of the FPR.
C.5 A site fire brigade shall be established, trained, and equipped and shall be onsite at all times.			See the Fire Protection Plan described in Part II of the FPR for details of the site fire brigade
C.6 Fire detection and suppression systems shall be designed, installed, maintained, and tested by personnel properly qualified by experience and training in fire protection systems.			Fire detection and suppression systems are described in Part II, "Fire Protection Plan."

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
C.6 Continued			For the information stated above in this column, refer also to: 1) NPG-SPP-18.4.8, "Control of Ignition Sources (Hot Work)" (Part II, Reference. 4.2.69), 2) Calculation EDQ00099920090012, "Unit 1 and 2 Appendix R Safe Shutdown Analysis" (Part II, Reference 4.2.18), 3) System Description N3-26-4002, "High Pressure Fire Protection System" (Part II, Reference 4.2.72), 4) System Description N3-13-4002, "Fire Detection System" (Part II, Reference 4.2.71).
C.7 Surveillance procedures shall be established to ensure that fire barriers are in place and that fire suppression systems and components are functional.			Surveillance procedures have been established to ensure that fire barriers are in place and that fire suppression systems and components are functional.
II.D Alternative or Dedicated Shutdown Capability			
In areas where the fire protection features cannot ensure safe shutdown capability in the event of a fire in that area, alternative or dedicated safe shutdown capability shall be provided.			Alternative shutdown is provided for those Control Building fires that could result in abandonment of the main control room.

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Appendix R Requirements		Plant Conformance	Alternatives	Remarks
III.	Specific Requirements			
III.A	Water Supplies for Fire Suppression Systems (Details deleted)			Section 12 of Part II, Fire Protection Plan, of the FPR describes the water supplies for the fire suppression systems.
III.B	Sectional Isolation Valves			
III.C	Hydrant Isolation Valves (Details Deleted)			Refer also to Sections 2.3.1 and 3.1.1 of N3-26-4002 (Part II, Reference 4.2.72).
III.D	Manual Fire Suppression (Details Deleted)			
III.E	Hydrostatic Hose Tests (Details Deleted)			
III.F	Automatic Fire Detection (Details Deleted)			Part II, Section 12.5 of the FPR describes the fire detection systems. Refer also to N3-13-4002 (Part II, Reference 4.2.71).

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>III.G Fire Protection of Safe Shutdown Capability</p> <p>G.1 Fire protection features shall be provided for structures, systems, and components important to safe shutdown. These features shall be capable of limiting fire damage so that:</p> <ul style="list-style-type: none"> a. One train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station(s) is free of fire damage; and b. Systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station(s) can be repaired within 72 hours. 	<p>The WBN fire protection program is designed to ensure that one train of systems necessary to achieve and maintain hot shutdown conditions from either the main control room or alternate shutdown panels is kept free of fire damage provided manual actions are also credited.</p> <p>Cold shutdown system repairs can be accomplished within 72 hours. Refer to Part V of the FPR and to Section 5.2.2 of WB-DC-40-51 (Part II, Reference 4.2.30). Selected manual actions (e.g., valve operation) may be required.</p>		<p>Free of fire damage means that the system or component is capable of performing its intended function. Manual actions such as valve operation by a handwheel are allowed when within minimum staffing and system safety limits. Portable ventilation is available if normal HVAC is lost.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>G.2 Except as provided for in paragraph G.3 of this section, where cables or equipment including associated nonsafety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits or shorts to ground, or redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:</p> <p>a. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a fire barrier having a three-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier.</p>	<p>Safe shutdown capability is assured by separation or protection of equipment performing functions necessary for safe shutdown. The type of protection provided varies from area to area.</p> <p>Separation of redundant cables and equipment and associated nonsafety circuits in the same fire area by fire barriers having a three-hour rating is provided in certain areas.</p>	<p>In certain areas, deviations from the separation criteria of Appendix R are identified. In these cases, alternate or equivalent fire protection is provided. Refer to Part VII of the FPR.</p>	<p>Refer to Part VI of the FPR for more information on separation and fire protection provided in individual areas. Additional information is provided in the fire hazards analysis documented in Calculation EDQ00099920090012 (Part II, Reference 4.2.18).</p> <p>Refer to Part VI of the FPR for more information on separation and fire protection provided in individual areas. Refer to the calculation and drawing series listed above for Section III.G.2.</p> <p>Structural steel supporting electrical raceways protected with ERFBS is protected to provide fire resistance equivalent to the ERFBS in accordance with the requirements of General Engineering Specification G-98, "Installation, Modification, and Maintenance of Electrical Raceway Fire Barrier Systems" (Part II, Reference 4.2.50).</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>b. Separation of cables and equipment associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.</p>	<p>Separation of redundant cables equipment and associated nonsafety circuits is provided by a horizontal distance greater than 20 feet with no intervening combustibles or fire hazards in certain areas. Fire detectors and automatic fire suppression systems are installed as defined in System Descriptions N3-13-4002 (Part II, Reference. 4.2.71) and N3-26-4002 (Part II, Reference. 4.2.72). A fire hazards analysis that addresses all fire areas in the plant is documented in Calculation EDQ00099920090012 (Part II, Reference 4.2.18). Additional information is provided in Parts II and VI of the FPR.</p>	<p>In certain areas, deviations from the separation criteria of Appendix R are identified. In these cases, alternate or equivalent fire protection is provided. In other areas, engineering evaluations are used to document the adequacy of less than full detection and/or suppression coverage. Refer to Part VII of the FPR.</p>	
<p>c. Enclosure of cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a one-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or</p>	<p>Redundant cables and equipment and associated nonsafety circuits are enclosed in a fire barrier having a one-hour rating in certain areas. Fire detectors and automatic fire suppression systems are installed as defined in System Descriptions N3-13-4002 (Part II, Reference 4.2.71) and N3-26-4002 (Part II, Reference 4.2.72). A fire hazards analysis that addresses all fire areas in the plant is documented in Calculation EDQ00099920090012 (Part II, Reference 4.2.18). Additional information is provided in Parts II and VI of the FPR.</p>	<p>In some areas, engineering evaluations are used to document the adequacy of less than full detection and/or suppression coverage. Refer to Section 3.1 of Part VII of the FPR.</p>	
<p>Inside noninerted containments one of the fire protection means specified above or one of the following fire protection means shall be provided:</p>			<p>Since the containments at WBN are noninerted, fire protection is provided by one or more of the means as indicated below.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>d. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustibles or fire hazards;</p>			<p>Redundant cables and equipment inside containment are addressed by Sections III.G.2d, 2e, and/or 2f as appropriate or by FHA. The fire hazards analysis for WBN is documented in Calculation EDQ00099920090012 (Part II, Reference 4.2.18). The results of the calculation are documented in Part VI of the FPR. Section 2.9 of Part VII provides a fire hazards analysis for certain rooms in lieu of meeting the separation requirements of III.G.2.</p>
<p>e. Installation of fire detectors and an automatic fire suppression system in the fire area; or</p>	<p>Detection and automatic suppression are used in selected areas of the Annulus to protect redundant safe shutdown cables.</p>		
<p>f. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a noncombustible radiant energy shield.</p>	<p>Radiant energy shields are used in selected areas to protect redundant safe shutdown cables.</p>		

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>G.3 Alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room, zone under consideration should be provided:</p> <p>a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section; or</p> <p>b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems.</p>	<p>An alternate shutdown capability is provided for those Control Building fires that could cause abandonment of the main control room, such as fires in the main control room, cable spreading room, and auxiliary instrument rooms. Alternate shutdown panels are located in the auxiliary control room located in the Auxiliary Building. Cables, systems, and components necessary to achieve safe shutdown using the auxiliary control room are independent (physically and electrically) of the main control room and auxiliary instrument rooms.</p>		

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.</p> <p>III.H Fire Brigade</p> <p>III.I Fire Brigade Training</p> <p>III.J Emergency Lighting</p> <p>Emergency lighting units with at least an eight-hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.</p> <p>III.K Administrative Controls</p>	<p>The main control room has installed fire detection. The cable spreading room and auxiliary instrument rooms are provided with detection and automatic suppression. Other portions of the Control Building are provided with detection and suppression. The design basis for these systems is documented in System Descriptions N3-13-4002 (Part II, Reference 4.2.71), N3-26-4002 (Part II, Reference 4.2.72), and in Calculation EDQ00099920090012 (Part II, Reference 4.2.18). A summary of the systems design and capabilities is documented in Part VI of the FPR.</p> <p>Emergency lighting units with minimum eight-hour capabilities are provided in areas required for the operation of safe shutdown equipment and in access and egress routes.</p>	<p>The main control room is not provided with a fixed suppression system, but has portable extinguishers located inside and hose stations available for use in the area. Other areas of the Control Building with less than full detection and suppression systems have low fire loadings.</p> <p>Diesel generator backed standby lighting is used in Turbine Building and Yard and portable lanterns are used in the Reactor Building in lieu of 8-hour battery power lights. Refer to Part II of the FPR for descriptions of the emergency lighting (Section 12.7). The emergency lighting system is addressed in System Description N3-228-4003 (Part II, Reference 4.2.73b) and in Section 3.1.6.1 of Design Criteria WB-DC-40-62 (Part II, Reference 4.2.33).</p>	<p>Refer to Section 2.3 of Part VII of the FPR for the III.G.3 detection and fixed suppression deviation request for the Control Building.</p> <p>Fire Brigade and their training are discussed in Part II, section 9.0 of the FPR.</p> <p>Not applicable.</p>

Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>III.L Alternative and Dedicated Shutdown Capability</p> <p>L.1 Alternative or dedicated shutdown capability provided for a specific fire area shall be able to:</p> <ul style="list-style-type: none"> a. Achieve and maintain subcritical reactivity conditions in the reactor; b. Maintain reactor coolant inventory; c. Achieve and maintain hot standby conditions for PWR (hot shutdown for a BWR); d. Achieve cold shutdown conditions within 72 hours; e. Maintain cold shutdown conditions thereafter. 	<p>The alternate shutdown capability (provided for Control Building fires that require main control room abandonment) is able to achieve and maintain subcritical reactivity conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot standby conditions and achieve cold shutdown conditions within 72 hours, and maintain cold shutdown conditions thereafter.</p>		

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>During the post fire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal AC power, and the fission product boundary integrity shall not be affected; i.e., there shall be no fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary.</p> <p>L.2 The performance goals for the shutdown functions shall be:</p> <p>a. The reactivity control function shall be capable of achieving and maintaining cold shutdown reactivity conditions.</p> <p>b. The reactor coolant makeup function shall be capable of maintaining the reactor coolant level above the top of the core for BWRs and be within the level indication in the pressurizer for PWRs.</p>	<p>The process variables can be maintained within those predicted for loss of normal AC power. No fuel clad damage, rupture of any primary coolant boundary, or rupture of the containment boundary will occur because these conditions are prevented from occurring following a fire in the Control Building.</p> <p>Performance goals of the alternate shutdown capability are achieved according to Section III.L.2, items a through e.</p>		

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>c. The reactor heat removal function shall be capable of achieving and maintaining decay heat removal.</p> <p>d. The process monitoring function shall be capable of providing direct readings of the process variables necessary to perform and control the above functions.</p> <p>e. The supporting functions shall be capable of providing the process cooling, lubrication, etc., necessary to permit the operation of the equipment used for safe shutdown functions.</p> <p>L.3 The shutdown capability for specific fire areas may be unique for each such area, or it may be one unique combination of systems for all such areas. In either case, the alternative shutdown capability shall be independent of the specific fire area(s) and shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours.</p>	<p>The alternate shutdown capability is independent of the Control Building. Post fire conditions can be accommodated with or without offsite power available for 72 hours.</p>	<p>Refer to Section 2.1 of Part VII of the FPR for the indication deviation request.</p>	

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>Procedures shall be in effect to implement this capability.</p> <p>L.4 If the capability to achieve and maintain cold shutdown will not be available because of fire damage, the equipment and systems comprising the means to achieve and maintain the hot standby or hot shutdown condition shall be capable of maintaining such conditions until cold shutdown can be achieved. If such equipment and systems will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. The number of operating shift personnel exclusive of fire brigade members, required to operate such equipment and systems shall be onsite at all times.</p>	<p>Plant procedures address alternate shutdown capability.</p> <p>The systems used during alternate shutdown are capable of being powered by both onsite and offsite power. There are sufficient operating shift personnel, independent of the Fire Brigade, onsite to accomplish safe shutdown simultaneously.</p>		

Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>L.5 Equipment and systems comprising the means to achieve and maintain cold shutdown conditions shall not be damaged by fire; or the fire damage to such equipment and systems shall be limited so that the systems can be made functional and cold shutdown can be achieved within 72 hours. Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs. If such equipment and systems used prior to 72 hours after the fire will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. Equipment and systems used after 72 hours may be powered by offsite power only.</p> <p>L.6 Shutdown systems installed to ensure post fire shutdown capability need not be designed to meet seismic Category I criteria, single failure criteria, or other design basis accident criteria, except where required for other reasons, e.g., because of interface with or impact on existing safety systems, or because of adverse valve actions due to fire damage.</p>	<p>Repair of cold shutdown components can be accomplished and cold shutdown achieved within 72 hours. Materials required for this repair are readily available onsite and procedures are in effect to implement these repairs. Local operation of selected equipment is required.</p> <p>An adequate inventory of fuses is available onsite.</p>		<p>Portable ventilation is available if normal HVAC is lost.</p> <p>No systems were installed for alternate or dedicated safe shutdown.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>L.7 The safe shutdown equipment and systems for each fire area shall be known to be isolated from associated nonsafety circuits in the fire area so that hot shorts, open circuits, or shorts to ground in the associated circuits will not prevent operation of the safe shutdown equipment. The separation and barriers between trays and conduits containing associated circuits of one safe shutdown division and trays and conduits containing associated circuits or safe shutdown cables from the redundant division, or the isolation of these associated circuits from the safe shutdown equipment, shall be such that a postulated fire involving associated circuits will not prevent safe shutdown.</p> <p>III.M Fire Barrier Cable Penetration Seal Qualification</p> <p>III.N Fire Doors</p>	<p>The safe shutdown equipment and systems are protected from hot shorts, shorts to ground, or open circuits in associated circuits such that a postulated fire involving associated circuits will not adversely affect safe shutdown capability.</p>		<p>Refer to Section 12.10.6, "Penetration Seals," of Part II. Section 12.10.6 lists applicable references to the documents which form the basis for WBN's design and use of penetration seals. Part VII of the FPR provides deviations and evaluations which address penetration seals.</p> <p>Fire doors are discussed in Part II, Section 12.10.4 of the FPR and in Section 3.3.5 of Part X.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>III.O Oil Collection System for Reactor Coolant Pump</p> <p>The reactor coolant pump shall be equipped with an oil collection system if the containment is not inerted during normal operation. The oil collection system shall be so designed, engineered, and installed that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the safe shutdown earthquake.</p> <p>Such collection systems shall be capable of collecting lube oil from all potential pressurized and unpressurized leakage sites in the reactor coolant pump lube oil systems. Leakage shall be collected and drained to a vented closed container that can hold the entire lube oil system inventory. A flame arrestor is required in the vent if the flash point characteristics of the oil present the hazard of fire flashback.</p>	<p>The RCPs are equipped with an oil collection system. The pumps, lube oil systems, oil spray shields, oil collection, and containment sump are all designed to seismic Category I requirements. The oil collection system is designed, engineered, and installed such that failure will not lead to fire during normal or design basis accident conditions and that there is reasonable assurance that the system will withstand the safe shutdown earthquake.</p> <p>The collection system is designed to collect oil from all pressurized and unpressurized leakage sites in the RCP lube oil system. A flame arrestor has been installed in the vent to prevent fire flashback. Containment operating temperature is approximately 120°F, which is well below the flash point of the oil.</p>	<p>Refer to Section 2.8 of Part VII of the FPR for the deviation which allows minor oil leakage outside the lube oil collection system. Refer to Calculation EPMBFS052395, "Fire Hazard Evaluation for the Reactor Coolant Pump Oil Collection System," (Part II, Reference 4.2.7) and to Section 3.2.1 of Design Criteria WB-DC-40-62 (Part II, Reference 4.2.33).</p>	<p>Leakage is drained to each reactor's building floor and equipment sump which is a closed vented container of adequate size to hold the entire lube oil system inventory.</p>

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Appendix R Requirements	Plant Conformance	Alternatives	Remarks
<p>Leakage points to be protected shall include lift pump and piping, overflow lines, lube oil cooler, oil fill, and drain lines and plugs, flanged connections on oil lines, and lube oil reservoirs where such features exist on the reactor coolant pumps.</p> <p>The drain line shall be large enough to accommodate the largest potential oil leak.</p>	<p>The drain line will accommodate the largest potential oil leak.</p>		

1.0 INTRODUCTION

Part X determines the level of compliance with applicable National Fire Protection Association (NFPA) codes at Watts Bar Nuclear Plant (WBN). The objective is achieved by:

- (1) Identifying the NFPA codes and standards to which WBN is committed for the installation of passive and active fire protection features;
- (2) Reviewing plant documentation and procedures to determine the location of passive and active fire protection features; and
- (3) Comparing the existing levels and configurations of passive and active fire protection features at WBN against the criteria contained within each applicable NFPA code and standard.

Where deviations from the code criteria are identified, justifications for existing configurations to demonstrate equivalent levels of protection are required. Those code deviations that have a potential impact on the operational capabilities of the specific fire protection feature are identified and justified in Part VII, Sections 3.0 and 5.0 of the Fire Protection Report (FPR). The compliance status of WBN fire protection features against the applicable code and section is identified in this Part.

2.0 SCOPE

The scope of this evaluation is limited to those fire protection features that are provided for those buildings and areas that contain systems, cables, or components relied on for safety related and fire safe shutdown (FSSD) purposes at WBN. This evaluation addresses fire protection features in both Reactor Buildings, the common Auxiliary Building (includes Unit 1 and Unit 2 Additional Equipment Buildings, fuel handling areas and main steam valve vaults) and Control Building, Diesel Generator Buildings, and intake pumping station at WBN.

Other buildings that do not contain systems, components, or cables relied on for safety related and FSSD purposes are not included in the scope of this review.

The scope of the review was to identify the passive and active fire protection features as installed at WBN and evaluate the level of compliance with the applicable sections of the NFPA codes. This scope was achieved by an article-by-article or section-by-section review of the applicable code articles. Included in this review were automatic detection systems, manual and automatic fixed suppression systems (water-based and CO₂ suppression systems), fire doors, fire dampers, manual hose stations, portable extinguishers, exterior hydrants, and fire pumps.

The scope of this evaluation was accomplished through a combination of field walkdowns and a review of documentation for references to passive and active fire protection features. Those codes which are referenced in Appendix A to BTP 9.5-1 are covered in this Part, with documentation reviewed and/or field walkdowns performed to evaluate those fire protection features that are relied on for compliance with Appendix A to BTP 9.5-1 and Appendix R to 10CFR50. Documentation reviews and/or field walkdowns were not performed for all applicable codes referenced in Appendix A to BTP 9.5-1. Section 3.3 provides the bases for the level of review and methods of documentation for each applicable NFPA code addressed in this Part.

To establish the level of compliance with the NFPA codes addressed in this Part, plant documentation dealing with fire protection related issues was reviewed. Information on the fire protection features existing at WBN was then reviewed to determine the level of compliance with the NFPA codes. As a general rule, the appendix of each NFPA code states that it is not a portion of the code and is included for information purposes only. As such, appendices to the codes were not included in the scope of the evaluation. However, where appropriate, the guidance contained in the appendices was utilized to either justify existing configurations or identify additional fire protection features that should be provided.

The code conformance evaluation was conducted by experienced fire protection engineers familiar with the application of NFPA codes and standards to nuclear power plants. Personnel holding Member Grade status in the Society of Fire Protection Engineers were responsible for review of the level of code compliance and preparation of the bases for justification of deviations identified in this Part. The code conformance evaluation was developed and/or reviewed by both engineering and fire operations personnel.

3.0 APPLICABLE NFPA CODES

Part VIII states the applicability of the NFPA codes specifically identified in Appendix A to BTP APCSB 9.5-1 to WBN. As appropriate, these NFPA codes are addressed in additional detail below.

3.1 NFPA Codes Not Applicable to WBN

Some of the codes address fire protection aspects that are either not installed at WBN or have been superseded by new codes. These codes have not been applied. Specifically, some of the codes address requirements that are not applicable to the multi-story, noncombustible construction buildings of WBN. Other codes provide general guidance on training and organization of fire brigades and guidance on fire loss prevention, which have been superseded by new codes. The NFPA codes identified in Appendix A to BTP 9.5-1 that fall into these categories have been identified and are listed below.

3.1.1 Not Applicable Codes - Apply to Single Story and/or Combustible Structures

The following NFPA codes are not applicable because the code requirements are not directly applicable to the multi-story, noncombustible construction structures at WBN.

NFPA 92M-1972	Waterproofing and Draining of Floors (Waterproofing of floors is not required at WBN (Part II, Reference 4.4.32). Adequate drainage exists as documented in suppression effects calculations.)
NFPA 204-1968	Smoke and Heat Venting (Smoke and heat venting is covered by pre-fire plans and implemented by the fire brigade. NFPA 204 (Part II, Reference 4.4.37) was applicable to single story structures and has been superseded by NFPA 204M.)

3.1.2 Not Applicable Codes - Fire Brigade and Fire Loss Prevention

The following NFPA codes are not applicable to WBN because the codes provide general guidance on training and organization of fire brigades and guidance on fire loss prevention, some of which have also been superseded by new codes:

- NFPA 4-1977 Organization for Fire Services (Part II, Reference 4.4.2)
- NFPA 4A-1969 Organization of a Fire Department (Part II, Reference 4.4.3)
- NFPA 6-1974 Recommendations for Organization of Industrial Fire Loss Prevention (Part II, Reference 4.4.4)
- NFPA 7-1974 Recommendations for Management Control of Fire Emergencies (Part II, Reference 4.4.5)
- NFPA 8-1974 Recommendations for Management Responsibility for Effects of Fire on Operations (Part II, Reference 4.4.6)
- NFPA 27-1975 Private Fire Brigades (Part II, Reference 4.4.20)
- NFPA 197-1966 Training Standard on Initial Fire Attack (Part II, Reference 4.4.36)
- NFPA 601-1975 Guard Service in Fire Loss Prevention (Part II, Reference 4.4.43)

The training and organization of the WBN fire brigade is identified in detail in Section 9.0 of Part II of the FPR, thereby demonstrating proper training and organization of onsite firefighting capabilities. The training of the WBN fire brigade is consistent with TVA Training Program Description, TPD-FBT, "Fleet Fire Brigade Training," (Part II, Reference 4.2.74) and with TVA procedure, FPDP-5, "Development and Evaluation of Fire Drills" (Part II, Reference 4.2.64).

3.2 Not Applicable Codes - WBN Site-Specific Fire Protection Features

A number of NFPA codes that are typically applicable to nuclear power plants are not applicable to WBN based on site-specific methods for implementation of fire protection features. In most cases, existing fire protection features were identified and evaluated for the level of protection afforded by the fire protection feature. This approach was applicable to specific features with code requirements that did not readily lend themselves to an in-depth code evaluation at WBN. Compliance with code criteria is only provided to the extent identified below for the existing fire protection features.

3.2.1 NFPA 10-1975: Portable Fire Extinguishers

Portable extinguishers are not installed in accordance with the spacing and location criteria nor inspected at the specified frequency of NFPA 10 (Part II, Reference 4.4.7). Compliance with NFPA 10-1975 is as defined in System Description N3-26-4002 (Part II, Reference 4.2.72), and also as described in Notes 3 and 4 of drawing 47W200-2 (Part II, Reference 4.2.38). Portable extinguishers are provided at WBN solely for use by personnel trained in the use and application of portable fire extinguishers. Fire brigade members and fire watches receive training in hands-on use of portable extinguishers. Fire brigade members are also trained on the location of extinguishers for firefighting purposes through the extinguishers inspection program. The experience history of other TVA nuclear plants was used as a basis for an inspection frequency of quarterly.

3.2.2 NFPA 11B-1977: Foam-Water Sprinkler Systems

NFPA 11B (Part II, Reference 4.4.8) is not applicable because the only foam-water sprinkler systems are located in plant buildings that do not contain systems, components, or cables relied on for fire safe shutdown. The systems covered by this code are provided in the Security Power and Additional Diesel Generator Buildings. (Some system 67 piping and valves are located in the Additional Diesel Generator Buildings, but they are not required for fire safe shutdown.) Therefore, the systems covered by this code are outside of the scope of this review.

3.2.3 NFPA 12A and 12B-1973: Halon 1301 and 1211 Extinguishing Systems

NFPA 12A (Part II, Reference 4.4.10) and NFPA 12B (Part II, Reference 4.4.11) are not applicable because there are no Halon extinguishing systems installed to protect structures, components, or cables relied on for fire safe shutdown. Therefore, the systems covered by this code are outside of the scope of this review.

3.2.4 NFPA 25-1992: Water System Tests

NFPA 25 (Part II, Reference 4.4.18) is not a code of record at WBN for any specific fire protection feature test and inspection requirement. This code is only referenced for the bases of the surveillance frequency and criteria that is applied to WBN in Part II, Section 14 of the FPR, as documented in the July 1, 1994, WBN response to NRC Requests for Additional Information (Part II, Reference 4.2.51).

3.2.5 NFPA 26-1958: Valve Supervision (Part II, Reference 4.4.19)

WBN's method of ensuring valve position is identified in Part II of the FPR. Valve positions are inspected quarterly in accordance with plant procedures.

3.2.6 NFPA 49-1975: Hazardous Chemical Reactions

Hazardous chemical reaction code criteria are only applicable to the storage and handling of chemicals by the chemistry department. Administrative procedures govern hazardous chemical use at WBN. The criteria of NFPA 49 (Part II, Reference 4.4.23) have no impact on the fire safe shutdown conformance program at WBN and were therefore not reviewed.

3.2.7 NFPA 50A-1973: Gaseous Hydrogen Systems (Part II, Reference 4.4.24)

Hydrogen is supplied to the volume control tanks (VCTs) through 1-inch seismically qualified piping from the exterior east wall of the Auxiliary Building through elevation 713 to the VCTs. The piping is seismically designed for pressure boundary retention between the VCTs and the isolation valves adjacent to the tanks. The remainder of the piping in the Auxiliary Building is seismically supported but not designed for pressure boundary retention. Two isolation valves, installed on the hydrogen supply line on the exterior wall of the auxiliary building, are designed to close automatically if the hydrogen flow in the downstream piping exceeds 50 scfm. Leakage less than 50 scfm should be diffused and carried away by the building ventilation system, thereby keeping the hydrogen concentration below the explosive limit of 4% by volume.

3.2.8 NFPA 51-1974: Oxygen Fuel Gas Systems for Welding and Cutting

NFPA 51 (Part II, Reference 4.4.25) is applicable to large manifolded oxygen fuel gas systems and the use of oxy-acetylene cylinders for cutting and welding activities. Large manifolded systems are not used at WBN. The use of oxy-acetylene cylinders is controlled through the approval and issuance of an ignition source permit and is covered under NFPA 51B (Part II, Reference 4.4.26).

3.2.9 NFPA 90A-1975: Air Conditioning and Ventilation Systems

The heating, ventilating and air conditioning (HVAC) systems at Watts Bar are not designed to NFPA 90A (Part II, Reference 4.4.31). The HVAC systems are designed as described in FSAR chapters 3, 6 and 9 and the following evaluations of systems have been performed:

- The required locations for fire dampers were reviewed by a comparison of HVAC duct locations and the locations of regulatory fire barriers.
- Specific HVAC penetrations through regulatory fire barriers without fire dampers are addressed in Part VII of the FPR.
- Closure of dampers under flow conditions has been demonstrated via testing except for two large dampers as evaluated in FPR Part VII, Section 3.4. Large damper closure under air flow conditions is addressed by shutting off HVAC fans.
- Justification for sealing thermal expansion gaps between the ductwork and the barrier is provided by fire test documentation.
- Access to fire dampers is usually provided by access doors. However, in some cases, bolted connection duct sections require removal for access to fire dampers.

3.2.10 NFPA 251-1985: Fire Tests of Building Materials

The fire rating of walls and floor/ceiling assemblies is based on a comparison with typical UL listed designs as documented in Section 12.10, "Fire-Rated Assemblies," of Part II of the FPR. The fire rating of electrical raceway fire barrier materials is addressed under a separate program. There are no other WBN considerations in regards to NFPA 251 (Part II, Reference 4.4.39) compliance.

3.2.11 Inspection, Testing, and Maintenance of Fire Protection Features

The inspection, testing, and maintenance of fire protection features within each code were not reviewed for compliance. Part II of the FPR identifies the scope of testing, inspection, and maintenance of fire protection features to be performed at WBN. The information in Part II of the FPR contains the testing, inspection, and maintenance requirements for regulatory fire protection features.

3.3 Applicable NFPA Codes Reviewed in Detail for Compliance

The remaining NFPA codes referenced in Appendix A to BTP 9.5-1 are both applicable to WBN and relied on to establish compliance with fire safe shutdown regulations and guidance documents. Detailed code evaluations were conducted as appropriate of the applicable sections of these codes to identify code requirements. Documentation was reviewed and field investigations were conducted in order to establish the level of compliance with code requirements.

The following list identifies the codes, along with the year of the edition, which were used to evaluate the adequacy of existing fire protection features against code requirements:

- | | |
|-----------------|---|
| • NFPA-12-1973 | Carbon Dioxide Systems (Part II, Reference 4.4.9) |
| • NFPA-13-1975 | Automatic Sprinkler Systems (Part II, Reference 4.4.12) |
| • NFPA-14-1974 | Standpipe and Hose Systems (Part II, Reference 4.4.13) |
| • NFPA-15-1973* | Water Spray Fixed Systems for Fire Protection (Part II, Reference 4.4.14) |
| • NFPA-20-1974* | Centrifugal Fire Pumps (Electric Motor Driven Pumps Only) |

- NFPA-20-1993 (Part II, Reference 4.4.15)
Centrifugal Fire Pumps (Diesel Driven Pump Only) (Part II, Reference 4.4.16)
- NFPA-24-1973 Outside Protection (Part II, Reference 4.4.17)
- NFPA-30-1973 Flammable and Combustible Liquids Code (Part II, Reference 4.4.21)
- NFPA-51B-1976* Cutting and Welding Processes (Part II, Reference 4.4.26)
- NFPA-69-1973* Explosion Prevention Systems (Part II, Reference 4.4.27)
- NFPA-72D-1975 Proprietary Protective Signaling Systems (Part II, Reference 4.4.28)
- NFPA-72E-1974 Automatic Fire Detectors (Part II, Reference 4.4.29)
- NFPA-80-1975* Fire Doors and Windows (Part II, Reference 4.4.30)
- NFPA-194-1974* Fire Hose Connectors (Part II, Reference 4.4.34)
- NFPA-196-1974* Fire Hose (Part II, Reference 4.4.35)

Detailed checklists were used to document the results of the code conformance evaluations for some, but not all, of the above identified codes. Where detailed code checklists were developed, a summary compliance matrix was developed that identifies the code article, the compliance status, and the topic of the code article and relevant remarks. Section 4.0 presents a discussion of the summary compliance matrices, with the matrices developed for each code immediately following Section 4.0. Detailed checklists and summary compliance matrices were not developed for those codes identified with an asterisk (*). Where detailed checklists were not used, a summary description of code compliance is provided in Subsections 3.3.1 through 3.3.6.

3.3.1 NFPA 15-1973: Water Spray Fixed Systems for Fire Protection

Three distinct types of water spray fixed systems for fire protection are used to protect special hazards in safety related areas. The hazards protected are unique to a nuclear power plant and therefore direct code application and compliance is beyond the scope of NFPA 15 in respect to the overall goals of the National Fire Code. However, NFPA 15-1973 forms the design basis of the water spray systems. Listed below is a synopsis of each system and the key application of NFPA 15.

3.3.1.1 Reactor Coolant Pumps (RCP)

Each of the RCPs is protected by a closed head, automatic pre-action water spray fixed system. Listed nozzles are located around the top of the RCP motor along a ring header. The systems are hydraulically designed in accordance with NFPA 13 & 15 and produce a minimum design density of 0.25 gpm/ft². This density corresponds to NFPA 15 requirement for transformer protection (oil hazard). The pre-action system is automatically actuated upon initiation of cross zoned thermal detectors located above the motor.

3.3.1.2 Charcoal Filters

Closed head, automatic pre-action, water spray fixed systems are provided for the Control Building Emergency Air Supply Unit (CBEASU), Containment Purge Air Exhaust System (CPAES), Post Accident Sampling Filter (PASF), Emergency Gas Treatment System (EGTS), and the Auxiliary Building Gas Treatment System (ABGTS). The use of water spray fixed systems for protection of charcoal filters is the only type of suppression system recognized by NFPA 803-1983 (Table 10-1.2) (Part II, Reference 4.4.44). The systems are hydraulically designed in accordance with NFPA 13 & 15 and produce a minimum design density of 0.25 gpm/ft² across the surface of the exposed filters.

The flow density of 0.25 gpm/ft² corresponds to the flow density specified in Section 5-4.6.1 of NFPA 850, "Recommended Practice for Fire Protection for Fossil Fueled Steam Electric Generating Plants" for sprinklers provided for coal handling structures subject to accumulations of coal or coal dust. Charcoal filters have a lower heat energy value (i.e., Btu/volume) than coal (based on lesser density and chemistry of the material). The flow density of 0.20 gpm/ft² over the plan area for bag-type dust collectors (in coal handling facilities) is adequate for the hazard. Therefore the use of 0.25 gpm/ft² for the charcoal filters is conservative.

The temperatures for the fusible elements in the spray nozzles was determined by correlating the maximum temperature expected in the filter units to the recommendations of NFPA 13, Table 3-15.6.1, "Temperature Ratings, Classifications and Color Codings".

In the event of a charcoal fire in an ABGTS, EGTS, CBEASC or CPAES filter unit, the smoke detectors will annunciate the alarm and trip the spray system's deluge valve, allowing water up to the closed nozzles. After shutdown of the fan and closure of the downstream damper, the heat will build inside the unit. Because the unit is constructed of heavy gauge metal, it will essentially act as an oven. This will ensure operation of the thermal elements in the nozzles if they have not previously been activated by the fire. The PASF unit's suppression system is similar to the other units but is not provided with a dedicated flow control valve (FCV). The system is supplied by the general area pre-action sprinkler system. A manual isolation valve located at the unit must be opened upon confirmation of a fire to allow water into the unit.

3.3.1.3 Annulus Cable Interactions

An automatic, pre-action sprinkler system, utilizing standard upright sprinkler heads, provides a unique application of a water spray fixed system in the annulus. Section III.G.2.e of 10CFR50 Appendix R, allows the use of "fire detectors and an automatic fire suppression system in the fire area" as one of the means of providing fire protection of safe shutdown capability inside a non-inerted containment. In order to meet this requirement a unique application of the suppression system was developed. The sprinkler heads were strategically located, by a fire hazard analysis, to prevent a single fire from damaging redundant trains of equipment. The design basis utilized a density of 0.15 gpm/ft² across a 20-foot design area. This density corresponds to NFPA 15 requirements for cable tray systems which are the principle combustible inside the Annulus. The pre-action system is automatically actuated upon initiation of cross-zoned smoke detectors located adjacent and above the sprinkler heads.

3.3.2 NFPA 20-1974: Centrifugal Fire Pumps

The electric motor driven High Pressure Fire Protection (HPFP) pumps fulfill the safety function of supplying emergency cooling water during a flood mode condition.

Therefore, the design and installation of the four electric motor driven HPFP pumps are based on ASME codes. The electric motor driven HPFP pumps are not designed in accordance with NFPA 20 (Part II, Reference 4.4.15) requirements. Refer to Part II, Section 12.1 for a description of the HPFP pumps.

3.3.3 NFPA 51B-1976: Cutting and Welding Processes

The use of ignition sources such as welding, flame cutting, thermite welding, thawing pipe, brazing, grinding, arc gouging, torch applied roofing, and open flame soldering within safety-related areas are controlled through the approval and issuance of an ignition source permit. Permits are reviewed and approved by appropriate plant personnel. The ignition source permit is valid for one job. Job area inspections are performed and documented at the start of each shift that ignition source activities are being performed. If no ignition sources activities are performed, then re-inspection is not required.

Designated ignition source activity areas are located and approved by the fire protection organization. A fire watch system is established for ignition source work activities that are performed in safety-related areas of the plant. Ignition source fire watches are established and will remain for 30 minutes following the elimination of the ignition source, unless other durations are approved by the fire protection organization. Non-smoking areas have been established at WBN in accordance with TVA policy and, when necessary, in areas which may create a fire hazard concern. TVA adequately addresses the primary functional requirements of NFPA 51B (Part II, Reference 4.4.26) via the implementation of administrative controls, ignition source permits that are reviewed and approved by appropriate plant personnel, and the use of fire watches for ignition source work activities in safety-related areas of the plant.

3.3.4 NFPA 69-1973: Explosion Prevention Systems

FPA 69 (Part II, Reference 4.4.27) is applicable only to the battery rooms. The exhaust air system for these areas is designed to limit the potential build-up of hydrogen gas to less than 2%. The systems as installed meet the intent of the code; however, there are no means to control and monitor the effectiveness of the combustible gas concentration.

3.3.5 NFPA 80-1975: Fire Doors and Windows

A summary door evaluation list was utilized to review fire doors per NFPA 80. As noted on the compartmentation drawing (47W240-1 [Part II, Reference 4.2.39]), the FPR Part VI, and the FPR Part VII, Section 4.1, evaluations have been performed by TVA or nationally recognized laboratories on those fire door assemblies that are not listed or labeled as fire rated door assemblies. TVA has ensured that the hardware and other components of fire door assemblies comply with NFPA 80 requirements or are appropriately evaluated. Security hardware additions and repairs to fire doors are controlled by General Engineering Specification G-73 to ensure the required fire resistive capability of the fire doors are maintained and are within the guidelines identified in Generic Letter 86-10 (Part II, Reference 4.1.16).

3.3.6 NFPA 194-1974: Fire Hose Connectors; NFPA 196-1974: Fire Hose

Fire Hose Connectors (NFPA 194) and Fire Hose (NFPA 196) address the acceptable connectors and materials for fire hose assemblies. The information did not require a checklist. Instead, fire hoses and their connectors were visually inspected at WBN and found to be acceptable. Fire hose and connectors are considered to be consumable items and replacement parts are purchased to the current standards at the time of purchase.

4.0 NFPA Code Conformance Summary Compliance List

The following lists summarize the results of the NFPA code evaluation for the applicable NFPA codes identified in Section 3.3. The summary compliance lists address those code articles which may impact on the performance of the fire protection feature. The lists contain three columns which document each NFPA code section or article included in the code review. The first column identifies the code section or article by the numbering system that exists in the code of record. The second column identifies the level of compliance with the particular code section or article. The third column provides a brief description of the topic covered by the code section or article, along with the bases for the level of compliance when appropriate.

The code sections or articles are not all individually listed. If a particular section or article (such as Article 230) of a particular code contains ten subsections or subarticles (such as Articles 2301 through 2310) that address general information about the code without any reviewable criteria, the level of compliance with the entirety of the section or article would be identified as not applicable, or N/A. In the case of Article 230 with its ten subarticles, only Article 230 would be listed, and the level of compliance would be identified as N/A. Where only the main code article is listed, the level of compliance for all subarticles within the main code article is the same. Where differences exist in the level of compliance between subarticles of the same article, then each subarticle is listed and summarized separately.

The level of compliance for each listed section or article is identified and defined as follows:

<u>N/A</u>	The code section has been identified as not applicable to WBN, or the section provides only general information with no specific code requirements.
<u>Alternative</u>	This particular feature/requirement is in general compliance with the identified code section, but is not in literal compliance. For example, Section 15 of NFPA 24-1973 requires the plans of the completed piping system be "framed and conspicuously posted". The system 26 (high pressure fire protection system) flow diagrams are under configuration control and maintained in the Main Control Room. This clearly complies with the intent of the code (as applicable to a nuclear plant) but does not meet literal compliance.
<u>Comply</u>	The particular feature is in compliance with the identified code section.
<u>Deviation</u>	Compliance with the particular NFPA code section is not achieved.

The deviations from the criteria of applicable NFPA codes were confirmed by field verification walkdowns and document reviews. The justification for certain deviations are documented in Part VII. The summary compliance matrices provide a brief description of the identified deviations.

NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Introduction		General information on purpose, scope, arrangement of the standard, and definitions.
Chapter 1		General Information and Requirements
11 through 115	N/A	General information on scope, definitions, effects of CO ₂ on fire, use and limitations, examples of protected and not protected hazards, and types of systems.
116	N/A	Package Systems. Package systems are not used at WBN.
12 through 1212	N/A	Personnel Safety. General information on personnel safety and hazards, hazards of CO ₂ , and visibility in CO ₂ .
122	Comply	Safety Requirements
123	Comply	Electrical Clearances
13	N/A	Title, Specifications, Plans and Approvals
131	Comply	Design, analysis, review, purchasing, and installation are per TVA standards and procedures. The authority having jurisdiction is as defined in Part II.
132 through 134	Comply	Plans, including level of details on plans, are per TVA standards and procedures. The authority having jurisdiction is as defined in Part II.
14	N/A	Title, Operation and Control of Systems
141	Comply	Methods of Actuation - System Classification
142	Comply	Detection of Fires
1421	Comply	Reliance on visual detection
1422	Comply	Automatic detection is by listed or approved methods or devices.

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1423	Comply	The detection systems have backup power supply from the emergency diesel generators.
143	N/A	Title, Operating Devices - General Information - Definition
1431	Comply	Operation by listed or approved mechanical, electrical, or pneumatic means in compliance with code.
1432	Comply	Devices are designed for the service they will encounter and will function properly at -20° F to 150° F.
1433	Comply	Protection from damage
1434	Comply	Location of local manual control
1435	Comply	Emergency manual control of valves is accessible; however, a key and a confined space access permit are required to access the power house tank in the CO ₂ tank pit located in the Yard.
1436	Comply	Manual controls do not require a pull of more than 40 lbs. (force) nor a movement of more than 14 inches to secure operation.
1437	N/A	Slave cylinders are not used at WBN.
1438	Comply	Shut down devices
1439	Comply	Operating devices identify the hazard they protect.
144	Comply	Supervision of the automatic detection system is provided.
145	Comply	General information with regards to alarms and indicators.

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1451	Comply	Alarm/Indicator on Discharge
1452	Comply	Alarm on Discharge
1453	Comply	Alarm for Warning Personnel
1454	Comply	Alarms Indicating Device Failure
15	N/A	Title, Carbon Dioxide Supply
151	Comply, See Note 1	Quantities
1511	N/A	Hand hose lines are not used at WBN.
1512	Comply	Continuous protection reserved quantity.
1513	N/A	Primary and reserve supplies for high pressure systems.
152	Comply	Quality
1521	Comply	Vapor phase is not less than 99.5 percent carbon dioxide with no detectable off taste or odor.
1522	Comply	The water content of the liquid phase is not more than 0.01 percent by weight (-30° F dew point) to comply.
1523	Comply	Oil content is not more than 10 ppm by weight to comply.
153	Comply	Replenishment
154	Comply	Storage Containers
1541	Comply	Location of Storage Containers
1542	Comply	Storage containers not subject to severe weather conditions.

NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1543	Comply	Excessive climatic or mechanical exposures not expected.
155	N/A	High pressure storage containers not used at WBN.
156	Comply	Low pressure storage containers
1561	Comply	Pressure container per ASME Code for unfired pressure vessels, with DOT information on tank.
1562	Comply	Liquid level and pressure gages, and hi/lo pressure supervisory alarms set at 315 and 250 psi, respectively, for pressure containers.
1563 and 1564	Comply	Refrigeration system of pressure container
1565	N/A	Heating system for pressure container is not used at WBN.
16	N/A	Distribution Systems
161	Comply	Piping
1611	N/A	Flexible piping is not used at WBN.
1612	Comply	Ordinary cast iron pipe and fittings shall not be used.
1613	Comply	Joints
1614	N/A	High pressure supply is not used at WBN.
1615	Comply	Low pressure supply pipe and fittings have a minimum bursting pressure of 1800 psi to comply.
162	Comply	Arrangement and Installation of Piping
1621	Comply	Piping system layouts

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1622	Comply	Piping system supports
1623	Comply	Pipe shall be reamed and cleaned before assembly, and after assembly the entire piping system shall be blown out before nozzles or discharge devices are installed.
1624	N/A	Pressure relief devices where valve arrangements introduce sections of closed piping - no closed sections.
1625	Comply	Suppression system pressure relief devices are designed to discharge to the outside or to non-objectionable area.
163	Comply	Valves
1631	N/A	High pressure systems are not used at WBN.
1632	Comply	Low pressure system valves can withstand a hydrostatic test to 1800 psi without permanent distortion.
1633	Comply	Valves are not subject to mechanical, chemical or other damage.
1634	Comply	Equivalent length of valves
164	Comply	Discharge Nozzles
1641	Comply	Discharge nozzle criteria
1642	Comply	Discharge orifice criteria
1643	N/A	Local application systems are not used at WBN.
1644	Comply	Marking of discharge nozzles
1645	N/A	Discharge nozzles are not subject to clogging and are not provided with blow out caps.

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
165	Comply	Pipe and Orifice Size Determination
1651	Comply	Pressure drop in a pipe line determination.
1652	Comply	Calculation of flow for low pressure systems.
1653	N/A	High pressure storage is not used at WBN.
17	N/A	Title, Inspection, Maintenance and Instruction
171	Alternative Comply	See Section 3.2.11 of Part X.
1711	Alternative Comply	See Section 3.2.11 of Part X.
1712	Alternative Comply	See Section 3.2.11 of Part X.
1713	Alternative	See Section 3.2.11 of Part X.
1714	Alternative	See Section 3.2.11 of Part X.
1715	N/A	High pressure cylinders are not used at WBN.
1716	Alternative	See Section 3.2.11 of Part X.
172	Comply	System maintenance
1721	Comply	Correction of trouble and impairments
173	Alternative	See Section 3.2.11 of Part X.

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1731	Comply	Training programs approved by the authority having jurisdiction shall be established. The authority having jurisdiction is as defined in Part II.
Chapter 2		Total Flooding Systems
21	N/A	Title, General Information
211	Comply	Description of total flooding systems
212	Comply	Concentration is achieved and maintained for the surface fires and rotating electrical equipment in diesel engine rooms to ensure complete fire extinguishment.
2121	Comply	Examples of hazards protected by total flooding systems
213	N/A	General requirements and identifying that Chapter 1 requirements to be met in addition to those of Chapter 2.
22	N/A	Title, Hazard Specifications - General Information
221	N/A	Enclosure description
2211	Comply	Unclosable opening area for flash or surface-type fires exceed either 3% of the cubic foot volume or 10% of the square foot room surface area. If exceeded, the system shall be tested to assure proper performance.
2212	Comply	Unclosable opening area for deep seated fires exceeds small openings in or near the ceiling unless the system is tested to assure proper performance.
2213	Comply	Prevention of fire spread
2214	N/A	Process and storage tank with flammable vapors are not applicable to WBN.
222	Comply See Note 1	Leakage and ventilation is not compensated by extended discharge of CO ₂ agent.

NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2221	Comply	Automatic closure of openings (see 2351 for diesel engine rooms)
2222	Comply	Shut down of ventilation
223	N/A	Types of fires - general information
2231	N/A	Surface fire extinguishment - General Information
2232	Comply	Deep seated fire extinguishment does not specify the required concentration and the required time for extinguishment. The Fire Brigade will respond to any CO ₂ discharge and verify extinguishment as appropriate.
23	N/A	Title, CO ₂ Requirements for Surface Fires
231	N/A	General information
232	Comply	Flammable material design concentration
2321	Comply	Table 4 carbon dioxide concentrations
2322	N/A	Calculation of design concentration if not on Table 4.
233	Comply	Volume factor
2331	Comply	Calculating volume to protect
2332	Comply	Table 5 Volume Factors
2333	Comply	Comment on Column B Table 5
2334	Comply	Interconnected volumes
234	N/A	Material conversion factor
235	N/A	Special conditions require additional agent

**NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2351	Comply See Note 1	Compensating for openings that cannot close (i.e., ceiling grills in diesel engine rooms) by addition of 1 pound of agent per square foot of opening.
2352	Comply See Note 1	Ventilation fans are shut off or taken into account.
2353	N/A	Elevated temperature of the enclosure is not anticipated.
2354	N/A	Low temperature of the enclosure is not anticipated.
2355	Comply	Surface fire extinguishment
24	N/A	Title, CO ₂ Requirements for Deep Seated Fires
241	Comply See Note 1	General - The carbon dioxide concentration is maintained for a substantial period of time to assure complete extinguishment.
242	Comply	Combustible materials
2421	Comply	Flooding factors for specific hazards (50% for deep seated fire locations such as board rooms, instrument rooms, etc.).
2422	N/A	Flooding factors for other deep seated fires
243	Comply	Volume of space protected
244	N/A	The discharge timers are adjusted for the hazard protected.
2441	Comply See Note 1	Compensating for openings that cannot close
25	N/A	Title, Distribution Systems
251	Comply	General

NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
252	Comply See Note 1	Rate of Application
2521	Comply See Note 1	Time to reach design concentration for surface fires
2522	N/A	High pressure systems are not used at WBN.
2523	Comply See Note 1	Time to reach design concentration for deep-seated fires
253	N/A	Extended rate of application is not used at WBN.
254	Comply	Piping Systems
2541	N/A	High pressure storage is not used at WBN.
255	Comply	Nozzle sizing and distribution
2551	Comply	Requirements of nozzles
26	N/A	Title, Venting Considerations
261	Comply	General
262	N/A	Relief venting - General Information
2621	Comply	Relief venting provided in auxiliary instrument rooms but not required elsewhere.
2622	N/A	Relief venting when hazardous materials involved
2623	N/A	Table 7, Strength and allowable pressures for average enclosures by general construction practices
Chapter 3	N/A	Local application systems are not used at WBN.
Chapter 4	N/A	Hand hose line systems are not used at WBN.

NFPA 12-1973, "Carbon Dioxide Systems"
TVA System 39 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Chapter 5	N/A	Standpipe systems and mobile supply are not used at WBN.

Note 1: WBN has verified the compliance with these code criteria based on system dump tests to ensure agent concentration, agent reserve, and functionality of the distribution system.

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1-1 through 1-4	N/A	General Information on scope, purpose, definitions, and related publications
1-5	N/A	Title, Maintenance
1-5.1	Alternative	Sprinkler systems shall be properly maintained. Sprinkler system installation is performed in accordance with plant operating and maintenance procedures.
1-5.2	N/A	Instruction charts describing operation and maintenance of sprinkler devices - in accordance with TVA procedures.
1-6 through 1-6.1	N/A	Title, Classification of Sprinkler Systems, and general information
1-7	N/A	Classification of occupancies - general information
1-8	N/A	Title, Design and Installation
1-8.1.1 and 1-8.1.2	Comply	TVA approved materials and devices (including regulatory and associated devices on pre-action system air supervision) used based on review of bill of materials for system installation.
1-9	N/A	Title, Working plans
1-9.1 and 1-9.2	Comply	Working plans are prepared, reviewed, and approved in accordance with TVA design, construction and modification procedures.
1-10	Comply	Approval of sprinkler systems. Approval of the systems are in accordance with TVA design, construction and modification procedures.
1-11	N/A	Title, Acceptance tests

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1-11.1 thru 1-11.4	Comply	Performance of acceptance tests (but not with identical paper to contractor's material and test certificate, but TVA's paper meets/exceeds intent), flushing of underground connections, hydrostatic tests, and dry pipe system tests. System tests are performed in accordance with TVA design, construction and modification procedures.
1-11.5	Deviation	The 2-inch drain design prevents meaningful results from a test, and operational controls with the installed equipment lessen the need for this test.
1-12	Comply	Material and test documentation via pre-op and system turnover tests. Material and test documentation is prepared in accordance with TVA design, construction, and modification procedures.
2-1	Comply	Each system shall have at least one automatic water supply.
2-2	Comply	Guide Tables - General Information
2-3	N/A	Connections to water works systems
2-4	N/A	Gravity tanks
2-5	Deviation	Fire pumps as source of water (i.e., the four electric driven pumps are ASME rated due to their safety function. Diesel driven fire pump is UL/FM as required by NFPA 20.
2-6	N/A	Pressure tanks
2-7	Deviation	Fire Department (FD) connections are desirable unless omission approved by authority having jurisdiction (Refer to the definition of authority having jurisdiction in Part II.).
2-8	N/A	Arrangement of water supply connections unobservable, underground
2-9	Comply	Water supply test pipes and gages

**NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-1	Comply	Piping shall be at least equivalent to listed standards
3-2	N/A	Definitions
3-3 through 3-7.1	N/A	Pipe schedule sprinkler installations
3-7.2	N/A	Sprinklers in storage racks
3-7.3	Deviation	Provision for flushing system
3-7.4	N/A	Enclosed stair towers are not provided with sprinklers.
3-7.5	Comply	Return bends with 1/2 or 3/4 inch close nipples used or dry pendant sprinklers, unless different configuration documented and justified in sprinkler modification design changes.
3-7.6	N/A	Dry pipe not provided underground
3-7.7	N/A	Hand hose connections to sprinkler pipes not used.
3-7.8	N/A	Hose connections for FD use provided on separate hose station risers, not connected directly to sprinkler systems.
3-8	N/A	Title, System test pipes
3-8.1	N/A	Wet systems not used. Pre-action sprinkler systems are wet only up to the FCV, systems are dry to the protected areas
3-8.2	N/A	Dry pipe system test pipes - no dry systems in safety-related areas.
3-9	N/A	Title, Protection of piping

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-9.1	Comply	Heat tracing has been added to piping subject to freezing in the intake pumping station.
3-9.2	N/A	Corrosive exposure conditions to external surface of pipe
3-9.3	Alternative	Piping and supports are designed in accordance with WBN seismic requirements.
3-10	N/A	Title, Drainage
3-10.1.1	Comply	Pitching of piping for drainage
3-10.1.2, 3-10.1.3	N/A	No wet or dry pipe sprinkler systems in safety related areas.
3-10.2.1 thru 2.3	Comply	System or main drain connections and drain valves
3-10.2.4, 3-10.2.5	N/A	No sprinkler risers less than 2-1/2 inches and no sprinkler system sectional control valves.
3-10.3.1	Comply	Auxiliary drains are provided.
3-10.3.2, 3-10.3.3	N/A	No wet pipe sprinkler systems in safety related areas.
3-10.3.4.1	Comply	Small capacity segments are provided with auxiliary drains, some are provided with caps.
3-10.3.4.2	Deviation	Not all large capacity systems are provided with (2) 1 inch valves and a 2 inch condensate nipple with a cap or plug.
3-10.3.5	N/A	Tie-in drains minimum 1 inch in size
3-10.4.1	Comply	Sprinkler drains are not interconnected with sewers.
3-10.4.2, 3-10.4.3	N/A	Drain pipes not buried or in blind spaces.

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-10.4.4	Alternative	Drain pipes are fitted with hose connection to facilitate drainage as opposed to turned down elbow.
3-10.4.5	Comply	Drain pipes are arranged so as not to be exposed to freezing conditions.
3-11	N/A	Title, Joining of pipe and fittings
3-11.1	N/A	Title, Threaded pipe and fittings
3-11.1.1 thru 1.3	Comply	Joint compounds, threaded pipe, and standard fittings are properly used in installation of sprinkler systems.
3-11.2.1, 3-11.2.2	Comply	Welded piping welded onsite and, where appropriate, welded pipe is joined by screwed flange fittings.
3-11.2.3 thru 2.6	Alternative	Torch cutting may be used to access pipe, welding performed per TVA procedures, welders are trained per TVA procedures, and welding is done per drawings but done in field not shop.
3-11.2.7	Comply	Welded outlets are attached by work plans which include procedures.
3-11.3	N/A	Rolled groove fittings not used.
3-11.4	N/A	Brazed joints not used.
3-12.1.1	Comply	Fittings shall be at least equivalent to materials listed.
3-12.1.2	N/A	Other type fittings not used.
3-12.1.3	Comply	Approved fittings are used.
3-12.1.4	Comply	Types of pipes and valves where operating water pressures of 175 to 300 psi reached (only reached by pressure spike at WBN).

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-12.1.5	Deviation	Flange joints on risers are not provided on each floor. The piping design and installation are in accordance with WBN procedures.
3-12.2	Comply	Coupling and/or unions are used on pipes 2 inches or smaller.
3-12.3	Alternative	Square shoulder bushings were used in lieu of one piece reducers in portions of the original installation. This was due in part to the sprinkler industry generic misinterpretation to the code statement "not available". After NFPA formal interpretation 83-12, controls were established in TVA General Engineering Specification G-73 to stop the use of bushings. Existing bushings were evaluated for acceptance as a part of the sprinkler upgrade program and accounted for in the hydraulic calculations for the systems.
3-13	N/A	Title, Valves (See NFPA 24 also)
3-13.1.1	Comply	Valves on connections to water supplies shall be of approved indicating type unless underground gate valve with approved roadway box accepted by the authority having jurisdiction.
3-13.1.2	Comply	Drain and test valves are of the approved type.
3-13.1.3	Comply	Check valves are of the approved type and are properly installed.
3-13.2.1	Comply	Each system is provided with an approved indicating valve.
3-13.2.2	Comply	At least one approved indicating valve is installed in each source of water supply, except the fire department connection.
3-13.2.3	Deviation	Valves are locked or sealed open and inspected once every 92 days instead of once per week.

**NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-13.2.4	Alternative, See NFPA 24	Each source of water supply (pump) is provided with a check valve.
3-13.2.5	N/A	Check valves in conjunction with fire department connections - no FDCs protecting safety-related areas.
3-13.2.6	N/A	There are no wet pipe systems in safety related areas.
3-13.2.7	N/A	No city connections are used.
3-13.3	Alternative	Identification of valves. System valves are identified in accordance with TVA procedures.
3-14	N/A	Title, Hangers
3-14.1.1	Comply	Adequate hangers are provided.
3-14.1.2	Alternative	Hangers are installed to resist earthquake loads in accordance with WBN seismic design criteria.
3-14.1.3	Comply	There are no ceiling sheathing
3-14.1.4	Comply	Hangers are qualified in accordance with WBN seismic criteria.
3-14.1.5 thru 1.8	Alternative	Sprinkler systems are supported by WBN qualified seismic hangers/supports.
3-14.2.1 thru 3.4	Deviation	Hangers in concrete are in accordance with WBN structural analysis and procedures.
3-14.4.1	Comply	Hanger assemblies, including rods, are approved.
3-14.4.2 thru 4.8	N/A	"U" hooks, screws, bolts or lag screws on the side of beams, drive screws, wood screws, nails, timber, joist, nailing strips, and planking are not used.

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-14.5	Alternative	Distance between hangers is per WBN seismic requirements.
3-14.6.1	Alternative	Spacing of hangers on branch lines is per WBN seismic requirements.
3-14.6.2	Comply	The spacing between sprinklers and hangers are addressed as acceptable in sprinkler DCN packages.
3-14.6.3	Comply	The 36 inch maximum distance is not exceeded.
3-14.6.4 thru -14.6.6	Alternative	Spacing of hangers on branch lines is per WBN seismic requirements.
3-14.7 thru 3-14.9.3	Alternative	Spacing of hangers on cross mains, feed mains, and risers is per WBN seismic requirements.
3-14.9.4	Comply	Set screws are not used on hangers.
3-15	N/A	Title, Sprinklers
3-15.1	N/A	Standard and Old Style Sprinklers
3-15.2	Comply	Types of sprinklers are addressed as acceptable in sprinkler design change packages.
3-15.3	N/A	Corrosion resistant sprinklers
3-15.4	Comply	Types of sprinklers are addressed as acceptable in sprinkler design change packages.
3-15.5	Comply	Types of sprinklers are addressed as acceptable in sprinkler design change packages.
3-15.6	Comply	Types of sprinklers are addressed as acceptable in sprinkler design change packages.
3-15.7	Alternative	Stock of spare sprinklers. Procurement and storage of spare sprinkler heads is in accordance with applicable WBN procedures and G-73 requirements.

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-15.8	Comply	Types of sprinklers are addressed as acceptable in sprinkler design change packages.
3-15.9	Comply	Painting and Ornamental finishes
3-16.1 thru 3-16.5	Comply	Sprinkler alarms, waterflow detection devices, and attachments
3-16.6.1, 3-16.6.2	Comply	Sprinkler alarms are provided per NFPA 72D-1975, not 1974, which meets intent of code articles.
3-16.6.3	Alternative	See Section 3.2.11 of Part X.
3-16.6.4	Comply	Outdoor electric alarm devices
3-16.7	Alternative	Drain pipes are fitted with hose connection to facilitate drainage.
Chapter 4	Alternative	Literal code conformance for the exact location and spacing of sprinkler heads is not always achievable due to congestion (e.g., tray, conduit, and pipe supports). The sprinkler heads have been located by qualified Fire Protection Engineers to provide adequate protection in the areas.
4-4.8.2.3	Comply	Unenclosed or unprotected elevators, stairs, and shafts are provided with water curtains and draft stops except between elevations 676 and 692 in Auxiliary Building. See Section 2.6.3.1 of Part VII of the FPR.
4-4.11	Deviation	Sprinklers are not installed in some plant locations under decks, galleries, and open gratings over 4 feet wide.
4-4.13	Comply	Sprinklers under HVAC ducts over 4 feet wide are provided.

**NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
4-4.20	Deviation	Sprinklers not provided in the Telephone Room (755.0-C17).
5-1	N/A	Wet Pipe Systems
5-2	N/A	Dry Pipe Systems
5-3 through 5-3.4	N/A	General Information
5-3.5	N/A	Title, Pre-Action Systems
5-3.5.1 and 5-3.5.2	Comply	Number of sprinklers per pre-action valve, piping and detection supervision
5-3.5.3	N/A	Pipe schedule systems
5-3.5.4	N/A	Use of dry pendent sprinklers in pre-action systems if subject to freezing.
5-3.6	N/A	Deluge systems only in nonsafety related locations.
5-3.7.1	N/A	Test devices are accessible.
5-3.7.2	Comply	Test apparatus are provided.
5-3.7.3	Comply	Pressure gages are installed above and below pre-action valves and on air supply to pre-action system supervision.
5-4	N/A	Combined Dry-Pipe and Pre-Action Systems
5-5	N/A	Anti-Freeze Systems
Chapter 6	N/A	Outside Sprinklers for Protection against Exposure Fires

**NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Chapter 7	Comply	Hydraulically designed sprinkler system calculations are performed in accordance with TVA Nuclear Engineering calculation procedures. Information is documented on a combination of drawings (flow, isometric and pipe layout) and calculations. Calculation methodology is per TVA hydraulic calculation using the QA software HYPERCALC.
Chapter 8	N/A	High-Rise Buildings

Section 1-11.5 Deviation

The 2 inch main drain test was not performed at Watts Bar because the design did not account for how to move the water from inside the safety related structures. The main purpose of the 2-inch main drain test is to ensure valves in the supply line are not closed due to mis-positioning or valve failure. At Watts Bar the mis-positioning is addressed by the rigid controls placed on configuration control and procedure use and adherence. The valve failure is generally a dropped disk on a gate valve and at Watts Bar the majority of the valves in the safety-related buildings are butterfly valves. There are gate valves in the system but they are generally in the yard. The design will not allow for a meaningful 2 inch main drain test and the operational controls are greater than normal industry practice and the installed equipment is less susceptible to blockage failure.

Section 2-5 Deviation

Refer to Part VII, Section 5.1.

Section 2-7 Deviation

FD pumper connections are provided to buildings with only one connection to the underground fire main. Buildings with two or more connections to the fire main need not have FD pumper connections.

Section 3-7.3 Deviation

Strainers are provided in the supply to each pre-action sprinkler system in lieu of flushing connections.

Section 3-10.3.4.2 Deviation

Auxiliary drains for trapped piping are provided.

Section 3-12.1.5 Deviation

Flange joints on risers are not provided on each floor. The piping design and installation are in accordance with TVA seismic criteria that exceed the intent of this section.

Section 3-13.2.3 Deviation

Valves are locked or sealed open and inspected once every 92 days instead of once per week (see Part II of this report).

NFPA 13-1975, "Automatic Sprinkler Systems"
TVA System 26 Compliance Summary Matrix**Section 3-14.2.1 through 3.4 Deviation**

Hangers in concrete are in accordance with TVA structural criteria that exceed the intent of this section.

Section 4-4.11 Deviation

The plant locations listed below do not have sprinklers installed under gratings/platforms. These locations have been evaluated and determined to be acceptable since the gratings/platforms do not significantly impede the sprinkler coverage.

- Room 692.0-A7 - grating located above four HPFP FCVs in the U1 penetration room.
- Room 692.0-A25 – grating located above four HPFP FCVs in the U2 penetration room.
- Room 757.0-A10 - grating located south of column line A4/W.
- Room 737.0-A9 - grating located northeast of column A11/W.
- Room 737.0-A12 - grating located between the exterior wall and the first bank of filters.
- Room 737.0-A3 - grating located between the exterior wall and the first bank of filters.
- Room 757.0-A2 - under stairs.
- Room 757.0-A24 - under stairs.
- Room 772.0-A9 - platform over the HEPA filters.

The plant locations listed below do not have sprinklers installed under equipment spray shields. Other vital electrical equipment such as shutdown boards, motor control centers, vital inverters, logic cabinets, etc. are also provided with spray shields, but are not listed. The spray shields were installed to prevent damage to water-sensitive equipment in the event of an inadvertent actuation of the area sprinklers.

- Room 692.0-C10 - equipment spray shield over the chillers.
- Room 737.0-A1 - equipment spray shields over the following chillers and radiation monitors:
 - CHR-31-36/2
 - 0-CHR-31-96
 - 0-CHR-31-80
 - 1-RE-90-112
 - 1-RE-90-106

Section 4-4.20 Deviation

The Telephone Closet in the Technical Support Center (TSC) Conference Room houses communications cables. The closet is approximately 5-feet wide by 2-feet deep. A sprinkler is located approximately 2-feet outside the door to the closet. The cables are not required for fire safe shutdown and are protected by adequately sized circuit protective devices. The lack of a sprinkler in this room (closet) does not present a significant fire hazard and is therefore acceptable.

NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
11 thru 14	N/A	General information on efficiency, classes of service, types of systems, and combined systems
151	Comply	Approved devices and materials used.
161	Comply	Closets and cabinets in the Reactor Buildings, on elevation 741 of the IPS (Class III), lower containment access (Class II), and on top of diesel generator and Auxiliary Buildings (Class I) meet the criteria.
171	Comply	Plans and specifications
181	Comply	Installation by experienced workmen
21 and 211	N/A	Design basis title and general information
212	Deviation	Size and flow requirements
213	N/A	Standpipe heights exceeding 275 feet
214 thru 218	N/A	Combined systems, standpipes on individual zones, and pumps for individual zones of standpipes
219	Comply	Sizing for Class II service
31	N/A	Title, Factors Governing, and general information
32	Deviation	Number of standpipes (length of hose)
33 and 331	N/A	Title, Location of Standpipes
331	N/A	No major building exposure within 60 feet.
332	Comply	Standpipe protection from mechanical and fire damage
333	N/A	Dry standpipe location requirements
334	Comply	Location of standpipes to protect rooms in buildings with many partitions

NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
335	N/A	Standpipes located at exterior columns in large areas.
34	N/A	Title, Hose Connections
341	Comply	2½ inch hose connections at each floor for Class I service, only located on roofs of safety-related buildings.
342	Alternative	WBN configuration lends itself more toward a "Hose System" rather than a "Standpipe System". An adequate number of hose stations are provided to ensure area coverage.
343	Comply	1½ and 2½ inch hose connections at each floor for Class III service in lower containment and in the Control Building.
41	N/A	Title, Location of Hose
411	Comply	Hose outlets within easy reach.
412	Alternative	Hose outlets only located in or near enclosed stairways in the Control Building (only building with enclosed stairways).
413	Deviation	Valves of approved indicating type provided at main riser provided in most cases. Hose stations, 0-26-677, 0-26-690, 1-26-674, 1-26-675, 2-26-674, 2-26-675 are fed directly from the header with no header isolation valves.
414	N/A	Wall outlets connected to standpipes not utilized
42 and 421	Deviation	No more than 100 feet of hose at Class II and III outlets.
43 and 431	Comply	Hose racks

NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
432	Alternative	WBN provides hose stations for the dedicated fire brigade as discussed in FPR, Part II, Sections 9.4 and 12.2. The hose stations are not for occupant use. Plant personnel are instructed in General Employee Training to not use such equipment unless they are trained in its use. The fire brigade members are routinely trained in the use of the hose stations.
44	N/A	Title, Hose Valves
441	Comply	Approved hose valves at each outlet.
442	Alternative	The hose stations are for use by the fire brigade. The fire brigade is trained in the use of fire hose where pressures in excess of 100 psi can be experienced. The fire hose is maintained to accommodate these higher pressures. Therefore, the pressure reducing devices are not needed to provide for personnel or equipment safety.
443	N/A	Automatic drip connections where linen hose used.
444	Comply	Hose valve threads
45	Comply	Nozzles approved and have discharge coefficient not exceeding 7.5.
46	N/A	Dry standpipe identification
51 and 511	N/A	Factors Governing Water Supplies - General Information
52	N/A	Title, Character of Water Supplies
521 and 522	Comply	Approved water supplies
523	Alternative	The diesel fire pump will automatically start on low system pressure.
524 and 525	Comply	Water supply quantity and duration

NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
526	N/A	Water supply connections from public waterworks
53, 54, and 55	Comply	Minimum supply for Class I, II, and III service
56	N/A	Fire department connections not used within Q* boundaries at WBN- used at MDB.
61	N/A	Title, Connections to Systems
611 and 612	N/A	Gravity tanks
613	Comply	Connections from fire pumps
614	Alternative	Standpipes in Auxiliary and Control Buildings are interconnected to the buildings internal HPFP loop, but not necessarily at the lowest elevation.
62	N/A	Title, Isolation and Check Valves
621	Alternative	Indicating and check valves at connections to water supplies are not provided, but standpipes can be isolated by system 26 (HPFP system) in the piping network. The HPFP system is a dedicated raw water system and check valves to prevent back flow (as in the case of a "water works" system) is not warranted.
622	Deviation	Isolation of standpipe
623	N/A	Post indicator valves (PIVs) in connections to public works system.
624	Deviation	Water supply control valves of approved indicating type at a safe distance from building or header.
625	Alternative	High pressure valves not used, even though system spikes of up to 190 psi can occur due to pump start surges before relief devices compensate. This is acceptable and in accordance with ANSI B31.1 requirements.

**NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
63	N/A	Title, Piping
631	Alternative	Listed materials are used and the piping can withstand working pressure of system.
632 and 633	N/A	Other types of pipe and brazed joints not used.
64	N/A	Title, Fittings
641	Alternative	The piping is in accordance with ANSI B31.1 material requirements.
642 and 643	Comply	Approved fittings and expansion joints
65	Comply	Pipe hangers
66	Deviation	Pressure gages
67	Deviation	Water flow alarm
Chapter 7	Alternative	See Section 3.2.11 of Part X.
Chapter 8	N/A	Buildings Under Construction

Section 212 Deviation

The standpipes located on elevations 676, 692, 713, 729, 757, 772, and 782 of the Auxiliary Building are supplied with 3 inch supply piping rather than the 4 inch required by NFPA 14-1974 and BTP 9.5-1; and elevation 755 of the Control Building is provided with 2-1/2 inch supply piping. The pipe sizes were verified as adequate by hydraulic calculations.

Section 32, 42, and 421 Deviation

Some standpipes have more than 100 feet of hose attached. Adequate nozzle pressure is available with the additional hose length (refer to Part VII of the FPR).

Sections 413 and 622 Deviation

Valves of approved indicating type are provided at main riser. Hose stations, 0-26-677, 0-26-690, 1-26-674, 1-26-675, 2-26-674, 2-26-675 are fed directly from the header with no header isolation valves. Sectionalizing valves are available to provide this isolation capability and the ability to provide hose stream coverage in the same locations would be maintained.

NFPA 14-1974, "Standpipe and Hose Stations"
TVA System 26 Compliance Summary Matrix**Section 624 Deviation**

Water supply control valve to standpipes in Diesel Generator Building not a PIV. The supply is provided with a wrench operated curb box (non-self indicating) valve. Administrative controls (e.g., second party verification, locking or sealing the valve in position, and strict control of work) for valve manipulation and the access restriction to trained and qualified personnel provide adequate assurance that the valve is in the proper position.

Section 66 Deviation

The tops of each standpipe do not have a 3½ inch dial spring pressure gage.

Section 67 Deviation

Push button stations at standpipes inside the Reactor Buildings will alarm in the Main Control Room. Flow alarms are not provided on other standpipes. The hose stations are provided primarily for the fire brigade members. Other site personnel are trained to report fires. After reporting a fire an individual may attempt to extinguish it if he has been trained in the use of firefighting equipment (see FPR, Part II, Section 9.3). Adequate notification of standpipe use will therefore be provided to the Main Control Room.

**NFPA 20-1993, “Centrifugal Fire Pumps”
(Diesel Driven Pump Only)
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1		Introduction and Definitions
2-1	Comply	Water supply is from the Unit 1 Cooling Tower basin, which can supply the fire pump for at least 2 hours at 150% capacity.
2-2	Comply	The pump is a listed pump.
2-3	Comply	Pump is rated for 2500 gpm at 125 psi.
2-4	Comply	Nameplate is provided.
2-5	Comply	Pressure gages are provided.
2-6	Comply	Cooling water is taken from the discharge side of the pump.
2-7	Comply	Pump is mounted on adequately designed concrete slab and inside a pump house that is provided with adequate lighting and heat.
2-8	Comply	Piping is appropriate.
2-9	Alternative	Water level required in the cooling tower basin to ensure no vortexing and provide 2-hours of continuous operation determined by calculation.
2-10	Comply	Discharge piping and fittings meet pressure requirements and are listed as required.
2-11	Comply	The valves are locked open.
2-12	Comply	Adequate clearances are provided.
2-13	Comply	Relief valve and piping are adequately sized.
2-14	Comply	Water metering device (listed flow meter) is provided.
2-15	Comply	Dependable electric power is available.
2-16	Alternative	The pump manufacturer tested the pump at the factory.
2-17	Comply	Pump rotation correctly specified.

**NFPA 20-1993, “Centrifugal Fire Pumps”
(Diesel Driven Pump Only)
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2-18	Comply	Appropriate alarms are provided.
2-19	Alternative	System pressure is maintained by the Raw Cooling Water pumps (a jockey pump has been provided as part of the fire pump package, but is not used).
2-20	Comply	Summary of Fire Pump Data
3-1	Comply	General
3-2	Comply	Factory and field performance
3-3	Comply	Fittings
3-4	Comply	Foundation and setting
4	N/A	Vertical Shaft Turbine-Type Pumps
5	N/A	Fire Pumps for High-Rise Buildings
6	N/A	Electric Drive for Pumps
7	N/A	Electric Drive Controllers and Accessories
8	Title	Diesel Engine Drive
8-1	Comply	General
8-2.1	Comply	Engine is listed for fire pump service.
8-2.2	Comply	Engine ratings
8-2.3	Comply	Engine connection to pump
8-2.4	Comply	Instrumentation and Control
8-2.5	Comply	Engine is equipped with reliable electric starting device.
8-2.6	Comply	Two storage battery units are provided with chargers.
8-2.7	Comply	Engine cooling

**NFPA 20-1993, "Centrifugal Fire Pumps
(Diesel Driven Pump Only)
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
8-3	Comply	Pump and Engine Protection
8-4	Comply	Fuel Supply and Arrangement
8-5	Comply	Engine Exhaust
8-6	Title	Driver System Operations
8-6.1	Alternative	Pump is started every 31 days and run for 30 minutes. Consistent with Standard Technical Specifications.
8-6.2	Comply	Engines shall be kept clean, dry, and well lubricated.
8-6.3	Alternative	See FPR, Part II, Testing and Inspection Requirements 14.2.
8-6.4	Alternative	See FPR, Part II, Testing and Inspection Requirements 14.2.
8-6.5	Comply	Temperature maintenance
8-6.6	Comply	Emergency starting and stopping
8-7	N/A	Air starting
9	Title	Engine Drive Controllers
9-1	Comply	General
9-2	Comply	Location
9-3	Comply	Construction
9-4	Comply	Components
9-5	Title	Starting and control
9-5.1	Comply	Automatic and nonautomatic
9-5.2	Title	Automatic Operation of Controllers

**NFPA 20-1993, "Centrifugal Fire Pumps
(Diesel Driven Pump Only)
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
9-5.2.1	Alternative	Jockey Pump - Pressure is maintained using the RCW System
	Comply	DFP Controller Circuit
9-5.2.2	N/A	Pump supplies the fire protection system loop.
9-5.2.3	Comply	Manual electric control at remote station.
9-5.2.4	N/A	Sequence starting of pumps operating in parallel.
9-5.2.5	Comply	External circuits connected to controllers.
9-5.2.6	N/A	Sole supply pumps
9-5.2.7	Alternative	The weekly timer is provided, but will be locked out so personnel can be available for the performance testing.
9-5.3	Comply	Nonautomatic operation of controller
9-5.4	Comply	Methods of stopping
9-5.5	Comply	Emergency control
9-6	N/A	Air Starting Engine Controllers
10	N/A	Steam Turbine Drive
11	Title	Acceptance Testing, Performance, and Maintenance
11-1	Comply Alternative	Hydrostatic tests Flushing per TVA Engineering Specification.
11-2	Comply	Field acceptance tests are performed by pump vendor.
11-3	Comply	Manuals, special tools, and spare parts
11-4	Alternative	Periodic inspections, testing, and maintenance is done in accordance with FPR, Part II, Testing and Inspection Requirements 14.2 (applicable items) and is consistent with standard Technical Specification requirements.

PART X – NFPA CODE EVALUATION

Revision XXX

**NFPA 20-1993, "Centrifugal Fire Pumps
(Diesel Driven Pump Only)
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
11-5	N/A	Impeller replacement
12	N/A	Referenced Publications

NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
11	Comply	Layout plans of new yard piping
12	Comply	Plan drawings showing size and location of water supplies, piping, valves, hydrants, sprinkler and standpipe risers, and fire department connections.
13	N/A	Piping layout general information
14	Comply	Installation by experienced and responsible workers.
15	Alternative	The system 26 (HPFP system) flow diagrams are under configuration control and maintained in the Main Control Room. This complies with the intent of the code (as applicable to a nuclear plant) but does not meet literal compliance.
21	Comply	Choice of water supplies
22	N/A	Title, Public Water Systems
2200	N/A	WBN does not rely on the public water system
2201	Comply	Adequate water supply - Tennessee River
2202	Comply	Street mains are of ample size
2203	Comply	No pressure regulating valves used in water supply.
2204	N/A	No connection to public waterworks.
2205	Alternative	The HPFP system is a dedicated raw water system and does not interface with a public water works system.
2206	Comply	Connections for domestic or standpipe use to meet Code Section 2205.
23	N/A	Title, Pumps

NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2300	N/A	Pumps - general information
2301	Comply	Pump supervisory service, see NFPA 72D, pumps operated monthly by operations personnel.
24	N/A	No tanks used.
25	N/A	Title, Penstocks or Flumes, Rivers or Lakes
2501	Comply	Approved (by AHJ, refer to definition in Part II) double removable screens and strainers used.
26	N/A	Fire department connections not used within Q* boundaries at WBN- used at MDB.
31	N/A	Title, Types of Valves
3101	Alternative	Both indicating and non-indicating valves are used in the HPFP system.
3102	Alternative	Check valves are in accordance with WBN approved material (e.g., ANSI B31.1).
32	N/A	Title, Valves Controlling Water Supply
3201	Comply	Use of approved OS&Y or other indicating control valves.
3202	Alternative	There is only one source of water supply for the four electric motor driven fire pumps (if multiple supplies, then a check valve is required in each connection), but there are two trained headers and a common header. The diesel driven fire pump takes suction from the Unit 1 Cooling Tower basin.
3203	Comply	Installation of control valves at check valves
3204	N/A	No gravity tank.
3205	N/A	Pump house noncombustible and no tanks used.
3206	N/A	Check valve placement - general information

NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3207	Comply	Control valves are readily accessible.
33	N/A	Title, Post Indicator Valves
3301	Comply	Post indicator and curb box valves used.
3302	Comply	Post indicator valve location (PIV 0-26-1969 located on the north side of EQ Building is closer than recommended and it is not within the Q* boundaries and is therefore out of scope)
3303	Alternative	Post Indicator Valves are not all 36" above the ground level (grade), but are accessible for proper operation.
3304	Comply	Post indicator valve protection
34	N/A	Valves in pits not used within Q* boundaries (only MDB valve is in a pit, which is of appropriate size and readily accessible, but outside of scope).
35	N/A	Title, Sectional Valves
3501	Comply	Use of sectional controlling valves at appropriate points.
3502	N/A	Main does not cross water.
36	N/A	Title, Identifying and Securing

NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3601	Alternative	Break-away locks or the red seals are used on fire protection system valves to administratively control their position. Inspections of valve positions are done quarterly, not weekly. The quarterly inspection is based on the administrative controls (e.g., second party verification of position, locking or sealing the valve in position, and strict control of work) for valve manipulation and the site access restriction to trained and qualified personnel. The frequency is more conservative than the inspection criteria established for primary system valves that are locked or sealed. This provides adequate assurance that the valve is in the proper position.
41	Comply	Type of Hydrants
42	N/A	Title Number and Location of Hydrants
4201	Comply	Quantity and placement of hydrants
4202	Comply	Placement with respect to buildings
43	N/A	Title, Setting of Hydrants
4301 and 4302	Comply	Hydrant setting and drainage considerations in accordance with TVA design, construction, and modification procedures.
4303	Comply	Height of Hose Outlet Above Grade
4304	Comply	Fastening of hydrants to piping in accordance with TVA design, construction, and modification procedures.
4305	Comply	Protection of hydrants
51 through 56	N/A	Hose houses and equipment criteria met by mobile apparatus.

**NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
57	Comply	Couplings of same size and thread, and are interchangeable with those of local fire department.
58	Comply	Nozzles are of the approved type.
59	Comply	The fire hydrants listed in Table 14.7 of Part II shall be Operable whenever the safety-related or FSSD equipment in the areas protected by the fire hydrants is required to be operable.
61	N/A	Title, General, information on hose care per NFPA 198
6100	Comply	Proper storage of hose (Note: WBN does not use rubber lined hose referenced in 6100, which addresses hose storage issues. WBN uses lined hose procured to current standards).
6101	N/A	Hose not stored at hose houses.
6102 through 6402	Comply	Usage, storage, testing, cleaning, and drying of hose
71	N/A	Heavy caliber hose stream available via portable monitor nozzles; hazards do not require permanent installations.
81 through 85	Alternative	Selection, coating and lining, and fitting of joints for piping is per TVA design, construction, and modification procedures. These procedures provide guidance that meets or exceeds the code. Corrosion is monitored per Section 12.1 of Part II of the FPR.
86	N/A	Title, Sizing of Pipe

NFPA 24-1973, "Outside Protection"
TVA System 26 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
8601 thru 8603	Comply	Minimum size of pipe underground not less than 6 inches, loop system provided, and pipe sizes to systems approved by authority having jurisdiction (refer to definition in Part II).
91 through 99	Alternative	Laying of pipe is per TVA design, construction, and modification procedures.

**NFPA 30-1973, "Flammable and Combustible Liquids Code"
Compliance Summary Matrix**

Note: NFPA 30 was only evaluated for storage and transport of transient combustible materials.

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Chapter I	N/A	General Provisions
Chapter II	N/A	Tank Storage
Chapter III	N/A	Piping, Valves, and Fittings
40	N/A	Title, Scope, and general information
41	N/A	Title, Design, Construction, and Capacity of Containers
4110	Comply	Approved containers
4120	N/A	Portable tanks
4130	Comply	Maximum size
4131	N/A	Medicines, beverages, and foodstuffs
4132	Comply	Glass containers
42	N/A	Title, Design, Construction, and Capacity of Storage Cabinets
4210	Comply	Storage cabinet limitations
4220	Comply	Storage cabinet design
4221	Comply	Metal cabinet construction
4222	N/A	Wooden cabinets
43	N/A	Design and construction of inside storage rooms
44	N/A	Storage inside buildings
45	N/A	Storage outside buildings
46	N/A	Title, Fire Control
4610	Comply	Hose and extinguishers

**NFPA 30-1973, "Flammable and Combustible Liquids Code"
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
4611	N/A	Portable extinguishers (See Section 3.2.1 of Part X)
4612	N/A	Portable extinguishers (See Section 3.2.1 of Part X)
4620	N/A	Sprinklers
4630	Comply	No open flames or smoking.
4640	Comply	Materials that react with water
4650	N/A	Tanks bonded or grounded
50	N/A	Scope - General Information
51 and 5110	N/A	Title, Incidental Storage or Use of Flammable and Combustible Liquids, and general information
5120 through 5122	Comply	Storage in tanks or closed containers - requirements
5123	N/A	Large quantities in tanks
5130	N/A	Separation of transfer areas
5140	N/A	Title, Handling Liquids at Point of Final Use
5141	Comply	Covered containers
5142	Comply	Closed containers used for transport to work areas.
5143 and 5144	Comply	No open flames and transfer requirements
52	N/A	Unit physical operations - general information
5210 through 5230	N/A	Applicability, location of plants, and unstable liquids
5240	N/A	Title, Drainage
5241 and 5242	N/A	Emergency drainage systems

**NFPA 30-1973, "Flammable and Combustible Liquids Code"
Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
5243	Comply	Preventing discharge
5250	N/A	Ventilation
5260	N/A	Processing plants
53	N/A	Tank vehicle and tank car loading and unloading
54	N/A	Title, Fire Control
5410 through 5430	Comply	Fire extinguishment and control equipment
5440	N/A	Special hazards
5450 and 5460	Comply	Fire alarm system and inspections
55	N/A	Title, Sources of Ignition
5510	Comply	Preventing ignition
5520	N/A	Class I liquids dispensed into metal containers.
56	N/A	Electrical equipment
57	Comply	Repairs to equipment
58	Comply	Housekeeping
Chapter VI	N/A	Bulk Plants
Chapter VII	N/A	Service Stations
Chapter VIII	N/A	Processing Plants
Chapter IX	N/A	Refineries, Chemical Plants and Distilleries

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
100	N/A	Definitions
1110	N/A	Application - Title
1111	Comply	"Class A" system
1112 through 1113	N/A	Emergency operation of Class A systems for manual fire alarm stations and guard tour signals
1120	N/A	Title, Central Supervising Structure
1121	Deviation	Location of the central supervising station in the Main Control Room, but is not in a room that is separated from the rest of the Main Control Room.
1210	N/A	Title, System Operation
1211	Comply	System arranged to receive and record all signals, and direct supervised circuit to local fire department not deemed necessary
1212	Comply	Recording requirements
1213	Alternative	The Fire Alarm Console in the Main Control Room is designed and assembled by the TVA Computer Engineering Group (CEG). The equipment has been evaluated to meet applicable UL listing requirements .
1220	N/A	Title, Operating Personnel

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1221	Alternative	Access to the "control supervising station" (Main Control Room) is not limited to only those personnel required to operate the system. Site security procedures ensures strict access control for personnel who can be on site much less in the Main Control Room. Areas in the Main Control Room that involve control functions of the plant, have additional access restrictions applied. The combination of these controls ensure the proper operation of and response to the "control supervising station".
1222	Comply	Reserve operators
1223	Alternative	Operation and supervision of fire alarm not primary function of the Main Control Room operators. They are responsible for all Main Control Room alarm response functions.
1224	Comply	Maintenance, inspection, and repair personnel availability
1230	N/A	Title, Tests
1231	Comply	Daily tests
1232	Alternative	See Section 3.2.11 of Part X.
1233	Alternative	See Section 3.2.11 of Part X.
1234	Alternative	See Section 3.2.11 of Part X.
1235	Comply	Test and operation records
1240	N/A	Title, Signals and Reports
1241	Comply	Reports of signals required by AHJ (refer to the definition of AHJ in Part II.).

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
1242	Comply	Signal designation
1243	N/A	Sprinkler supervisory signals, See 3423 and 3442.
1244	N/A	Transmission over common signaling circuit for fire alarm boxes and supervisory signals.
1250	N/A	Title, Disposition of Signals
1251	Deviation	Actions upon receipt of selected low threshold fire alarm signal - fire brigade not immediately activated, basis for alarm investigated first.
1252	N/A	No guard tours.
1253	Comply	Actions upon receipt of supervisory signal.
1254	Comply	Actions upon receipt of trouble signal.
1310 through 1322	Comply	Circuit arrangement
2010 through 2013	N/A	Title, Scope, and general information
2020 through 2021	N/A	Title, Approval, and general information
2022	Alternative	System components are UL listed except as noted in 1213.
2023	Alternative	Except for the Main Control Room Console
2024	N/A	Maintenance agreement
2030 and 2031	N/A	Title, Installation and Design, and general information
2032 and 2033	Comply	Vibration and grounding requirements
2034	N/A	Multiple alarm feature
2035	Comply	System restricted for fire protection use only.

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2036	Alternative	System is not rated to operate at 85% and 100% of rated voltage, system is rated at 105V to 115V, and nominal is 115V. (85% of 115V is 97.75V. 85% of 120V is 102V.)
2037	N/A	System does not use devices that require rewinding or resetting.
2038	N/A	Coded alarm signals
2110	N/A	Even though criteria of NFPA 70 Article 760 followed, NFPA 70 is not applicable to electric generating stations.
2210 and 2211	N/A	Title, Power Supply Sources, and general information
2212	Alternative	Use of approved equipment except as noted in 1213.
2213	N/A	Even though criteria of NFPA 70 for wiring and power supply equipment is followed, NFPA 70 is not applicable to electric generating stations.
2220	N/A	Title, Power Supply, Central Supervising Station
2221	Alternative	Primary and secondary power supply not within the Main Control Room; they are provided for the fire alarm console from offsite and onsite power sources.
2222	Comply	Primary power supply requirements
2223	Alternative	The fire alarm system has the emergency diesel generators as the automatic secondary power supply. The UPS backup within the fire alarm console supplies devices in the fire alarm console.
2224	Deviation	Separate power supply for trouble signals
2230	N/A	Title, Power Supply for Remotely Located Control Equipment

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2231	Deviation	Power supply for remotely located control equipment - requirements
2240	N/A	Title, Light and Power Services
2241	Comply	Three-wire power supply
2242 and 2243	Deviation	Limiting access to power service connection (0-DPL-13-1) and overcurrent protective devices (not in locked panels).
2250 through 2252	N/A	Rectifier power supplies
2260	Alternative	Emergency diesel generators (DG) are not reviewed against NFPA 37, and the DGs are not operated weekly (they are designed, tested, and operated based on FSAR and Technical Specification requirements with the intent of ensuring the supply is met).
2270	N/A	Storage batteries are not used as primary power source (only a back-up source) for fire detection panels not powered from 1E power sources.
2280	N/A	Cycle-charged batteries not used to operate system.
2290	N/A	Primary (dry cell) batteries not used to operate system.
230	N/A	Title, Overcurrent Protection
2310 and 2311	N/A	Batteries, see 2270 - 2290
2321	N/A	Although the criteria of NFPA 70 for wiring is followed, NFPA 70 is not applicable to electric power generating stations.
2330	Comply	System control unit protection to 150% of rating.
2340	Comply	Transformer protection
240	N/A	Title, Electrical Supervision

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2410	Comply	Electronic supervision for breaks, faults, and failures provide alarms in the Main Control Room.
2420	Comply	Power supply circuit supervision
2430	Comply	Signal initiating circuits supervision
2440	Comply	Alarm signal sounding circuits supervision
2450	N/A	Exceptions to electrical supervision
2460	N/A	Title, Trouble Signals
2461	N/A	Distinctive signals for trouble, alarm, and supervisory signals or comply with 2462.
2462	Comply	Distinctive audible signals for trouble, alarm, and supervisory signals, or supplementary visual indication.
2463 through 2465	Comply	Trouble signal silencing and reflash
2470	N/A	Speaker amplifier and tone generating equipment requirements not on system 13.
2510	Comply	Audible signal appliances
2520	Alternative	Listing and protection requirements except as noted in 1213. Audible signal is not listed, protection is same or similar.
2530	N/A	Requirements for speakers (see 2470)
2540	N/A	Distribution and adequacy of evacuation signals (see 2470)
2550	Deviation	Distinctive signals, but fire alarm signals do not take priority over all other Main Control Room signals. Priority is left to discretion of Operations Shift Manager.
2610 and 2611	N/A	Signal capacity of circuits and number of code wheels

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
2612	Comply	Number of waterflow and supervisory switches
2620	N/A	Separate alarm signal circuits (multiplex circuits used)
2630	Comply	Combined alarm and supervisory signal circuits requirements (multiplex circuits used).
2640	Comply	Loading capacity of signaling line circuits
2650	Comply	Loading capacity of sprinkler supervisory signaling line circuits
2660	N/A	Loading capacity of guard supervisory signaling line circuits
3010	N/A	Types of signaling systems general information
310	N/A	Fire alarm boxes
320	N/A	Guard tour supervisory service
3310 and 3311	N/A	Title, Automatic Fire Detection And Alarm Service, and general information
3321	Comply	Supplementary manual alarm signal operation
3330	Comply	Detectors installed per NFPA 72E (see NFPA 72E review).
3410 and 3411	N/A	Title, Sprinkler System Waterflow Alarm and Supervisory Signal Service, and general information
3420	N/A	Title, General
3421	N/A	Dry pipe systems not used in safety related buildings.
3422	Comply	See 2462 (distinctive audible signals for trouble, alarm, and supervisory signals).

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3423	Deviation	Signal attachments and circuits (pressure switches) can be removed or tampered with and not cause an alarm.
3430	N/A	Title, Waterflow Alarm Service
3441	Comply	Supervising sprinkler systems
3442	Deviation	Control valve supervision (locked or sealed instead).
3443b and 3443d	Comply	Pressure source supervision for pipe integrity
3444 and 3445	N/A	Water storage container supervision
3446	Comply	Fire pump supervision (Fire Pump "Running" signal)
3510	N/A	Title, Signal Indication
3511	Comply	Signal indication for automatic smoke alarms
3520	Comply	Detectors installed per NFPA 72E (see NFPA 72E review).
3530	Alternative	See Section 3.2.11 of Part X.
3540	N/A	Title, Circuit Arrangement
3541	Comply	Circuit arrangement (Class A)
3542	N/A	(3541 Applies)
3543	N/A	Blowers in smoke detectors
3544	Comply	Electrical supervision
3545	Comply	Trouble signal upon failure of supervised circuits (audible and printed out on fire alarm console as required by 2462).

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
4010	N/A	Multiplex alarm systems introduction
4110	N/A	Title, System Operation
4111	Alternative	Both visual and recorded displays in compliance, but records not preserved. The printer is On Demand only.
4112	Deviation	The transmission of an alarm signal to the fire alarm console, because of a wire to wire short circuit, cannot be recorded.
4113	Comply	Fault(s) on trunk/leg facilities
4114	N/A	Private radio facilities
4120	N/A	Satellite station facilities
4210 thru 4214	Comply	Circuit Arrangement
4220	N/A	Power supplies for repeater and satellite stations
4310	N/A	Title, Systems Equipment and Trunk Capacities
4311	Deviation	Functionality under fault conditions (see 4112)
4312	N/A	System equipment and trunk capacities - general information
4313	Comply	System equipment and trunk capacities

Section 1121 Deviation

The central supervising station is located in the Main Control Room which is a security area with strict access control.

See Section 3.2.11 of Part X. See Section 3.2.11 of Part X. See Section 3.2.11 of Part X.

**NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix**

Section 1251 Deviation

Upon receipt of an alarm from a cross zoned detection system, an individual is dispatched to the area to determine cause of alarm. If a fire exists, the individual notifies the Main Control Room and they notify the site fire brigade. If both zones of a cross zoned detection system alarm, the site fire brigade is notified immediately. This allows false alarms to be addressed at a proper level while still maintaining a rapid response by the site fire brigade to actual fires.

Sections 2224 and 2231 Deviation

The alarm power and trouble power for the local panels come from the same power panel, but from different circuit breakers. The same primary and secondary power supplies power to both alarm and trouble circuits.

Section 2242 and 2243 Deviation

Limited access to power service connection (0-DPL-13-1) and overcurrent protective devices (not in locked panels); however, access to panels is under operations control so intent is met.

Section 2550 Deviation

Distinctive signals, but fire alarm signals do not take priority over all other Main Control Room signals. Priority is determined by the Operations Shift Manager.

Section 3423 Deviation

Signal attachments and circuits (pressure switches) can be removed or tampered with and not cause an alarm. However, site personnel access control and the work control system provide adequate assurance that work on such devices are properly controlled and documented. Therefore, there is not a need for such alarms as would be in areas accessible to the general public where tampering is a concern.

Section 3442 Deviation

Sprinkler system control valves are not electrically supervised. They are locked or sealed open and periodically inspected instead. Administrative controls (e.g., second party verification of position, locking or sealing the valve in position, and strict site access and work control) for valve manipulation assure that the valve has not been tampered with and is in the proper position.

Section 4111 Alternative

Both visual and recorded displays are in compliance, but records are not preserved for later inspection. Plant procedures have reporting requirements for conditions adverse to quality. These procedures require that an adverse condition report be initiated by the end of the shift on which the problem was identified. The printouts from the fire alarm console are periodically retrieved and retained by the site Fire Protection staff; therefore, documentation from the fire alarm console would be available to support an adverse condition report. This retention is adequate to aid in the reconstruction of a sequence of events and meets the intent of the code.

Sections 4112 and 4311 Deviation

The transmission of an alarm signal to the fire alarm console, because of a wire to wire short circuit, cannot be recorded. A wire to wire short will generate a trouble signal which requires action to correct. See Part II, Section 14.5 for disposition of trouble signals.

NFPA 72E-1974, "Automatic Fire Detectors"
TVA System 13 Compliance Summary Matrix

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Chapter 1	N/A	General information
2-1 thru 2-4	N/A	Classification of detectors, definitions, shape of ceilings, and ceiling surfaces - general information
2-5 and 2-5.1	N/A	Titles, Common Requirements and Approval
2-5.1.1	Comply	Approved detection devices used.
2-5.1.2	Comply	Specifications and floor plans for detectors
2-5.1.3	Comply	Contractor statement (TVA is installer and AHJ, refer to definition in Part II)
2-5.2.1	Comply	Acceptance tests
2-6	N/A	Title, Installation
2-6.1	Comply	Protection from mechanical damage
2-6.2	Comply	Detector support
2-6.3	Comply	Detectors not recessed into the mounting surface.
2-6.4	Comply	Installation on solid joist construction.
2-6.5	Deviation	Required installation areas
2-6.6	N/A	Installation under loading docks, platforms, and crawl spaces
2-6.7	Comply	Protection of selected areas
3-1	N/A	Heat detectors - general information
3-2	N/A	Heat detector operating principles - general information
3-3	Comply	Temperature classification of heat detectors
3-4	Comply	Location of heat detectors
3-5	N/A	Title, Spacing

**NFPA 72E-1974, "Automatic Fire Detectors"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
3-5.1	Comply	Smooth ceiling spacing
3-5.1.1	Comply	Irregular area spacing
3-5.2	N/A	Open joist construction spacing
3-5.3	Deviation	Beam construction spacing
3-5.4	N/A	Sloped ceiling spacing
4-1	N/A	Smoke detector - general information
4-2	N/A	Smoke detector operating principles - general information
4-3	Comply	Location of smoke detectors
4-4 and 4-4.1	N/A	Title, Detector Spacing, and general information
4-4.2	Deviation	Smooth ceiling spacing
4-4.3	N/A	Joisted ceiling spacing
4-4.4	Comply	Sloped Ceiling Spacing
4-4.5 and 4-4.5.1	N/A	Title, High Ceiling Spacing, and general information
4-4.5.2	Alternative	High ceiling spacing
4-4.6 and 4-4.7	N/A	Beam construction spacing and beam-type detectors
4-5 through 4-5.1.4	N/A	Special considerations
4-5.1.5	Comply	Detectors in air conditioned facilities
4-6	N/A	Special uses
Chapter 5	N/A	Flame detectors
Chapter 6	N/A	Other fire detectors

**NFPA 72E-1974, "Automatic Fire Detectors"
TVA System 13 Compliance Summary Matrix**

<u>Code Section</u>	<u>Summary</u>	<u>Topic/Remarks</u>
Chapter 7	Alternative	See Section 3.2.11 of Part X.
8-1.1.1	N/A	Duct detector general information
8-1.1.2	Deviation	Use of duct detectors in lieu of area detectors done in Reactor Building upper and lower compartment coolers.
8-1.1.3 thru 8-1.1.5	Comply	Location of duct detectors, listed or approved devices, suitability for maximum temperatures.
8-1.2.1	Deviation	Duct detectors not provided per NFPA 90A requirements.
8-1.2.2	N/A	Duct detectors connected to signalling system.
8-1.2.3	Comply	Listed or approved detectors when connected to signalling system.
8-1.3	Alternative	See Section 3.2.11 of Part X.
8-2	N/A	Smoke detectors for door release service
8-3	N/A	Automatic data processing facilities

Section 2-6.5 Deviation

Not all areas of the plant building have detection. A majority of the plant safety related buildings are provided with detection as documented in the system description, N3-13-4002 (Part II, Reference 4.2.71) and plant drawings like 47W600-series. Some areas do not have detection as required by Appendix R or the Branch Technical Position. These non-detected areas are discussed in Part VII, Section 3.1.

NFPA 72E-1974, "Automatic Fire Detectors"
TVA System 13 Compliance Summary Matrix

Sections 3-5.3 and 4-4.2 Deviation

Note: The code allows for locating smoke detectors based on each detector covering a square with each side of the square equal to the recommended spacing. TVA has reduced this coverage to be more consistent with how fire effects spread along a ceiling by locating smoke detectors based on a circle with a radius equal to 1/2 of the recommended spacing. This is more conservative than the code of record and will result in additional detectors to cover the area; however, this spacing is more representative of later code editions.

The locations which exceed these spacing requirements are identified in Part VI of the FPR.

**NFPA 72E-1974, "Automatic Fire Detectors"
TVA System 13 Compliance Summary Matrix**

Section 4-4.5.2 Alternative

Smoke detectors in the high ceiling areas are not installed alternately on two levels. In general, high ceilings are addressed by reduced spacing of detectors at ceiling level as opposed to two levels of detectors. This is acceptable because stratification is not a concern as it would be in a warehouse and because of the HVAC mixing of the air.

Section 8-1.1.2 Deviation

Use of duct detectors in lieu of area detectors done in Reactor Building upper and lower compartment coolers; however, regulatory requirements for detectors met in Reactor Building. Duct detectors are used to address the hazard which is the coolers.

Section 8-1.2.1 Deviation

Duct detectors not provided per NFPA 90A requirements; fans that service area of the fire are manually shut down to ensure that air flow will not prevent fire dampers from closing.

Enclosure 2
New Fire Protection Commitment

1. TVA has determined that a license amendment request for a change to License Condition 2.F of the Unit 1 Operating License should be submitted separate from the as-constructed U1/U2 FPR and before the TVA intends to request an operating license for Unit 2. This License Condition establishes the NRC's basis for approval of WBN's Fire Protection Program. Considering this, TVA intends to submit the amendment request for a change to License Condition 2.F by July 22, 2015.

Enclosure 3
Calculation EDQ0009992012000085
Appendix R - WBN Unit 2 Multiple Spurious Operation (MSO) Evaluations

NPG CALCULATION COVERSHEET / CTS UPDATE

Page i

<u>REV 0 EDMS/RIMS NO.</u>		<u>CTS TYPE:</u> Calculation		<u>EDMS TYPE:</u> CALCULATIONS (NUCLEAR)		<u>EDMS ACCESSION NO (N/A for REV. 0)</u>	
Calc Title: Appendix R -- WBN Unit 2 Multiple Spurious Operation (MSO) Evaluations							
<u>CALC ID</u>	<u>ORG</u>	<u>PLANT</u>	<u>BRANCH</u>	<u>NUMBER</u>		<u>CUR REV</u>	<u>NEW REV</u>
	NUC	WBN	EEB	EDQ0009992012000085			000
CTS UPDATE ONLY <input type="checkbox"/> (Verifier and Approval Signatures Not Required)				NO CTS CHANGES <input type="checkbox"/> (For calc revision, CTS has been reviewed and no CTS changes required)			
<u>UNIT (check one)</u> 0 <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> 3 <input type="checkbox"/>		<u>SYSTEMS</u> 003 032 062 068 072 074 067 063 211 999			<u>UNIDS</u> VARIOUS		
<u>ECP, N/A</u> N/A		<u>APPLICABLE DESIGN DOCUMENT(S)</u> N/A				<u>CLASSIFICATION</u> E	
<u>QUALITY RELATED?</u> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>SAFETY RELATED?</u> (If yes, QR = yes) Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<u>UNVERIFIED ASSUMPTION</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<u>SPECIAL REQUIREMENTS AND/OR LIMITING CONDITIONS?</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>		<u>DESIGN OUTPUT ATTACHMENT?</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	<u>SAR/TS and/or ISFSI SAR/CoC AFFECTED?</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
<u>CALCULATION NUMBER REQUESTOR</u> Name: N/A PHONE: N/A			<u>PREPARING DISCIPLINE</u> EEB	<u>VERIFICATION METHOD</u> DESIGN REVIEW	<u>NEW METHOD OF ANALYSIS</u> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
<u>PREPARER (PRINT NAME AND SIGN)</u> C. E. Brush <i>C. E. Brush</i>			<u>DATE</u> 6-22-2015	<u>CHECKER (PRINT NAME AND SIGN)</u> F. W. Tanner <i>F. W. Tanner</i>			<u>DATE</u> 6-22-2015
<u>VERIFIER (PRINT NAME AND SIGN)</u> F. W. Tanner <i>F. W. Tanner</i>			<u>DATE</u> 6-22-2015	<u>APPROVAL (PRINT NAME AND SIGN)</u> JDP <i>JDP</i> <i>06-24-2015</i>			<u>DATE</u> 6-24-15
<u>STATEMENT OF PROBLEM/ABSTRACT</u> This calculation evaluates fire induced multiple spurious operation (MSO) of Appendix R equipment for Watts Bar Nuclear Plant Unit 2 as required by Nuclear Regulatory Commission (NRC) Regulatory Guide 1.189, Rev. 2. Based on the results of the MSO Expert Panel conducted at the plant for Unit 1, various scenarios were identified and were reviewed for WBN Unit 2.							
<u>MICROFICHE/EFICHE</u> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> <u>FICHE NUMBER(S)</u>							

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KEYWORDS (A-add, D-delete)

CROSS-REFERENCES (A-add, D-delete)

Following are required only when making keyword/cross reference CTS updates and page 1 of form NEDP-2-1 is not included:

PREPARER (PRINT NAME AND SIGN)	DATE	CHECKER (PRINT NAME AND SIGN)	DATE
PREPARER PHONE NO.	EDMS ACCESSION NO.		

NPG CALCULATION RECORD OF REVISION	
CALCULATION IDENTIFIER EDQ0009992012000085 R0	
Title Appendix R – WBN Unit 2 Multiple Spurious Operation (MSO) Evaluations	
Revision No.	DESCRIPTION OF REVISION
0	<p>Initial issue.</p> <p>Total number of pages is 77 including pages: i thru v and 1 and 3</p> <p>Appendix A 64 pages</p> <p>Appendix B 3 pages</p> <p>Appendix C 2 pages</p> <p>SAR Section 9.5.1, Fire Protection System, has been reviewed and is not affected. However, this section has been replaced by the Fire Protection Report which will be affected.</p> <p>The Technical Specifications have been reviewed and are not affected.</p> <p>.</p>

NPG CALCULATION VERIFICATION FORM

Calculation Identifier EDQ0009992012000085

Revision 0

Method of verification used:

1. Design Review ☒
2. Alternate Calculation ☐
3. Qualification Test ☐

Verifier

F. W. Tanner

Date

6/22/15

F. W. Tanner

Comments:

Design verification has been performed by design review method in accordance with NEDP-5 and NEDP-2. The methodology used is consistent with good engineering practice and the results were found to be acceptable.

NPG CALCULATION TABLE OF CONTENTS		
Calculation Identifier: EDQ0009992012000085		Revision: 0
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1.0 PURPOSE

This calculation documents the Watts Bar Nuclear Plant Unit 2 (WBN-2) evaluation of Appendix R equipment for multiple spurious operation (MSO) issues resulting from the publication of Nuclear Regulatory Commission (NRC) Regulatory Guide 1.189 Rev. 2 (RG 1.189) (Ref. 3.1). Specifically, Section 5.3 of RG 1.189 discusses an allowable approach to address multiple fire induced circuit failures. This calculation identifies scenarios that may be caused by multiple circuit failures and evaluates each scenario to determine if, in fact, it is a concern. For any concern identified, resolutions are provided to address the concern.

2.0 BACKGROUND

RG 1.189 was issued by the NRC in October 2009. RG 1.189 provides guidance for nuclear power plants that are not transitioning their fire protection licensing basis to a performance-based standard under 10CFR50.48(c) and National Fire Protection Association (NFPA) standard 805 (Ref. 3.2)

RG 1.189 formalized the requirements for addressing multiple fire induced circuit failures, or MSOs and multiple concurrent hot shorts. RG 1.189 endorsed portions of NEI 00-01 Rev. 2 (Ref. 3.3) as an acceptable approach to address these issues. NEI 00-01 allows the use of an expert panel to identify plant specific scenarios that might be caused by MSOs.

TVA recently reviewed MSOs in accordance with RG 1.189 for Watts Bar Unit 1 and its sister plant, Sequoyah Units 1 and 2. Construction of Watts Bar Unit 2 is nearing completion and is proceeding through the licensing process. Most of the multiple spurious operation scenarios were previously addressed in the baseline post fire safe shutdown analysis of WBN-2. Those that were not in the baseline analysis will be incorporated into the final post fire safe shutdown analysis as applicable.

3.0 REFERENCES

- 3.1 NRC Regulatory Guide 1.189, Fire Protection For Nuclear Power Plants, Revision 2 dated October 2009
- 3.2 NRC Enforcement Guidance Memorandum 09-002, Enforcement Discretion for Fire Induced Circuit Faults, dated May 14, 2009
- 3.3 NEI 00-01, Guidance for Post Fire Safe Shutdown Circuit Analysis, Revision 2 dated May 2009
- 3.4 Calculation WBN-OSG4-031, Revision 51, Equipment Required for Safe Shutdown per 10CFR50 Appendix R
- 3.5 Fire Protection Report
- 3.6 1-CM-6.20, Chemistry Manual – Sampling the Reactor Coolant System, Revision 1
- 3.7 1-CM-6.21, Chemistry Manual – Sampling the Pressurizer Liquid, Revision 2
- 3.8 1-CM-6.22, Chemistry Manual – Sampling Pressurizer Gas, Revision 1
- 3.9 1-CM-2.31, Chemistry Manual – Zinc Addition to the Reactor Coolant System, Revision 0
- 3.10 NEI-00-01, Guidance for Post Fire Safe Shutdown Circuit Analysis, Revision 3 dated October, 2011
- 3.11 R1976-20-01 Rev. 1, Watts Bar Unit 2 Multiple Spurious Operation Evaluation, Prepared by Engineering Planning and Management, Inc. under Bechtel sub-contract 25402-11-HC4-AYFP-00001.
- 3.12 Calculation EDQ00099920090016, Appendix R – Units 1 & 2 Manual Action Requirements

4.0 ASSUMPTIONS

4.1 None

5.0 COMPUTATIONS AND RESULTS

- 5.1 The WBN-2 MSO evaluations, starting from the WBN Unit 1 MSO information, used following the general process in the evaluation of each scenario.
1. For each scenario or issue, components were identified whose failure would cause the particular scenario or issue to occur.
 2. These components were arranged in a logical relationship.
 3. For components already included in the FSSD analysis, the associated cables already identified and located by fire zone/analysis volume. The MSO functional requirement for the component was compared to the FSSD functional requirement to ensure the appropriate cables were included in the evaluation.
 4. For newly identified components (not included in the FSSD), or components with new functional requirements associated cables were identified and located by fire zone/analysis volume.
 5. Cable and cable location information is maintained in the System Assurance & Fire Protection Engineering (SAFE) database (FSSD analysis).
 6. For each Fire Area where MSO components could fail due to cable fire damage, an evaluation was performed to determine the impact of multiple fire induced faults.
- 5.2 Operator Manual Actions (OMAs) identified in the Post Fire Safe Shutdown (FSSD) analysis were identified and credited where applicable to resolve the MSO scenarios.
- 5.3 Each scenario is identified and the resulting evaluation is included in Appendix A.

6.0 RESULTS

Appendices B and C summarize the resolutions resulting from the review of Regulatory Guide 1.189 Multiple Spurious Operation (MSO) requirements at WBN-2. Concerns were identified in a few plant areas and for different post-fire scenarios. Where concerns were identified, resolutions were provided to eliminate the concern. Many of the resolutions were identified by the baseline post fire safe shutdown analysis (FSSD) and resulting plant modifications are in process. Such resolutions are included in this calculation for completeness.

The review of the MSO scenarios is attached as Appendix A. The scenarios selected for review is the same set of scenarios that were determined to be applicable to WBN unit 1 by the MSO Expert Panel. This list was based on the Pressurized Water Reactor Owner's Group (PWROG) generic list of multiple spurious operations as published as Appendix G to NEI-00-01. The changes made to Appendix G in revision 3 of NEI-00-01 (Ref. 3.10) have been reviewed for incorporation into this evaluation. The Sequoyah (dual unit) MSO list was compared to the WBN Unit 1 list and no additional scenarios were identified due to dual unit operation.

7.0 CONCLUSION

Based on the results of the above evaluations it is concluded that upon completion of the resolutions identified in appendix B, there are no fire induced multiple circuit failure scenarios of concern for WBN Unit 2.

Appendix A

UNIT 2 MSO EVALUATION

1.0 PWROG Scenario 1: Primary Inventory Control - Loss of all reactor coolant pump (RCP) seal cooling due to spurious closure of RCP seal injection header valve(s) concurrent with spurious isolation of component cooling water (CCW) to the thermal barrier heat exchanger.

1.1. Description: Spurious isolation of reactor coolant pumps seal injection header flow AND spurious isolation of component cooling water (CCW) to the thermal barrier heat exchanger

1.2. Notes:

- Scenario causes loss of all RCP seal cooling and subsequent increase in RCP seal leakage, challenging the reactor coolant system (RCS) Inventory Control Function.
- Westinghouse Tech Bulletin 04-22 Rev. 1 provides a summary of the issue. Tech Bulletin references provide additional detail. B&W plants with Westinghouse designed seals may have similar concerns.
- Seal injection flow isolation can occur at main header or at supply to each individual pump. In addition, scenarios that cause loss of all charging (i.e., multiple pump failure due to loss of suction, non-spurious pump failures such as loss of power, etc.) can also cause loss of seal injection.
- Loss of all seal cooling to any individual RCP is a problem (i.e., does not have to occur on all RCPs to be a problem)
- Westinghouse plants refer to Letter LTR-RAM-I-10-053 Revision 2 of White Paper on Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios
- * CE plants generally do not have seal injection and can lose seal cooling for an extended period of time without increased seal leakage. These plants can lose all seal cooling due to spurious isolation of CCW.
- Refer to WCAP-16175.

1.3. WBN Unit 2 Safe Shutdown Compliance:

- 1.3.1. Seal Injection Header Isolation can only be accomplished by closing flow control valve (FCV) 2-FCV-062-093. 2-FCV-062-093 is an air operated valve which is normally open and fails full open on loss of control air or electrical power. The valve has a pneumatic stop to ensure valve will allow a minimum seal injection flow. For analysis volume AV-104 (fire on the valve) or AV-005 (fire on panel 2-L-112 where pneumatic stop is located) fire

damage could possibly cause 2-FCV-62-93 closure. For these AVs thermal barrier cooling (TBC) is available and provides RCP seal cooling. Both centrifugal charging pumps (CCPs) are stopped while manual valves are aligned to bypass 2-FCV-62-93 and CCP suction is aligned to the RWST. One of the CCPs is restarted within 75 minutes to resume RCP seal injection.

- 1.3.2. Loss of suction to the centrifugal charging pump (CCP) has been reviewed and determined that one CCP will always survive considering multiple spurious closure of either volume control tank (VCT) suction valve, loss of refueling water storage tank (RWST) suction valves, loss of or multiple spurious start of CCPs, spurious safety injection (SI), and loss of CCP heating ventilation and cooling (HVAC). For analysis volume (AV)-106, fire on the RWST suction valves, TBC is credited for 75 minutes for RCP seal cooling. During this time both charging pumps are stopped from MCR within 4 minutes, a RWST suction valve is manually opened within 75 minutes, and a charging pump is started after RWST suction valve is opened to resume normal seal injection.

2.0 PWROG Scenario 2: Primary Inventory Control - Loss of all reactor coolant pump (RCP) seal cooling due to charging flow diversion concurrent with spurious isolation of component cooling water (CCW) to the thermal barrier heat exchanger.

2.1. Description:

Spurious opening of charging injection valve(s) causing diversion flow away from seals

AND

Spurious isolation of component cooling water (CCW) to the thermal barrier heat exchanger

2.2. Notes:

- Flow diversion away from seal injection could be caused by spurious opening of charging injection valves. Note, spurious opening of #1 seal bypass valve is judged to not fail seal injection function due to orifice restricting bypass flow to ~1gpm (Reference Letter #OG-09-156)
- Scenario causes loss of all RCP seal cooling and subsequent increase in RCP seal leakage, challenging the RCS Inventory Control Function.
- Westinghouse Tech Bulletin 04-22 Rev. 1 provides a summary of the issue. Tech Bulletin references provide additional detail. B&W plants with Westinghouse designed seals may have similar concerns.

- Seal injection flow isolation can occur at main header or at supply to each individual pump. In addition, scenarios that cause loss of all charging (i.e., multiple pump failure due to loss of suction, non-spurious pump failures such as loss of power, etc.) can also cause loss of seal injection.
- Loss of all seal cooling to any individual RCP is a problem (i.e., does not have to occur on all RCPs to be a problem)
- Westinghouse plants refer to Letter LTR-RAM-I-10-053 Revision 2 of White Paper on Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios.
- * CE plants generally do not have seal injection and can lose seal cooling for an extended period of time without increased seal leakage. These plants can lose all seal cooling due to spurious isolation of CCW.
- Refer to WCAP-16175.

2.3. WBN Unit 2 Safe Shutdown Compliance:

- 2.3.1. Cable separation ensures closure of at least one of the Injection Header Isolation valves (2-FCV-62-90-A or 2-FCV-62-91-B) except for a fire where the valves are located (AV-099). For AV-099, the Charging Flow Control valve (2-FCV-62-89) in series with the injection header isolation valves but located in a different fire zone will be closed from the main control room within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12).
- 2.3.2. The only fires that could cause the boron injection tank (BIT) outlet isolation valves 2-FCV-63-25-B or 2-FCV-63-26-A to spuriously open is a fire in their respective Reactor Motor Operated Valve (RMOV) board rooms (AV-072, -073, -074). The BIT path will be isolated by closing the BIT inlet isolation valves 2-FCV-63-39-A and 2-FCV-63-40-B from their respective Control & Auxiliary Building Vent Boards located in AV-054 and AV-057. The time requirement for these actions is shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref.3.12).

3.0 **PWROG Scenario 3: Primary Inventory Control - Spurious re-initiation of reactor coolant pump seal injection / thermal barrier cooling results in failure of the RCP seals due to thermal shock.**

3.1. Description:

Loss of all seal cooling to reactor coolant pump(s) (see PWR Owners Group scenarios #1 and #2)

AND

(Spurious re-initiation of seal injection OR spurious re-initiation of component cooling water (CCW) to the thermal barrier heat exchanger)

3.2. Notes:

- Scenario is assumed to cause RCP seal failure and a subsequent RCP seal loss of cooling accident (LOCA), challenging the RCS Inventory Control Function.
- Westinghouse Tech Bulletin 04-22 Rev. 1 (Reference 11) provides summary of issue. Tech Bulletin references provide additional detail.
- Westinghouse plants please refer to Letter LTR-RAM-I-10-053 Revision 2 of White Paper on Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios.
- * CE plants generally do not have seal injection and can lose seal cooling for an extended period of time without increased seal leakage. These plants can lose all seal cooling due to spurious isolation of CCW. Refer to WCAP-16175.

3.3. WBN Unit 2 Safe Shutdown Compliance:

3.3.1. Based on Scenario 1 & 2 discussions, there will not be a sustained loss of seal injection, so this scenario is not applicable.

4.0 PWROG Scenario 4: Primary Inventory Control - Catastrophic RCP Seal Failure

4.1. Description:

Loss of all seal cooling to reactor coolant pump(s) (see PWR Owners Group scenarios #1 and #2)

AND

Fire prevents tripping the reactor coolant pumps OR spurious start of a reactor coolant pump(s)

4.2. Notes:

- Scenario causes catastrophic RCP seal failure and subsequent RCP seal LOCA, challenging the RCS Inventory Control Function.
- Westinghouse Tech Bulletin 04-22, Rev. 1 provides summary of issue. Tech Bulletin references provide additional detail. Additionally refer to Letter LTR-

RAM-I-10-053, Revision 2 of White Paper on Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios.

- Refer to WCAP-16175 for RCP seal behavior on loss of seal cooling at CE plants.

4.3. WBN Unit 2 Safe Shutdown Compliance:

- 4.3.1. As discussed in Scenarios 1 & 2, RCP seal flow is always credited except for AV-005, -104, -106 where TBC is credited for 75 minutes until RCP seal cooling can be reestablished. The cables associated with the RCPs which can cause a spurious start of the pump or prevent the pump from being tripped are entirely contained inside the Control or Turbine Building. For all AVs except Control Building the RCPs are tripped from the main control room (MCR) panels. For a Control Building fires resulting in MCR abandonment, the RCPs and the normal and alternate supply breakers feeding the 6.9kv RCP board would be tripped prior to evacuating the control room. Additionally local action at the 6.9kv RCPs board ensures that the RCP breakers remain tripped.

5.0 **PWROG Scenario 5: Primary Inventory Control - Loss of all reactor coolant pump (RCP) seal cooling concurrent with spurious operation of the number 1 seal leakoff valve results in failure of RCP seal number 2**

5.1. Description:

Loss of all seal cooling to any RCP(s). See Scenarios 1 & 2.

AND

Spurious isolation of No.1 seal leakoff valve(s).

5.2. Notes:

- Isolation of the No. 1 seal leakoff line during a loss of all seal cooling event would force the No. 2 RCP seal into a high pressure mode of operation at high temperature, which is beyond the design bases of the No. 2 seal. This could cause failure of the No. 2 seal and increase RCP seal leakage.
- Westinghouse Tech Bulletin 04-22, Rev. 1 provides summary of issue. Tech Bulletin references provide additional detail.
- Also reference Letter WOG-05-163 DW-04-004 "Isolation RCP#1 Seal Leakoff" and Letter LTR-RAM-I-10-053 Revision 2 of White Paper on Westinghouse Reactor Coolant Pump Seal Behavior for Fire Scenarios.

- This scenario would apply to B&W plants with Westinghouse designed RCP seals.

5.3. WBN Unit 2 Safe Shutdown Compliance:

- 5.3.1. As discussed in Scenarios 1 & 2, RCP seal flow is always credited except for AV-005, -104, and -106 where TBC is credited for 75 minutes until RCP seal cooling can be reestablished.
- 5.3.2. The No. 1 seal leakoff valves (2-FCV-62-9, -22, -35, and -48) are normally open and fail open on loss of air or electric power. For areas where valve circuits could be fire damaged the valves can be maintained open by main control room operator actions to close the Reactor Building non-essential control air header isolation valve (2-FCV-32-111-B) and open valve (2-XSV-32-112A1, A2, B1, B2) to vent the downstream header. This will depressurize the control air header and ensure the No. 1 seal leakoff valves fail open. For AV-057 a postulated fire could have caused the seal leakoff valves for RCPs 2 and 4 to fail closed and also prevent isolation of the non-essential control air header. DCN 53421 relocates the seal leakoff valve cables out of AV-057.
- 5.3.3. Resolution: Relocate the cables for 2-FCV-62-22 and 2-FCV-62-48 out of AV-057.
- 5.3.4. WBN Unit 1 identified this condition in PER 227833.

6.0 PWROG Scenario 6: Primary Inventory Control - Failure to isolate / spurious opening of normal letdown active isolation valves

6.1. Description:

Spurious opening of (or failure to close) letdown isolation valve(s)

AND

Spurious opening of (or failure to close) letdown orifice valve(s)

6.2. Notes:

- Scenario causes loss of RCS inventory, challenging the RCS Inventory Control Function.
- In a typical Post-Fire Safe Shutdown (PFSS) Analysis, the Chemical and Volume Control System (CVCS) downstream of the letdown isolation valve(s) and upstream of the Volume Control Tank (VCT) isolation valve(s) is not evaluated, and the RCS inventory (letdown) is conservatively assumed lost and unavailable

for makeup. In reality, additional failures downstream of the letdown isolation valves would have to occur for this RCS inventory to be unavailable for makeup.

- Also note that the letdown isolation valves and letdown orifice valves are often interlocked such that the isolation valves will not open without the orifice valves being open. Letdown failure to isolate can be a single spurious operation with interlocked valves.
- Note B&W plants do not have letdown orifice valves. Scenario applicable to B&W is spurious operation of multiple letdown isolation valves.

6.3. WBN Unit 2 Safe Shutdown Compliance:

- 6.3.1. Normal Letdown is isolated by closure of series valves 2-FCV-62-69-A or 2-FCV-62-70-A from the control room. For areas where valve circuit fire damage could prevent closure of one of the valves (AV-036, -037, -037C, -038, -042(D,E,F,G), -045, -048, -056, -058, -067, -74, -115, and -117) letdown isolation is achieved by main control room actions to isolate and vent the reactor building non-essential control air header (2-FCV-32-111-B and 2-XSV-32-112A1, A2, B1, B2) causing 2-FCV-62-69-A and 2-FCV-62-70-A to fail closed.

7.0 **PWROG Scenario 7: Primary Inventory Control - Normal letdown fails to isolate and inventory is lost to the pressurizer relief tank (PRT)**

7.1. Description:

Letdown fails to isolate (see scenario #6)

AND

Spurious closure of downstream containment isolation valve.

7.2. Notes:

- Scenario causes letdown flow to Pressurizer Relief Tank (PRT) through relief valve. This letdown flow is assumed unavailable for RCS makeup.

7.3. WBN Unit 2 Safe Shutdown Compliance:

- 7.3.1. Normal Letdown is isolated by closure of series valves 2-FCV-62-69-A or 2-FCV-62-70-A from the control room. To ensure valve closure for areas where valve circuits could be fire damaged (AV-036, -037, -037C, -038, -042(D,E,F,G), -045, -048, -056, -058, -067, -074, -115, and -117) main control room operator actions will isolate and vent the reactor building non-essential control air header (2-FCV-32-111-B and 2-XSV-32-112A1, B1, A2,

B2) causing 2-FCV-62-69-A and 2-FCV-62-70-A to fail closed due to loss of control air.

8.0 PWROG Scenario 8 Primary Inventory Control - Excess letdown fails to isolate

8.1. Description:

Spurious opening of (or failure to close) of multiple in-series excess letdown isolation valves

8.2. Notes:

- Scenario causes loss of RCS inventory to the CVCS system, challenging the RCS Inventory Control Function. The RCS inventory (letdown) is conservatively assumed lost and unavailable for makeup. In reality, additional failures downstream of the excess letdown isolation valves would have to occur for this RCS inventory to be unavailable for makeup.
- This scenario often requires three spurious operations.

8.3. WBN Unit 2 Safe Shutdown Compliance:

8.3.1. The excess letdown isolation valves 2-FCV-62-55 and 2-FCV-62-56 are normally closed and fail closed on loss of air. Valve 2-FCV-62-55 is a solenoid controlled, air operated valve and fails closed on loss of power. Hand indicating controller 2-HIC-62-56A opens/closes valve 2-FCV-62-56 from the MCR. Other than in the Control Building and Annulus cables for 2-FCV-62-56 are routed in dedicated conduit with no energized circuits to prevent spurious opening due to hot shorts. Auxiliary Control System transfer switches isolate the Control building portion of the letdown isolation valves' circuits when the MCR is abandoned. For the Annulus, main control room operator actions will isolate and vent the reactor building non-essential control air header (2-FCV-32-111-B and 2-XSV-32-112A1, B1, A2, B2) causing 2-FCV-62-55 and 2-FCV-62-56 to fail closed due to loss of control air.

9.0 PWROG Scenario 9: Primary Inventory Control - Spurious valve operation results in loss of all high head RCS makeup flow paths

9.1. Description:

Spurious isolation of reactor coolant pump (RCP) seal injection flow path AND / OR
Spurious isolation of normal charging flow path AND / OR Spurious isolation of
charging injection flow path

9.2. Notes:

- Scenario isolates all high head RCS makeup flow paths, challenging the RCS Inventory Control Function.
- Each flow path contains a number of series and/or parallel valves. P&ID review is required to identify each relevant combination of valves.
- Note that isolation of all RCS makeup may also involve non-spurious failures. For example, the charging injection valves are normally closed, and a fire-induced loss of valve power (not a spurious operation) would cause these valves to fail closed. On the other hand, these valves could spuriously close after they have been opened.
- *Note CE plants generally do not have seal injection.

9.3. WBN Unit 2 Safe Shutdown Compliance:

- 9.3.1. Seal Injection Header Isolation can only be accomplished by closing FCV-062-093. FCV-062-093 is an air operated valve which is normally open and fails full open on loss of control air or electrical power. The valve has a pneumatic stop to ensure valve will always allow a minimum seal injection flow. For a fire on valve 2-FCV-62-93 (AV-104), or for a fire on panel 2-L-112 that contains the pneumatic stop for valve 2-FCV-62-93 (AV-005); TBC is available and provides RCP seal cooling for 75 minutes while an alternate injection path is established by manipulating manual valves that are not located in either AV-005 or AV-104. During this time both charging pumps are stopped from the MCR and one is re-started from the MCR within 75 minutes.
- 9.3.2. No credit is taken for charging through the BIT flow path or normal charging flow path in the FSSD analysis.

10.0 PWROG Scenario 10: Primary Inventory Control - Spurious isolation of Makeup Tank (MUT) / Volume Control Tank (VCT) outlet valve(s) concurrent with spurious isolation of suction valves to the refueling water storage tank (RWST) results in damage to charging pump(s) when they are in normal operation (aligned to the MUT / VCT)

10.1. Description:

Initial condition is charging pump running with suction from VCT.

Spurious isolation of suction from the MUT / VCT to running charging pump(s) when the charging pump(s) is aligned to the VCT

AND

Spurious isolation of (or failure to open) suction from the RWST to the running charging pump(s)

Notes:

- Scenario causes charging pump failure, challenging the RCS Inventory Control Function. This is especially challenging if the credited charging pump is running at the time of the fire.
- Can be a single spurious scenario if the RWST valves are normally closed motor operated valves (MOVs) and they are not interlocked with the VCT outlet valves.
- Note that valve interlocks may prevent scenario if they prevent VCT and RWST outlets from both being in closed position simultaneously.

10.2. WBN Unit 2 Safe Shutdown Compliance:

10.2.1. Spurious closure of either VCT isolation valve will automatically open the both RWST suction valves. This automatic interlock has been evaluated in the FSSD analysis and is operable except for AV-106.

10.2.2. For AV-106, where the RWST suction valves are located, TBC is available and provides RCP seal cooling for 75 minutes. During this time both charging pumps are stopped from MCR, a RWST suction valve is manually opened within 75 minutes, and a charging pump is re-started to resume normal seal injection. This OMA was previously approved for Unit 1.

10.2.3. This SCENARIO is only addressing spurious valve closure resulting in CCP suction isolation. Gas ingestion into CCP's is addressed in section 12.3.

11.0 PWROG Scenario 11: Primary Inventory Control - Spurious isolation of two parallel refueling water storage tank (RWST) suction valves results in failure of running charging pump(s) when the charging pump(s) is aligned to the RWST

11.1. Description:

Initial condition is charging pump running and drawing suction from the RWST. Spurious isolation of two parallel RWST outlet valves.

11.2. Notes:

- Scenario causes loss of charging pump suction, causing subsequent pump cavitation and failure. This challenges the RCS Inventory Control Function.

11.3. WBN Unit 2 Safe Shutdown Compliance:

11.3.1. See Scenario 10 for discussion.

11.3.2. For AV-106, fire on the RWST suction valves, both CCPs are available. A fire on the RWST valves (open per scenario initial condition) would not cause spurious closure.

12.0 PWROG Scenario 12: Primary Inventory Control - Spurious opening (or failure to close) of multiple series VCT outlet valves

12.1. Description:

Spurious opening (or failure to close) of multiple in-series volume control tank (VCT) outlet valves

12.2. Notes:

- Scenario causes VCT drain down and hydrogen cover gas entrainment into charging pump suction, ultimately causing charging pump failure and challenging the RCS Inventory Control Function. This is especially challenging if the credited charging pump is running at the time of the fire. Note this scenario assumes that VCT makeup has been isolated (i.e., letdown isolated).
- Note that spurious starting of idle charging pump(s) may cause failure of additional pumps. Spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal.
- Potential resolution is comparison of charging pump suction header pressure provided by the RWST versus the VCT. Specifically, the RWST may provide sufficient pressure such that the check valve to the VCT remains seated and hydrogen is not entrained into the pump suction.

12.3. WBN Unit 2 Safe Shutdown Compliance:

12.3.1. For AV-111, fire on the VCT isolation valves (2-FCV-62-132-A, -133-B), or for AV-110, fire on the VCT vent valves (2-FCV-62-1228-A and 2-FCV-62-1229-B), one each of the VCT isolation and vent valves must be closed within 70 minutes. The closure of the VCT vent valves is to ensure the line going to the charging suction is water solid. One RWST suction valve is available to be opened from the main control room to provide suction to the CCP.

12.3.2. Manual closure of one of the VCT isolation valves is credited for some analysis volumes due to potential cable damage, but AV-111 is the most time limiting. This OMA was previously approved for Unit 1.

13.0 PWROG Scenario 13: Primary Inventory Control - Failure to isolate / spurious opening of normal letdown active isolation valves concurrent with spurious isolation

of component cooling water (CCW) to the letdown heat exchanger results in failure of charging pump(s)

13.1. Description:

Letdown fails to isolate (see PWR Owners Group scenario #6)

AND

Spurious isolation of component cooling water (CCW) to the letdown heat exchanger

13.2. Notes:

- Scenario causes elevated charging pump suction temperature and subsequent pump failure. Charging pump failure challenges the RCS Inventory Control Function. This is especially challenging if the credited charging pump is running at the time of the fire.
- Starting of additional charging pumps can cause failure of additional pumps. Spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal

13.3. WBN Unit 2 Safe Shutdown Compliance:

13.3.1. Normal Letdown is isolated by closure of series valves 2-FCV-62-69-A or 2-FCV-62-70-A from the control room. To ensure valve closure for areas where valve circuits could be fire damaged (AV-036, -037, -037C, -038, -042(D,E,F,G), -045, -048, -056, -058, -067, -74, -115, and -117) main control room operator actions will isolate and vent the reactor building non-essential control air header (2-FCV-32-111-B and 2-XSV-32-112A1, A2, B1, B2) causing 2-FCV-62-69-A and 2-FCV-62-70-A to fail closed due to loss of control air.

13.3.2. In addition, 2-TCV-70-192 (CCS discharge from the non-regenerative letdown heat exchanger) is included in the FSSD analysis to ensure CCS flow to the letdown heat exchanger and prevent CCS suction heatup. For AV-038 2-TCV-70-192 is not available to provide cooling to the heat exchanger, valve 2-LCV-62-132-A, VCT outlet valve, can be closed promptly from the MCR to isolate VCT flow. Prompt closure of the VCT outlet valve will auto open RWST discharge valve to ensure supply to and avoid CCP suction heatup.

13a.0 PWROG Scenario 13a: Charging Pump Runout

Note: PWROG Rev. 1 (6/5/09) Scenario No. 14 and 52 (partial)

13a.1 Description:

Scenario causes charging pump runout and failure. Pump(s) must be running when RCS is at a depressurized condition. Unintentional RCS depressurization could occur due to spurious opening of pressurizer power operated relief valves (PORVs), for example. Charging pump(s) can spuriously start if they are not already running. Scenario may also require failure of other components (e.g., charging flow control valve, etc.).

13a.2 Notes:

- Scenario causes charging pump runout and failure. Pump(s) must be running when RCS is at a depressurized condition. Unintentional RCS depressurization could occur due to spurious opening of pressurizer PORV(s), for example. Charging pump(s) can spuriously start if they are not already running. Scenario may also require failure of other components (e.g., charging flow control valve, etc.).

13a.3 WBN Unit 2 Safe Shutdown Compliance:

13a.3.1 This scenario would cause CCP run out when the RCS is depressurized concurrent with fire induced failure of charging path flow control valves. For WBN Unit 2 CCP run out cannot occur because the FSSD analysis shows that the RCS will remain pressurized for a fire in any analysis volume. The normal charging path can be isolated by MCR operator actions.

14.0 PWROG Scenario 14: Primary Inventory Control - Spurious opening of Containment sump motor operated isolation valves (including residual heat removal (RHR) and containment spray (CS) suction valves) results in gravity draining of refueling water (borated water) storage tank (RWST / BWST) inventory to the Containment sump

Note: PWROG Rev. 1 (6/5/09) Scenario No. 15

14.1. Description: Spurious opening of multiple in-series containment sump valves

14.2. Notes:

- Scenario causes a pumped RWST draindown via the containment spray ring. The RWST inventory ultimately settles to the containment sump. Since typical PFSS analyses do not credit alignment of the containment sump, the RWST inventory is assumed unavailable for RCS makeup, challenging the RCS Inventory Control Function.
- Note that either the RHR pumps or the containment spray pumps could cause this RWST pumped diversion to the spray ring.
- Note that the spurious pump starting can occur for several reasons, including fire damage to control circuitry or inadvertent ESFAS signal.

14.3. WBN Unit 2 Safe Shutdown Compliance:

14.3.1. CS/RHR containment sump valves have been evaluated with the in-series CS/RHR Pump Suction valves to ensure RWST drain down does not occur. The CS/RHR containment sump valves 2-FCV-72-44-A, -45-B and 2-FCV-63-72-A, -73-B are normally closed. Their control circuits have been modified such that fire initiated spurious opening is only a concern in the AV where the MCC is located. The CS/RHR containment sump valves and the CS/RHR pump suction valves are powered from different MCCs to ensure availability of at least one valve. For AV-072 and AV-073, 2-FCV-63-73-B and 2-FCV-72-45-B could spuriously open, but 2-FCV-74-21-B and 2-FCV-72-21-B closure isolate the sump via MCR operator action. For AV-074, 2-FCV-63-72-A and 2-FCV-72-44-A could spuriously open, but 2-FCV-74-3-A and 2-FCV-72-22-A are available to isolate the sump via MCR operator action.

15.0 PWROG Scenario 15: Primary Inventory Control - Spurious start of containment spray pump(s) concurrent with spurious opening of associated pump discharge valve results in transferring refueling water (borated water) storage tank (RWST / BWST) inventory to the Containment sump

Note: PWROG Rev. 1 (6/5/09) Scenario No. 16

15.1. Description:

Spurious starting of containment spray pump(s)

AND

Spurious opening of the associate pump discharge valve(s) AND / OR containment spray header valve(s)

15.2. Notes:

- Scenario causes a pumped RWST draindown via the containment spray ring. The RWST inventory ultimately settles to the containment sump. Since typical PFSS analyses do not credit alignment of the containment sump, the RWST inventory is assumed unavailable for RCS makeup, challenging the RCS Inventory Control Function.
- Note that either the RHR pumps or the containment spray pumps could cause this RWST pumped diversion to the spray ring.
- Note that the spurious pump starting can occur for several reasons, including fire damage to control circuitry or inadvertent ESFAS signal.

15.3. WBN Unit 2 Safe Shutdown Compliance:

15.3.1. For all AVs except AV-042 and AV-057, either the containment spray pump trip circuits are available and the pumps can be tripped from the control room or the containment spray header isolation valves are closed which will prevent RWST drain-down via containment spray ring. For a fire inside the applicable pumps board room A (AV-042) and B (AV-057), the board supplies are tripped at their upstream boards feeder breakers (normal and auxiliary) within 10 minutes and the emergency diesel generator (EDG) for that board is shutdown. The diesel kill switches on both 0-M-26 and 0-L-4 were cabled thru and selected from the associated board rooms and as such could not assure functionality. Modification DCN 58383 added a switch to L-11A and/or L-11B that will select between main control room and auxiliary control room and the circuit is powered from a 125V Vital Battery Board feed whose cable is not be routed in the board room. Associated cables to the

MCR and DG building have been routed outside the board room. This modification has been done for each of the four EDGs.

15.3.2. WBN Unit 1 identified this condition in PER 227839.

15a.0 SCENARIO 15a : Primary Inventory Control - Spurious start of residual heat removal (RHR / shutdown cooling (SDC) / low pressure safety injection (LPSI) pump(s) concurrent with spurious opening of containment spray header valve(s) results in transferring refueling water (borated water) storage tank (RWST / BWST) inventory to the Containment sump. Note: PWOOG Rev.1 (6/5/09) Scenario No. 16.

15a.1 Description:

Spurious starting of residual heat removal (RHR / shutdown cooling (SDC) / low pressure safety injection (LPSI) pump(s)

AND

Spurious opening of the associate pump discharge valve(s)

AND / OR

Containment spray header valve(s)

15a.2 Notes:

- Scenario causes a pumped RWST draindown via the containment spray ring. The RWST inventory ultimately settles to the containment sump. Since typical PFSS analyses do not credit alignment of the containment sump, the RWST inventory is assumed unavailable for RCS makeup, challenging the RCS Inventory Control Function.
- Note that either the RHR pumps or the containment spray pumps could cause this RWST pumped diversion to the spray ring.
- Note that the spurious pump starting can occur for several reasons, including fire damage to control circuitry or inadvertent ESFAS signal.

15a.3 WBN Unit 2 Safe Shutdown Compliance:

15a.3.1 For all AVs except AV-042 and AV-057, either the RHR pumps are available and can be tripped from the MCR or the RHR spray header isolation valves are closed which will prevent RWST drain down via the RHR spray ring. For a fire inside pump board room A (AV-042) or B (AV-057), the board's supplies are tripped at their upstream board's

feeder breakers (normal and auxiliary) within 10 minutes and the emergency diesel generator is shutdown. The diesel kill switches on both 0-M-26 and 0-L-4 were cabled thru and selected from the associated board rooms and as such could not assure functionality. Modification DCN 58383 added a switch to L-11A and/or L-11B that selects between main control room and auxiliary control room. The circuit is powered from a 125V Vital Battery Board feed whose cable is not routed in the board room. Associated cables to the MCR and DG building are routed outside the board room. This modification has been done for each of the four EDGs.

16.0 PWROG Scenario 16: Primary Inventory Control - Spurious opening of shutdown cooling suction line isolation valves (interfacing systems LOCA)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 17.

16.1. Description:

Spurious opening of multiple in-series RHR suction valves from the RCS

16.2. Notes:

- Scenario causes interfacing system LOCA, challenging the RCS Inventory Control Function.
- The valve operators are typically maintained de-energized during normal plant operation. If so, spurious operation of each valve would generally require three proper phase hot shorts.
- Note B&W plants have three series valves.
- From a Fire PRA perspective, this interfacing system LOCA scenario generally screens out if at least two series valves are normally de-energized.
- From a PFSS analysis perspective, this is classified as a high/low pressure interface and maintaining the valves de-energized generally complies with fire protection regulatory requirements.

16.3. WBN Unit 2 Safe Shutdown Compliance:

16.3.1. RHR suction valves (interface with RCS) 2-FCV-74-1-A and 2-FCV-74-9-B are in-parallel and in-series with valves 2-FCV-74-8-A and 2-FCV-74-2-B. These valves are administratively locked in the closed position with the power removed during normal operation. The power will not be restored until the valves are required for RHR. The power cable for valves 2-FCV-74-1-A and 2-FCV-74-9-B are routed in separate dedicated conduit with no other cables

such that spurious operation due to hot shorts is not possible. In the Annulus 2-FCV-74-9-B is routed from dedicated conduit to tray before entering penetration 9 (both tray and penetration are wrapped with RES); therefore, no hot shorts are possible.

17.0 PWROG Scenario 17: Primary Inventory Control - Spurious operation of pressurizer PORV(s) / PORV block valve(s) given that the associated PORV block valve is open

Note: PWROG Rev. 1 (6/5/09) Scenario No. 18

17.1. Description:

Spurious opening of multiple (two or three) pressurizer PORVs with corresponding block valves in their normal, open position

17.2. Notes:

- Scenario causes loss of RCS inventory through the pressurizer PORVs, challenging the RCS Inventory Control Function. Scenario also causes pressurizer depressurization, challenging the RCS Pressure Control Function.
- Note some CE plants do not have any PORVs. Scenario would not be applicable to these plants.
- Note B&W plants only have one PORV. Scenario would not be applicable to these plants.

17.3. WBN Unit 2 Safe Shutdown Compliance:

17.3.1. PORVs 2-PCV-68-334-B and 2-PCV-68-340A-A are in series with Block valves 2-FCV-68-332-B and 2-FCV-68-333-A respectively. Cables for PORVs 2-PCV-68-334-B and 2-PCV-68-340A-A are routed in dedicated conduit, thus spurious operation is not possible except at the containment penetrations. The PORVs and their associated Block valves are routed through primary containment penetrations which are separated with auto detection suppression such that a fire on one penetration will not spuriously open the PORV and prevent closure of the associated Block valve. In AV-117 (Unit 2 annulus), a MCR operator action can close the PORV Block valve to prevent pressurizer from flashing and depressurizing the RCS.

18.0 PWROG Scenario 18: Primary Inventory Control - Spurious operation of pressurizer PORV(s) / PORV block valve(s) given that the associated PORV block valve is closed.

Note: PWROG Rev. 1 (6/5/09) Scenario No. 19

18.1. Description:

Spurious opening of pressurizer PORV(s)

AND

Spurious opening of pressurizer PORV block valve(s) after the block valve(s) has been closed

18.2. Notes:

- Scenario causes loss of RCS inventory through the pressurizer PORV(s), challenging the RCS Inventory Control Function. Scenario also causes pressurizer depressurization, challenging the RCS Pressure Control Function.
- In this scenario, operators may have closed the block valve either to 1) mitigate a fire-induced PORV LOCA or as a 2) pre-emptive action to prevent PORV LOCA from occurring. The first spurious operation is the PORV and the second is the block valve that has been closed.
- Note that the initial PORV LOCA, caused by spurious operation of PORV alone, is a single spurious since block valve is normally open.

18.3. WBN Unit 2 Safe Shutdown Compliance:

18.3.1. See Scenario 17.3.1 discussion.

19.0 PWROG Scenario 19: Primary Inventory Control - Spurious operation of reactor vessel head vent valves

Note: PWROG Rev. 1 (6/5/09) Scenario No. 20

19.1. Description:

Spurious opening of multiple reactor head vent valves

Note: PWROG Rev. 1 (6/5/09) Scenario No. 20

19.2. Notes:

- Scenario causes loss of RCS inventory through open reactor head vent flowpath(s), challenging the RCS Inventory Control Function.
- Spurious operation of one head vent flowpath generally requires two spurious operations. Likewise, spurious operation of two head vent flowpaths generally requires four spurious operations.
- Note B&W plants only have one head vent flowpath. Hot leg vents should be also be evaluated for B&W plants.
- From a PRA perspective, note that this scenario may screen out due to the low RCS inventory loss rate through these flowpaths. The scenario may also screen if the head vent valves are normally de-energized.
- From a PFSS analysis perspective, a head vent LOCA may be acceptable if the available makeup mass flow rate exceeds the LOCA mass flow rate.

19.3. WBN Unit 2 Safe Shutdown Compliance:

19.3.1. Reactor Upper Head Vent valves 2-FSV-68-394-A and 2-FSV-68-395-B are in parallel and in series with in-parallel valves 2-FSV-68-396-B and 2-FSV-68-397-A. These valves are all administratively closed (Modes 1 through 4) with control circuits disabled (switch 2-SW-68-394, -395 are in "off" position). In addition, the power cables for 2-FSV-68-396, -397 are routed in dedicated conduits with no energized circuits and the cables are separated by 20 feet and protected at penetrations with radiant energy shields. This will preclude these valves spuriously opening and causing loss of RCS inventory through open reactor head vent flow paths.

20.0 PWROG Scenario 20: Primary Inventory Control - Spurious operation of high head charging pumps challenges pressurizer safety valves

Note: PWROG Rev. 1 (6/5/09) Scenario No. 21

20.1. Description:

Spurious starting of additional high head charging pump(s)

AND

Spurious opening of additional RCS makeup flow paths (i.e., charging injection)

20.2. Notes:

- Scenario causes increasing RCS inventory, leading to a water solid pressurizer and PORV or safety valve opening. This scenario challenges both RCS Inventory and RCS Pressure Control Functions.
- Similar to inadvertent SI.
- Note that the spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal.
- Also note that other failures (spurious or non-spurious) in the makeup control system could contribute to this scenario.

20.2.1. See Scenario 2 for BIT isolation.

20.3. WBN Unit 2 Safe Shutdown Compliance:

- 20.3.1. Either CCP 2-MTR-62-104-B or 2-MTR-62-108-A is credited in all fire areas for makeup and seal injection (cooling). The normal charging path and BIT injection path are closed to prevent pressurizer overfill. Spurious start of the non-credited charging pump is not explicitly modeled in the FSSD analysis. However, operating both pumps would not have a detrimental effect on seal injection flow since this would result in a slight increase in both flow and pressure.
- 20.3.2. The normal charging path can be isolated by closing either 2-FCV-62-90-A or 2-FCV-62-91-B. At least one of these valves is available in all AVs except AV-099 where both valves are located. For AV-099, 2-FCV-62-89 (in-series with the injection header isolation valves but located in a different fire zone) will be closed from the MCR to isolate the Injection Header within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12).
- 20.3.3. The only fires that could cause the BIT outlet isolation valves 2-FCV-63-25-A or 2-FCV-63-26-B to open is a fire in their respective board rooms (AV-072, -073, -074). The BIT path will be isolated by closing BIT inlet valves 2-FCV-63-39-A and 2-FCV-63-40-B from their respective board rooms. These valves are powered by the respective Train A and Train B 480 VAC Control & Auxiliary Building Vent Boards located in AV-054 and AV-057. The allowable time requirement for these actions is shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref.3.12).
- 20.3.4. In summary, two charging pumps running with only the seal injection flow path available would result in a slight increase in both flows and pressure; but would not challenge pump minimum flow.

21.0 PWROG Scenario 21: Primary Inventory Control - Spurious opening of active valves in primary sample lines

Note: PWROG Rev. 1 (6/5/09) Scenario No. 22

21.1. Description:

Spurious opening of RCS sample valve(s) (i.e., hot leg, pressurizer liquid space, pressurizer steam space, etc.)

AND

Spurious opening of inside containment isolation valve

AND

Spurious opening of outside containment isolation valve

AND

Spurious opening of downstream sample valve(s)

21.2. Notes:

- Scenario causes loss of reactor coolant through the primary sample system, challenging the RCS Inventory Control Function.
- From a PRA perspective, scenario will generally screen due to requirement of 3+ spurious operations and the small magnitude of the leak. Also note that existing thermal hydraulic evaluation of loss of coolant through head vents may bound loss of coolant via the primary sample system.
- Scenario can be screened from consideration if a manual isolation valve prevents the flow. Scenario may also screen if it is within a closed loop capable of withstanding expected pressure.

21.3. WBN Unit 2 Safe Shutdown Compliance:

21.3.1. The RCS Hot Leg Loops 1 and 3, Pressurizer Liquid, and Pressurizer Gas primary sample isolation valves are not included in FSSD analysis. Each sample line consists of three in-series normally closed valves (fail close on loss of power or control air) and a manual isolation valve that could be closed in the Hot Sample room. The sample inlet valves 2-SMV-43-1153 (RCS hot leg sample), 2-SMV-43-1167 (Pressurizer liquid sample) and 2-SMV-43-1180 (Pressurizer gas sample) are closed during normal operation and are only open when taking a sample (Ref. 3.5 through 3.8). The sample lines are closed loop

design with the liquid samples return to the volume control tank and the gas sample to the gas analyzer vent header except when a local sample is taken in the hot sample room. Therefore, a failure would require spurious operation of three in-series normally closed valves and a break in the sample line. In addition, a manual isolation valve for each sample line can be closed in Hot Sample Room. Also, the sample lines are 3/8 inch OD, thus the magnitude of the leak is small and need not be considered.

22.0 PWROG Scenario 22: Decay Heat Removal - Spurious opening of atmospheric relief valve(s) upstream of the main steam isolation valves (MSIVs)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 23

22.1. Description:

Spurious opening of atmospheric relief valve(s) (also sometimes called atmospheric dump valves) upstream of the main steam isolation valves (MSIVs)

22.2. Notes:

- Scenario causes RCS over-cooling. Also, the overcooling can cause RCS shrinkage, causing low pressurizer level, and challenging the RCS Inventory Control Function.
- Note that spurious operation of each individual steam dump valve may require multiple hot shorts.
- Note some B&W designs do not have MSIVs.

22.3. WBN Unit 2 Safe Shutdown Compliance:

22.3.1. The FSSD Analysis includes the ability to close all 4 steam generator power operated relief valves (PORVs) in the event of spurious opening. A Unit 2 design change has been incorporated to add a third "C" solenoid of opposite train from the existing "A & B" solenoid valves for each PORV. It is located in a separate fire zone and its cables are routed separately from the "A & B" solenoid valves for each PORV. For all AVs except the Control Building, a MCR operator action will close the PORV's via either the "B" or "C" solenoid valve. For Control Building fires resulting in MCR abandonment the PORV's are closed by pressure indicating controllers in the auxiliary control system panel.

23.0 PWROG Scenario 23: Decay Heat Removal - Failure to close or spurious opening of main steam isolation valves with concurrent failure of downstream steam relief valve(s) to close

Note: PWROG Rev. 1 (6/5/09) Scenario No. 24

23.1. Description:

Main steam isolation valve(s) (MSIV(s)) spuriously open OR fail to close

AND

Valve(s) for downstream steam load(s) (e.g., condenser steam dumps, turbine inlet valves, some atmospheric relief / dump valves, etc.) spuriously open OR fail to close

23.2. Notes:

- Scenario causes RCS over-cooling. Also, the overcooling can cause RCS shrinkage, causing low pressurizer level, and challenging the RCS Inventory Control Function.
- Note that spurious opening, or failure to close, each individual MSIV may require multiple hot shorts. In addition, re-opening an MSIV once it has been closed may be very difficult due to differential pressure across valve.
- Note some B&W designs do not have MSIVs.

23.3. WBN Unit 2 Safe Shutdown Compliance:

23.3.1. The MSIVs can be closed from the main control room except for AV-032, -037, 037C, -038, -112, -114S, -115. As an alternate the steam load valves (MS Cool Down, MS Dump, Main FW Pump Turb HP Stop & Control, Main Turb Stop & Control, MSR Control & Low Power Bypass Control) (TBISOL) are available and can be closed by MCR operator action for these AV's. For Control Building fires resulting in MCR abandonment the MSIVs are closed before leaving the MCR and a confirmatory action is performed in the auxiliary control room.

24.0 PWROG Scenario 24: Decay Heat Removal - Failure to close or spurious opening of main steam isolation Bypass valves with concurrent failure of downstream steam relief valve(s) to close

Note: PWROG Rev. 1 (6/5/09) Scenario No. 25

24.1. Description:

Main steam isolation valve(s) (MSIV(s)) bypass valves spuriously open OR fail to close

AND

Valve(s) for downstream steam load(s) (e.g., condenser steam dumps, turbine inlet valves, some atmospheric relief / dump valves, etc.) spuriously open OR fail to close

24.2. Notes:

- Scenario may cause RCS over-cooling. Also, the overcooling can cause RCS shrinkage, causing low pressurizer level, and challenging the RCS Inventory Control Function
- Note, depending on size and number of bypass lines failing open, scenario may not cause overcooling.
- Note some B&W designs do not have MSIVs.

24.3. WBN Unit 2 Safe Shutdown Compliance:

24.3.1. Electric power is removed from the steam line warming valves (main steam isolation valve bypass valves) 2-FCV-1-147-A, -148-B, -149-A, -150-B by administrative control of local control switches (2-HS-1-147B, -148B, -149B, -150B) during normal power operation to prevent spurious opening due to Appendix R fire. In addition, as an alternate the steam load valves (MS Cool Down, MS Dump, Main FW Pump Turbine HP Stop & Control, Main Turbine Stop & Control, MSR Control & Low Power Bypass Control) (TBISOL) are available for all auxiliary and reactor building fires and can be closed by MCR operator action.

25.0 PWROG Scenario 25: Decay Heat Removal - Spurious operation of main steam header drain valve(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 26

25.1. Description:

Spurious operation of main steam header drain valve(s)

25.2. Notes:

- Scenario may cause RCS over-cooling. Also, the overcooling can cause RCS shrinkage, causing low pressurizer level, and challenging the RCS Inventory Control Function.
- Thermal hydraulic analysis may show that the drain valve flowpath is not large enough to be a problem.

25.3. WBN Unit 2 Safe Shutdown Compliance:

25.3.1. Not Applicable. WBN has no solenoid valves associated with the Main Steam Drains (in Aux. Bldg.), these are manual valves that are closed, and the DRVs and ISVs are not Appendix R equipment.

26.0 PWROG Scenario 26: Decay Heat Removal - Spurious operation / failure to operate of active steam supply valves fails the turbine driven auxiliary (emergency) feedwater pump (AFW / EFW)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 27

26.1. Description:

Spurious isolation of redundant steam supply valves to turbine driven AFW pump.

26.2. Notes:

- Scenario causes turbine driven AFW pump loss of function, which challenges the Decay Heat Removal Function.

26.3. WBN Unit 2 Safe Shutdown Compliance:

26.3.1. The turbine driven auxiliary feedwater pump (TDAFWP) is credited in AV-026, and AV-038. The steam supply valves are operational for AV-026 and AV-038. For AV-026, 2-FCV-1-51-S requires local operator action within 13 minutes. For AV-038 cables have been relocated out of AV-038 to prevent spurious isolation of the steam supply to the TDAFWP.

26a PWROG Scenario 26a: Decay Heat Removal - Spurious operation / failure to isolate steam to non-credited TDAFW pump

Note: PWROG Rev. 1 (6/5/09) Scenario No. 26 (partial)

26a.1 Description:

Failure to isolate steam to non-credited TDAFW pump.

26a.2 Notes:

- Scenario may cause RCS over-cooling. Also, the overcooling can cause RCS shrinkage, causing low pressurizer level, and challenging the RCS Inventory Control Function.
- Thermal hydraulic analysis may show that the drain valve flowpath is not large enough to be a problem..

26a.3 WBN Unit 2 Safe Shutdown Compliance:

- 26a.3.1 The motor driven auxiliary feedwater pumps (MDAFWPs) are credited in all AV's except AV-026 and AV-038. For all other analysis volumes, at least one of the TDAFWP steam supply valves 2-FCV-1-17-A, 2-FCV-1-18-B, or 2-FCV-1-52 can be closed from the MCR to isolate steam to the non-credited TDAFWP. Although the TDAFWP can be driven by steam from either SG1 or SG4 the FSSD analysis only credits SG1. Spurious opening of 2-FCV-1-16-B (SG4) is not of concern because the steam supply valves listed above are downstream of the SG selection valves (2-FCV-1-15-A & 2-FCV-1-16-B).
- 26a.3.2 The baseline FSSD Analysis did not specifically evaluate shutting the non-credited TDAFWP steam supply valves; however, as described above that capability does exist and is included in the FSSD analysis. This problem is identified in WBN Unit 1 PER 227804.

27.0 PWROG Scenario 27: Decay Heat Removal - Spurious closure of auxiliary (emergency) feedwater pump (AFW / EFW) active discharge valve(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 28

27.1. Description:

Spurious closure of multiple valves in AFW pump discharge flow path(s)

27.2. Notes:

- Scenario isolates AFW flow to the steam generator(s), challenging the Decay Heat Removal Function.
- AFW flow isolation can occur due to several combinations of valve closures in the pump discharge and/or discharge cross-connect flow paths. Review P&IDs to identify specific valves.

27.3. WBN Unit 2 Safe Shutdown Compliance:

- 27.3.1. WBN auxiliary feedwater (AFW) system consists of 1 TDAFWP feeding all four SGs and 2 MDAFWPs feeding 2 SGs each. The TDAFWP is credited in AV-026 and AV-038. The MDAFWPs are credited for the remaining AVs. Local operator manual actions, except in AV-073, previously credited to operate the steam generator level control valves have been eliminated by EDCR 58210 which provided a nitrogen supply as a backup to the control air for the level control valves and the MDAFW pump back pressure control valves. These valves are now operable from the main control room. There

are no other valves between the AFW pumps and the credited steam generators. For AV-073, the MDAFWP 2A-A PCV has the backup nitrogen supply; the SG #1 and #2 LCVs must be manually controlled within the allowable time requirement shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref.3.12).

27.3.2. WBN Unit 1 identified the control air problem in PER 226948. DCN 58387 installed a nitrogen backup to the control air for the unit 1 steam generator level control valves just like unit 2.

27.3.3. Compliance strategy for both units is the same.

28.0 PWROG Scenario 28: Decay Heat Removal - Spurious operation / failure to operate of active steam supply valves fails the turbine driven auxiliary (emergency) feedwater pump (AFW / EFW) concurrent with spurious isolation of the AFW / EFW discharge flow path

Note: PWROG Rev. 1 (6/5/09) Scenario No. 29

28.1. Description:

Spurious closure of steam supply valve(s) to turbine driven AFW / EFW pump

AND

Spurious isolation of AFW / EFW pump discharge flow path(s)

28.2. Notes:

- Scenario isolates AFW flow to the steam generator(s) and causes turbine driven AFW pump loss of function, challenging the Decay Heat Removal Function.

28.3. WBN Unit 2 Safe Shutdown Compliance:

28.3.1. As discussed in scenarios 26 and 26a the TDAFW pump and associated FCVs and level control valves (LCVs) are credited in AV-026 and AV-038. For all AVs except AV-026 and AV-038, the MDAFW pumps are available.

28.3.2. The TDAFWP and MDAFWPs LCV's are discussed in scenario 27.

28.3.3. WBN Unit 1 identified the loss of control air problem in PER 226948.

28.3.4. Unit 1 and Unit 2 compliance strategies are the same.

29.0 PWROG Scenario 29: Decay Heat Removal - Auxiliary (emergency) feedwater (AFW / EFW) flow diversion to non-credited steam generator(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 30

29.1. Description:

Combination of spurious valve operations in the AFW / EFW pump discharge flowpaths to the steam generators

29.2. Notes:

- Scenario causes AFW flow diversion to a non-credited steam generator(s), challenging the Decay Heat Removal Function. A steam generator may be "non-credited" by the FSSD analysis for a number of reasons including unavailability of instrumentation, failure of steam dumps on that loop, etc.
- Scenario may be a single spurious event in some cases.
- Also note that plants with unit-crossties may be subject to flow diversion to steam generators for another unit.

29.3. WBN Unit 2 Safe Shutdown Compliance:

29.3.1. The FSSD analysis ensured that two credited SGs had AFW flow either from the MDAFWP or TDAFWP.

29.3.2. As discussed in scenarios 26 and 26a, the TDAFWP is credited in AV-026 and AV-038. The steam supply valves are operational for these AVs. For AV-026, 2-FCV-1-51-S requires local operator action within 13 minutes. In addition, the MDAFWPs are stopped from the MCR, thus preventing flow diversion to the non-credited SGs. For AV-026 the pumps are stopped from the MCR. For AV-038 MDAFW pump A is stopped from the MCR and MDAFW pump B is stopped via the auxiliary control transfer and control switches on 6.9kv Shutdown board 2B (2-BD-211-B-B).

29.3.3. The MDAFWPs are credited with the remaining AVs. The non-credited MDAFWP can be stopped either in the MCR or in the associated shutdown board room. The non-credited TDAFWP can be stopped from the MCR by closing one of the TDAFWP steam supply valves 2-FCV-1-17-A, 2-FCV-1-18-B, or 2-FCV-1-52, thus preventing flow diversion to the non-credited SGs.

29.3.4. Pressure control valves (PCVs) 2-PCV-3-122 and 2-PCV-3-132 are modeled in the FSSD analysis and are designed to prevent MDAFW pump runout. Unit 2 EDCR 58210 and Unit 1 DCN 58387 added a nitrogen supply to

provide motive power to the MDAFW pump pressure control valves upon loss of control air. The valves (PCVs) can be controlled from the MCR.

30.0 PWROG Scenario 30: Decay Heat Removal - Auxiliary (emergency) feedwater (AFW / EFW) pump failure due to runout following spurious full opening of multiple AFW / EFW flow control and / or isolation valves

Note: PWROG Rev. 1 (6/5/09) Scenario No. 31

30.1. Description:

Spurious full opening of multiple EFW / AFW flow control and / or isolation valves

30.2. Notes:

- Scenario may cause AFW pump runout and failure, challenging the Decay Heat Removal Function.
- Note that this scenario may occur even without spurious operations if the fail-safe position of relevant valves is full open.

30.3. WBN Unit 2 Safe Shutdown Compliance:

30.3.1. The TDAFWP and MDAFWP mini-flow lines contain breakdown orifices.

30.3.2. For the TDAFWP, the credited SGs LCVs are modulated from the MCR as discussed in 27.3.1 within 13 minutes. Speed control of the TDAFWP is included as part of the FSSD analysis. Local control of the TDAFWP (credited for AV-026.) prevents turbine overspeed.

30.3.3. For the MDAFWPs, the credited pump discharge PCV and SG LCVs are modulated from the MCR, except AV-073, as discussed in section 27.3.1 within 13 minutes. MDAFWP A is credited in AV-037 and AV-037C and its associated discharge PCV could fail open due to fire damage to the differential pressure transmitter cable. The PCV can still be modulated from the MCR via 2-PDIC-3-122A (manual mode) with the operator using the AFW flow indicators for SG 1 and 2.

31.0 PWROG Scenario 31: Decay Heat Removal - Spurious opening of condenser hotwell makeup control valve results in gravity draining condensate storage tank (CST) inventory to the hotwell

Note: PWROG Rev. 1 (6/5/09) Scenario No. 32

31.1. Description:

Spurious opening of valves between the Condensate Storage Tank (CST) and condenser hotwell.

31.2. Notes:

- Scenario causes inadvertent draining of CST inventory to the condenser. This CST inventory becomes unavailable as an AFW source, challenging the Decay Heat Removal Function.
- In some plants, this requires spurious operation of multiple valves. In other plants, this only requires spurious operation of one valve. And in other plants, this may occur due to loss of instrument air or a non-spurious valve failure (e.g., loss of air / power).
- Other CST draindown paths may exist. P&ID review required.
- Some plants may have a standpipe that prevents the CST from draining below a certain level.

31.3. WBN Unit 2 Safe Shutdown Compliance:

31.3.1. Valve 2-LCV-2-9 is not part of the FSSD analysis. The Hotwell makeup cannot lower the CST level below the minimum volume required for supply to AFW (standpipe protected volume). The valve is normally shut and fails closed on loss of air and power. Spurious ERCW valve operations could lead to inadvertent CST draindown from the CST to the ERCW header and ultimately to the cooling tower basin. AFW pump suction can be aligned to the ERCW discharge header from the MCR within 125 minutes for all analysis volumes except AV-026, AV-037, AV-037C, AV-038, AV-069, and AV-072 which credit local operator manual actions for pump suction alignment. This OMA was previously approved for Unit 1.

32.0 PWROG Scenario 32: Decay Heat Removal - Spurious pump(s) operation / failure to trip pump(s) results in steam generator(s) overfill / overcooling

Note: PWROG Rev. 1 (6/5/09) Scenario No. 33

32.1. Description:

Scenario can occur due to various combinations of spurious AFW / EFW pump starts, spurious opening (or failure to close) of valves in AFW / EFW pump discharge flowpaths and spurious opening of main feedwater (MFW) isolation valves with MFW pump(s) running.

32.2. Notes:

- Scenario causes RCS over-cooling and/or steam generator overfill, both challenging the Decay Heat Removal Function. RCS over-cooling can cause RCS shrinkage and low pressurizer level. Steam generator overfill can affect operability of turbine-driven AFW pump.
- Note that the spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal.

32.3. WBN Unit 2 Safe Shutdown Compliance:

- 32.3.1. As discussed in scenario 29, the TDAFWP is credited in AV-026 and AV-038. The steam supply valves are operational for these AVs. For AV-026, 2-FCV-1-51-S requires local operator action within 13 minutes. In addition, the MDAFWPs can be stopped, thus preventing steam generator overfill. For AV-038, MDAFW pump A is stopped from the MCR and MDAFW pump B is stopped from 6.9kv shutdown board B (2-BD-211-B-B) via the auxiliary control system (ACS) transfer and control switches.
- 32.3.2. The MDAFWPs are credited with the remaining AVs. The non-credited MDAFWP can be stopped either from the MCR or the associated 6.9KV shutdown board room. Steam flow to the non-credited TDAFWP can be isolated from the MCR by closing either of the TDAFWP steam supply valves 2-FCV-1-17-A, or 2-FCV-1-18-B, or 2-FCV-1-52 within 13 minutes.
- 32.3.3. As noted above, the non-credited MDAFWP or TDAFWP can be stopped within 13 minutes.
- 32.3.4. The MFW isolation and control valves for both the main and bypass lines are included in FSSD analysis. For Control Building fires resulting in MCR abandonment, MFW main line isolation is accomplished by closing the Main FW isolation valves before abandoning the MCR. The Bypass isolation and Main and Bypass Reg. solenoid valve circuits are de-energized by operator action in Vital Battery Board rooms III and IV. The Bypass isolation and Main and Bypass regulating valve control circuits have been modified to ensure main and bypass line isolation for all postulated fire locations.
- 32.3.5. WBN Unit 1 identified this condition in PER 227804.

33.0 PWROG Scenario 33: Decay Heat Removal - Spurious operation of steam generator blowdown valves with subsequent loss of steam generator(s) inventory

Note: PWROG Rev. 1 (6/5/09) Scenario No. 34

33.1. Description:

Spurious opening of, or failure to close, multiple series steam generator blowdown valves

33.2. Notes:

- Scenario causes drain down of steam generator inventory through the blowdown system, challenging the Decay Heat Removal Function.
- The number of valves required to spuriously open varies by plant design.
- B&W plants generally do not have a steam generator blowdown system. However, some B&W plants with replacement steam generators may have this system.
- Potential Resolution: Scenario may screen if available AFW mass flow rate exceeds steam generator inventory mass loss rate through blowdown.

33.3. WBN Unit 2 Safe Shutdown Compliance:

- 33.3.1. Each pair of Steam Generator Blowdown Containment Isolation Valves was evaluated in the FSSD analysis to ensure closure of at least one SGBD valve in each flow path. Prompt MCR operator actions will close the SGBD CIVs. For Control Building fires resulting in MCR abandonment, the valve controls will be transferred to and closed from the Auxiliary Control System stations.

34.0 PWROG Scenario 34: Decay Heat Removal - Spurious opening of active valves in secondary sampling system(s) causes loss of steam generator(s) inventory

Note: PWROG Rev. 1 (6/5/09) Scenario No. 35

34.1. Description:

Spurious opening of steam generator sample valve(s) inside containment

AND

Spurious opening of isolation valve(s) outside containment

AND

Spurious opening of downstream sample valve(s)

34.2. Notes:

- Scenario causes drain down of steam generator inventory through the sample system, challenging the Decay Heat Removal Function.
- From a PRA perspective, scenario will generally screen due to requirement of 3+ spurious operations and the small magnitude of leak.
- Scenario can be screened from consideration if a manual isolation valve prevents the flow or if the system is closed loop capable of withstanding expected pressure.
- Scenario may also screen if available AFW mass flow rate exceeds steam generator inventory mass loss rate through the sample system.
- B&W plants sample directly from the steam generator (i.e., not through blowdown system).

34.3. WBN Unit 2 Safe Shutdown Compliance:

34.3.1. The Steam Generator Drum and Blowdown Sampling Isolation Valves are required to be closed to complete Secondary Side Isolation to ensure that the AFW system can maintain steam generator level and remove decay heat. However, these valves were removed from the FSSD analysis since the steam generator blowdown sample flow (maximum of 0-6 gpm) is considered negligible and would not compromise the auxiliary feed water makeup flow.

35.0 PWROG Scenario 35: Primary Pressure Control - Spurious operation of active normal pressurizer spray valves concurrent with inability to trip operating reactor coolant pump(s) (RCPs) from the Control Room

Note: PWROG Rev. 1 (6/5/09) Scenario No. 36

35.1. Description:

Spurious opening of normal pressurizer spray valve(s)

AND

Inability to trip / failure to trip, or spurious operation of, RCP(s)

AND

Inoperability of pressurizer heater(s)

35.2. Notes:

- Scenario causes a RCS pressure transient, challenging the RCS Pressure Control Function. Typical PFSS analyses address this issue; PRAs often consider scenario negligible since there is no real threat of core uncover.
- Potential candidate for generic analysis to evaluate various spray / heater combinations and show no adverse impact on safe shutdown capability.
- Note that spurious opening or failure to isolate pressurizer auxiliary spray would have similar consequence; however this is typically a single spurious scenario.

35.3. WBN Unit 2 Safe Shutdown Compliance:

35.3.1. The cables associated with the RCPs which can cause a spurious start of the pump or prevent the pump from being tripped are entirely contained inside the Control or Turbine Building. For all AVs requiring the RCP's to be tripped except Control Building, the RCPs are tripped from MCR panels. For Control Building fires resulting in MCR abandonment, the RCPs are tripped by control room switches, the RCP board normal and alternate supply breakers are also tripped at the Electrical Control Board (in the control room), and a local action at the 6.9KV RCP Board ensures the RCP's do not restart. (Reference Scenario 4)

35.3.2. The PZR Spray valves 2-PCV-68-340B, and 2-PCV-68-340D could spuriously open in AV-025, -025C, -026, -037, -037C, -038, -115, and -117. For each of these analysis volumes the RCPs are tripped via MCR operator action to prevent pressurizer spray.

35.3.3. The PZR Heaters are not credited to mitigate spurious opening of the pressurizer spray valves. However, as described in scenario 36, they could spuriously operate due to fire in the control building and in AV-036, -037, -037C, -038, -045, -048, -049, -050, -053, -055, -056, -066, -070, -071, and -117. They can be tripped from the MCR or from the 6.9kv shutdown boards (AV-042, AV-057) within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12). For fires in the 6.9KV shutdown board rooms (AV-042, AV-057) the board will be de-energized by tripping the supply breakers and the EDG.

35a.0 PWROG Scenario 35a: Primary Pressure Control - Spurious operation of auxiliary pressurizer spray valves with charging pumps in operations

Note: PWROG Rev. 1 (6/5/09) Scenario No. 36

35a.1 Description:

Spurious opening of auxiliary pressurizer spray valve(s)

AND

Inoperability of pressurizer heater(s).

35a.2 Notes:

- Scenario causes a RCS pressure transient, challenging the RCS Pressure Control Function. Typical PFSS analyses address this issue; PRAs often consider scenario negligible since there is no real threat of core uncover.
- Potential candidate for generic analysis to evaluate various spray / heater combinations and show no adverse impact on safe shutdown capability.
- Note that spurious opening of failure to isolate pressurizer auxiliary spray would have similar consequence; however this is typically a single spurious scenario.

35a.3 WBN Unit 2 Safe Shutdown Compliance:

35a.3.1 The charging header isolation valves 2-FCV-62-90-A, -91-B can be closed from MCR in all AVs except AV-099 to isolate the auxiliary pressurizer spray line. The auxiliary spray valve, 2-FCV-62-84-A, will not spuriously open due to fire damage in AV-099. Therefore the auxiliary pressurizer spray line can be isolated for all AVs and the pressurizer heaters are not needed to mitigate spurious operation of the auxiliary spray valve.

35a.3.2 Unit 2 compliance strategy is the same as Unit 1.

36.0 PWROG Scenario 36: Primary Pressure Control - Spurious operation of multiple pressurizer heater banks

Note: PWROG Rev. 1 (6/5/09) Scenario No. 37

36.1. Description:

Spurious operation of multiple pressurizer heaters

AND

Inoperability of pressurizer spray and auxiliary spray

36.2. Notes:

- Scenario causes a RCS pressure transient, challenging the RCS Pressure Control Function. RCS pressure increase could cause PORV(s) and/or safety valve(s) to open.

36.3. WBN Unit 2 Safe Shutdown Compliance:

36.3.1. The PZR Heaters could spuriously operate due to fire damage in AV-036, -037, -037C, -038, -045, -048, -049, -050, -053, -055, -056, -066, -070, 0-71, and -117. The heaters can be tripped from the MCR or the 6.9kv shutdown board rooms (AV-042 and AV-057). For fires in the 6.9kv shutdown board rooms (AV-042, AV-057) the boards are de-energized by tripping all of the supply breakers (normal and alternate) and the EDG. EDG kill switches are located on both MCR panel 0-M-26 and ACS panel 0-L-4. Each EDG has a transfer switch located on 1,2-L-11A or 1,2-L-11B to select between MCR and ACS. DCN 58383 relocated the transfer switches from the 6.9kv board rooms to the ACS transfer panels. The heaters can be disabled within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12).

36.3.2. WBN Unit 1 identified this condition in PER 227839.

37.0 PWROG Scenario 37: Reactivity Control - Inadvertent injection of undiluted makeup water / inadvertent injection of makeup water with very low boron concentration

Note: PWROG Rev. 1 (6/5/09) Scenario No. 38

37.1. Description:

Unborated water supply to the RCS can occur due to combinations of the following:

- Spurious start of reactor makeup pump(s) (supplies unborated water to the VCT),
- Spurious opening of valves between reactor makeup pump(s) and VCT,
- Spurious full opening of the reactor makeup flow control valve,
- Spurious closure of the boric acid flow control valve.

37.2. Notes:

- Scenario decreases RCS boron concentration, potentially causing reactivity increase, and challenging the Reactivity Control Function.
- The reactor makeup flow control valve would normally provide the setpoint flowrate instead of being fully open.
- Potential Solution: The maximum flow from the reactor makeup pump may be limited due to the plant specific design (e.g., installation of a flow orifice to limit the pump's maximum flow, boron dilution protection system, etc.).
- Potential Solution: The reactivity increase may occur at a very slow rate, allowing operators sufficient time to mitigate.

37.3. WBN Unit 2 Safe Shutdown Compliance:

37.3.1. If the primary makeup pumps (2-MTR-81-3 and 2-MTR-81-7) spuriously start they can be tripped within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref.3.12) from the main control room or from their 480vac MCC to ensure the reactor coolant system boron concentration is maintained. Main control room trip capability is available for all fires except analysis volumes AV-005, -026, -038, and -057.

For AV-005, -026, -038, and -057 the allowable time is conservative since the normal makeup path can be isolated from the MCR and the BIT outlet isolation valves (2-FCV-63-25-A and 2-FCV-63-26-B) are normally closed and their control circuits have been modified such that they cannot spuriously

open except for a fire where their MCCs are located (AV-072, -073, & -074). Therefore a boron dilution event will not occur for these analysis volumes and the primary makeup pumps can be stopped at their MCCs in a timely manner.

For AV-072, -073, & -074 the normal makeup path can be isolated and the primary makeup pumps stopped from the MCR. Therefore, a boron dilution event will not occur for these analysis volumes. The BIT injection path can be isolated by closing the BIT inlet isolation valves (2-FCV-63-39-A and 2-FCV-63-40-B) from their MCCs (reference Section 2.3).

For the remaining analysis volumes the normal makeup path can be isolated and the primary makeup pumps stopped from the MCR and the BIT outlet isolation valves remain closed. Therefore, boron dilution event will not occur.

38.0 PWROG Scenario 38: Reactivity Control - Fire prevents reactor trip

Note: PWROG Rev. 1 (6/5/09) Scenario No. 39

38.1. Description:

Fire damage to the reactor protection system (RPS) may prevent reactor trip. For example, hot shorts may prevent tripping of the RPS motor generator (MG) sets.

38.2. Notes:

- BWRs have identified scenarios where fire-induced hot shorts could prevent all control rod groups from inserting when required. Reference NRC Information Notice 2007-07.
- No cases at PWRs were identified by the survey results that supported this MSO list. However, each plant should consider performing a review to determine if scenario is plausible at their plant. Note that this review may have already been performed for the disposition of Information Notice 2007-07.

38.3. WBN Unit 2 Safe Shutdown Compliance:

38.3.1. The post fire safe shutdown analysis demonstrates that at least one train of the reactor trip switchgear can be tripped from the main control room for all AVs with the possible exception of AV-115 where the reactor trip switchgear is located.

38.3.2. For AV-115 reactor trip is confirmed by tripping the normal and alternate supplies to the control rod MG sets, 2-MTR-85-1A and 2-MTR-85-1B, at the 480vac unit boards in the turbine building within the allowable time shown in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12).

38.3.3. For Control Building fires resulting in MCR abandonment reactor trip is initiated and confirmed prior to evacuating the control room.

39.0 PWROG Scenario 39: Support Systems - Spurious loss of component cooling water (CCW) either as an entire system or to individual headers (including potential water hammer events)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 40

39.1. Description:

CCW flow can be isolated via several combinations of spurious valve closures. Pertinent valves include:

- CCW pump discharge valves,
- CCW pump crosstie valves,
- CCW heat exchanger inlet valves,
- CCW heat exchanger outlet valves,
- CCW heat exchanger crosstie valves,
- Etc.

39.2. Notes:

- Scenarios cause failure of CCW function to provide cooling to safe shutdown loads.
- Review P&IDs to identify relevant valve combinations.

39.3. WBN Unit 2 Safe Shutdown Compliance:

39.3.1. Spurious loss of Component Cooling System (CCS) is prevented by removing power from the motor operated valves that could isolate CCS flow or provide flow diversion. The CCS pump supply (inlet) and discharge valves are open with power removed. CCS heat exchanger inlet and outlet valves are open with power removed. Cross tie valves between units and heat exchangers are closed with power removed. Isolation valves in supply lines serving the charging pumps, safety injection pumps, RHR pumps and Containment Spray pumps are open with power removed.

39.3.2. The following individual load valves are powered and are evaluated for spurious operation in the post fire safe shutdown analysis:

CCS Heat Exchanger B (Unit 2 train A loads):

0-FCV-70-194-B, normally open supply to spent fuel pool heat exchanger B. The valve control circuit has been modified such that only fire damage in the electrical board room (AV-072 or AV-073) could cause spurious closure. Spurious valve closure would not prevent the CCS pump from providing the needed flow to safe shutdown equipment.

2-FCV-70-156-A, normally closed RHR heat exchanger 2A outlet valve. The valve control circuit has been modified to minimize spurious opening of the valve. For a fire in the electrical board room (AV-074), the valve could open and divert CCS flow through the RHR heat exchanger, but normally open valve 0-FCV-70-194-B can be closed from the MCR to ensure adequate CCS flow is available for the fire safe shutdown equipment.

2-FCV-70-87-B, 2-FCV-70-90-A, 2-FCV-70-133-A & 2-FCV-70-134-B, normally open thermal barrier cooling isolation valves. Thermal Barrier Cooling (TBC) is only credited for AV-005, -104, and -106 (See section 1.3). The valves will not spuriously close due to fire damage in these AVs except for AV-106 where the TBC differential flow transmitters are located. MCR operator actions are credited to bypass the differential flow signal and re-open the valves that may have spuriously closed.

CCS Heat Exchanger C (both units train B loads):

2-FCV-70-153-B, normally throttled RHR heat exchanger 2B outlet valve. Valve control circuit has been modified to prevent spurious closing except for a fire in the Unit 2 train B RMOV board room. If the valve spuriously closes the Unit 1 valve can be opened from the MCR.

1-FCV-70-153-B, RHR normally throttled heat exchanger 1B outlet valve. Valve control circuit has been modified to prevent spurious closing except for a fire in the Unit 1 Train B RMOV board room. If the valve spuriously closes, the Unit 2 valve can be opened from the MCR.

40.0 PWROG Scenario 40: Support Systems - Spurious loss of component cooling water (CCW) to individual critical loads (including potential water hammer events)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 41

40.1. Description:

Spurious isolation of CCW cooling to individual redundant loads including lube oil coolers, RHR heat exchangers, etc.

40.2. Notes:

- Scenario isolates CCW cooling to credited loads causing safe shutdown equipment inoperability of credited trains.
- For example, a plant may have two redundant charging pumps. Each charging pump may have a lube oil system that is cooled by the corresponding train of CCW. If CCW flow to both lube oil coolers spuriously isolates, then both charging pumps would become inoperable.
- All credited CCW loads should be reviewed.

40.3. WBN Unit 2 Safe Shutdown Compliance:

40.3.1. See scenario 39.

41.0 PWROG Scenario 41: Support Systems - Component cooling water (CCW) flow diversion to non-credited loop(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 42

41.1. Description:

Flow diversion can occur via several combinations of spurious valve operations in the CCW pump discharge and CCW loop crosstie flowpaths. Review P&IDs to identify relevant combinations.

41.2. Notes:

- Scenario causes CCW flow to be diverted to the non-credited loop. This ultimately prevents CCW cooling of credited safe shutdown loads.
- Review P&IDs to identify relevant valve combinations.

41.3. WBN Unit 2 Safe Shutdown Compliance:

41.3.1. Spurious loss of Component Cooling System (CCS) is prevented by removing power from the motor operated valves that could isolate CCS flow or provide flow diversion. The CCS pump supply (inlet) and discharge are open with power removed. CCS heat exchanger inlet and outlet valves are open with power removed. Cross tie valves between units and heat exchangers are closed with power removed. Isolation valves in supply lines serving the

charging pumps, safety injection pumps, RHR pumps and Containment Spray pumps are open with power removed.

41.3.2. The following individual load valves are powered and are evaluated for spurious operation in the safe shutdown analysis (See Scenario 39):

CCS Heat Exchanger B (Unit 2 train A loads):

0-FCV-70-194-A, normally open supply to spent fuel pool heat exchanger B.

2-FCV-70-156-A, normally closed RHR heat exchanger 2A outlet valve.

2-FCV-70-133-A, 2-FCV-70-134-B, 2-FCV-70-87-B, & 2-FCV-70-90-A normally open thermal barrier cooling valves

CCS Heat Exchanger C (both units train B loads):

2-FCV-70-153-B, normally throttled RHR heat exchanger 2B outlet valve.

1-FCV-70-153-B, RHR normally throttled heat exchanger 1B outlet valve.

41.3.3. CCS normally closed valves 1-FCV-70-143-A, -85-B (Excess Letdown Heat Exchanger Containment Isolation Valves) are not included in FSSD analysis because the additional 232 gpm load would not impact the CCS pumps.

42.0 PWROG Scenario 42: Support Systems - Spurious loss of safety-related service water (SW) either as an entire system or to individual headers (including potential water hammer events)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 43

42.1. Description:

Safety related service water (sometimes called, "essential," service water) flow to credited loads can be isolated via several combinations of spurious valve closures.

Pertinent valves include:

- SW pump discharge valves,
- SW pump crosstie valves,
- SW heat exchanger inlet valves,
- SW heat exchanger outlet valves,

-SW heat exchanger crosstie valves,

Review P&IDs to identify relevant combinations.

42.2. Notes:

- Scenario causes isolation of ESW, which can fail cooling to the CCW system and other safe shutdown components directly cooled by ESW (e.g., EDG cooling).
- All credited ESW loads should be reviewed for spurious isolation.

42.3. WBN Unit 2 Safe Shutdown Compliance:

- 42.3.1. ERCW pump availability is evaluated in the FSSD analysis to ensure that at least 2 of the 4 pumps of the credited train are available for all fire scenarios. Note: when ERCW header 1B is supplying header 2A (1-FCV-67-458-A open) 3 train B pumps are credited to ensure adequate flow for both headers.
- 42.3.2. Pump discharge (strainer inlet) and header isolation valves are open with power removed to prevent spurious closure and ensure ERCW flow path.
- 42.3.3. FCV-67-66-A and FCV-67-67-B, emergency diesel generator heat exchanger supply valves from ERCW headers, for both units are normally closed and open upon emergency diesel generator start. The valves, their control and power circuits, and power sources are included in the FSSD analysis to ensure ERCW flow to emergency diesel generators when needed.
- 42.3.4. FCV-67-127-A and FCV-67-128-B for both units are open with power removed to ensure ERCW flow to critical air conditioning equipment.
- 42.3.5. Potential flow diversion to Containment Spray heat exchangers due to spurious opening of in-series valves FCV-67-123-B and -124-B or FCV-67-125-A and -126-A for both units is evaluated in FSSD analysis.
- 42.3.6. Supply and discharge valves for each of the three CCS heat exchangers are evaluated in the FSSD analysis to ensure ERCW flow is available for the credited safe shutdown components. Valve control circuits are modified to minimize spurious operation potential.

43.0 PWROG Scenario 43: Support Systems - Spurious loss of safety-related service water (SW) to individual critical loads (including potential water hammer events)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 44

43.1. Description:

Spurious isolation of safety related service water (SW) cooling to redundant loads including component cooling water (CCW) heat exchangers and emergency diesel generator cooling (EDG) cooling.

43.2. Notes:

- Scenario isolates ESW cooling to redundant loads causing safe shutdown equipment failure on redundant trains.
- For example, redundant EDGs may be cooled by ESW. If ESW flow to both EDGs spuriously isolates, then both EDGs could fail.
- All credited ESW loads should be reviewed.

43.3. WBN Unit 2 Safe Shutdown Compliance:

43.3.1. See Scenario 42.

44.0 PWROG Scenario 44: Support Systems - Safety related service water (SW) flow diversion to non-credited loops / loads

Note: PWROG Rev. 1 (6/5/09) Scenario No. 45

44.1. Description:

Flow diversion can occur via several combinations of spurious valve operations in the service water pump discharge and loop crosstie flowpaths. Review P&IDs to identify relevant combinations.

44.2. Notes:

- Scenario causes ESW flow to be diverted to a non-credited loop or system. This ultimately prevents ESW cooling of credited loads.
- Review P&IDs to identify relevant valve combinations.

44.3. WBN Unit 2 Safe Shutdown Compliance:

44.3.1. The only significant potential flow diversion are the Containment Spray heat exchangers each of which is isolated by 2 normally closed motor operated valves. These valves are included in the FSSD analysis and evaluated for spurious opening. If both valves for a heat exchanger could spuriously open additional ERCW flow capacity is ensured. The Unit 2 valves are modified to minimize spurious opening potential.

45.0 PWROG Scenario 45: Support Systems - Non-critical components inadvertently loaded onto credited emergency diesel generator(s) (EDGs)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 46

45.1. Description:

Additional components load onto credited diesel generator

45.2. Notes:

- Scenario causes diesel generator overloading and failure.
- Scenario very site specific. Interlocks may prevent this from occurring.

45.3. WBN Unit 2 Safe Shutdown Compliance:

45.3.1. See scenario 46.

46.0 PWROG Scenario 46: Support Systems - Emergency diesel generator(s) (EDGs) overloading

Note: PWROG Rev. 1 (6/5/09) Scenario No. 47

46.1. Description:

Emergency diesel generator (EDG) overloading

46.2. Notes:

- Scenarios cause diesel generator overloading and failure.
- Scenarios very site specific. Interlocks may prevent these from occurring.
- In addition to Scenario 45, overloading may also occur if proper load sequencing is bypassed via hot shorts, causing simultaneous loading of multiple components onto the EDG.

46.3. WBN Unit 2 Safe Shutdown Compliance:

46.3.1 An investigation was initiated to determine the effects of MSOs on each EDG with respect to overloading the EDG. This was accomplished by revising calculation WBPEVAR9503001, *Appendix R – Diesel Generator Load Study* to change the methodology from an evaluation of a worst-case steady state loading applied to EDG 1A-A to an evaluation of each EDG during each Appendix R fire that credits the EDG. All cables that could

cause any load to spuriously connect to its EDG or prevent required load shedding was included in the Appendix R Analysis. Failure of any of these cables resulted in the associated loading addition being evaluated in WBPEVAR9503001. This evaluation considers both steady state loading and load pickup capability. Steady state loading is evaluated for the short time rating (<2 hours) and at the continuous rating (>2 hours) of the EDG. Load pickup capability is evaluated for the worst case loading for each EDG for three conditions: (1) Maximum starting plus running (transient) loading, 0 to 180 sec, compared to cold engine capability, (2) Maximum starting plus running (transient) loading, 180 sec to end, compared to hot engine capability, and (3) Maximum step load increase (excitation), 0 sec to end, compared to generator step load capability. Spurious loading that resulted in an overloaded EDG resulted in cable reroutes that were necessary to bring the EDG within its ratings.

Results for each EDG requiring reroutes are as follows:

2A-A For fire in 737-A7, 737-A8, 737-A1AN, 737-A1BN and 737-A1CN (AV-37C)

Relocating cable and 2PL5145 out of these fire zones was accomplished by PIC 56638 as part of DCN 54912.

1B-B For fire in 772-A2A1, 772-A2A2 and 772-A2A3 (AV-059)

Relocating cables 1B27G, 1B32G, 1PL5396B and 1PL5398B out of these fire zones was accomplished by DCN 58383 which also changed their cable numbers to 1B20G, 1B21G, 1PL1191B, and 1PL1192B.

46.3.2 Overall long term resolution has been accomplished by including in the FSSD analysis all cables that could spuriously start or prevent removing loads to/from an EDG. These cables are analyzed with the specific EDG for which they are associated as described in 46.3.1 above.

46.3.3 WBN Unit 1 identified this condition in PER 227839.

47.0 PWROG Scenario 47: Support Systems - Spurious start of an emergency diesel generator(s) (EDGs) with concurrent failure to provide required cooling

Note: PWROG Rev. 1 (6/5/09) Scenario No. 48

47.1. Description:

Fire spuriously starts an emergency diesel generator(s)

AND

MOVs providing required cooling water to the emergency diesel generator(s) either fail to open or spurious close

47.2. Notes:

- The fire causes startup of the Emergency Diesel Generator and spurious isolation of ESW cooling (See Scenarios 43 & 45). Running the Emergency Diesel Generator with a loss of cooling water could trip and/or damage the diesel on high temperature.

47.3. WBN Unit 2 Safe Shutdown Compliance:

47.3.1. The ERCW valves supplying the EDGs (1/2-FCV-67-66-A and 1/2-FCV-67-67-B) are normally closed and automatically open upon EDG start. The valves, their power supplies, and associated cables are included in the FSSD analysis to ensure that cooling water is available for each fire zone where the EDGs are credited.

For control room abandonment, subsequent to operating the AUX control transfer switches for each EDG, the EDG is not automatically loaded onto its associated shutdown board. This is accomplished manually at the shutdown board. Operator action closes the EDG breaker within 18 minutes of EDG start. Once the board is energized their associated ERCW valve will open automatically to prevent EDG from reaching its high water temperature alarm.

48.0 PWROG Scenario 48: Support Systems - Non-synchronous paralleling of emergency diesel generator(s) (EDGs) with on-site and off-site sources through spurious circuit breaker operations

Note: PWROG Rev. 1 (6/5/09) Scenario No. 49

48.1. Description:

Non-synchronous paralleling of emergency diesel generator(s) (EDGs) with on-site and off-site sources through spurious circuit breaker operations.

48.2. Notes:

- Non-synchronous paralleling of EDG with on-site and off-site sources through spurious breaker operations

48.3. WBN Unit 2 Safe Shutdown Compliance:

48.3.1. EDGs cannot be connected to other on-site EDGs except through multiple spurious offsite feeder breaker closures. The EDG breaker cannot be closed spuriously to parallel a running DG with offsite power for the credited boards for all fire zones. Cables associated with the EDG breaker CLOSE circuit that could spuriously close the breaker are routed outside all fire zones that credit the associated board. Similarly, neither the normal feeder breaker, alternate feeder breaker, nor maintenance feeder breaker can be closed spuriously to connect offsite power to a board that is receiving power from a running EDG. Cables associated with these offsite breakers' CLOSE circuits that could spuriously close the breaker are routed outside all fire zones that credit the associated board. All of the 6.9kV shutdown board feeder breaker control circuit cables that could spuriously close a board feeder breaker are modeled in the FSSD analysis.

The following specific cables, wires, fire zones, and Analysis Volumes are used to demonstrate the above statements for board 1-BD-211-A-A; the other boards are similar:

To spuriously close Emergency Feeder Breaker (1912)(Onsite source) with a running EDG while operating on Offsite Power, wire SA6C3 in cable 1PP475A must experience a hot short (positive battery) AND wire SA6GA in cables 1PP478A OR PP1715A OR wire SA6GA1 in cable 1PP474A must experience a hot short (negative battery). The latter energizes permissive relay AX allowing the positive short on SA6C3 to close the breaker. Cable 1PP475A is located in fire zones 737-A1A, 757-A2, and control building. The control building is eliminated by the operation of the Norm/Auxiliary transfer switch 1-XS-57-46 in the event of a control building fire resulting in MCR abandonment. Other affected analysis volumes are AV-036, AV-042, AV-042D AV-042E, AV-042F, and AV-042G. None of these analysis volumes takes credit for board 1-BD-211-A-A. Cable damage on 1PP478A, PP1715A and 1PP474A alone cannot spuriously close the EDG breaker.

To spuriously close the Normal Feeder Breaker (1713)(Offsite source) while operating on Onsite Power, wire SA16T6 (energizes relay R716) and wire SA16C5 (completes close circuit through R716 contact) must experience a hot short (positive battery). Both wires are in cable 1PP462A. Cable 1PP463A contains wire SA16C4 which could complete the close circuit if R716 were energized by hot short on cable 1PP462A wire SA16T6. However, cable 1PP463A is routed entirely in the control building and is eliminated by Norm/Auxiliary transfer switch 1-XS-57-41 in the event of a control building fire resulting in MCR abandonment. Cable 1PP462A is located in fire zones 737-A1A, 757-A2 and control building. The control building is eliminated by the operation of the Norm/Auxiliary transfer switch 1-XS-57-41 in the event of a control building fire resulting in MCR abandonment. Other affected analysis volumes are AV-036, AV-042, AV-042D AV-042E, AV-042F, and AV-042G. None of these analysis volumes takes credit for board 1-BD-211-A-A.

To spuriously close the Alternate Feeder Breaker (1932)(Offsite source) while operating on Onsite Power, wire SA1T6 (energizes relay R932) and wire SA1C5 (completes close circuit through R932 contact) must experience a hot short (positive battery). Both wires are in cable 1PP440A. Cable 1PP442A contains wire SA1C4 which could complete the close circuit if R932 were energized by hot short on cable 1PP440A wire SA1T6. However, cable 1PP442A is routed entirely in the control building and is eliminated by Norm/Auxiliary transfer switch 1-XS-57-97 in the event of a control building fire resulting in MCR abandonment. Cable 1PP440A is located in fire zones 737-A1A, 757-A2 and control building. The control building is eliminated by the operation of the Norm/Auxiliary transfer switch 1-XS-57-97 in the event of a control building fire resulting in MCR abandonment. Other affected analysis volumes are AV-036, AV-042, AV-042D AV-042E, AV-042F, and AV-042G. None of these analysis volumes takes credit for board 1-BD-211-A-A.

To spuriously close the Maintenance Feeder Breaker (1718)(Offsite source) while operating on Onsite Power, wire SA11T6 (energizes relay R718) and wire SA11C4 (completes close circuit through R718 contact) must experience a hot short (positive battery). Both wires are in cable 1PP450A. Cable 1PP451A contains wire SA1C3 which could complete the close circuit if R718 were energized by hot short on cable 1PP450A wire SA11T6. However, cable 1PP451A is routed entirely in the control building and is eliminated by Norm/Auxiliary transfer switch 1-XS-57-44 in the event of a control building fire resulting in MCR abandonment. Cable 1PP450A is located in fire zones 737-A1A, 757-A2 and control building. The control building is eliminated by the operation of the Norm/Auxiliary transfer switch 1-XS-57-44 in the event of a control

building fire resulting in MCR abandonment. Other affected analysis volumes are AV-036, AV-042, AV-042D AV-042E, AV-042F, and AV-042G. None of these analysis volumes takes credit for board 1-BD-211-A-A.

48a.0 PWROG Scenario 48a: Emergency Power – Inadvertent paralleling of normal and alternate offsite power sources through the onsite busses and breakers

Note: PWROG Rev. 1 (6/3/09) Scenario 49.1

48a.1 Description:

Similar to non-synchronous paralleling-inadvertent crosstie breaker operation between opposite divisions or non-synchronous paralleling-inadvertent cross tying the offsite power sources through the onsite busses and breakers, with synchronous faults. Spurious closure on alt feeder and failure of normal to open (i.e. parallel supply) + circuit fault could result in short circuit currents above withstand/interrupt ratings.

48a.2 Notes:

- May apply to Electrical Boards with normal and alternate feeder breakers without physical mechanical interlocks.

48a.3 WBN Unit 2 Safe Shutdown Compliance:

48a.3.1 Normal and alternate offsite power sources cannot be connected in parallel through any onsite busses and breakers by multiple spurious operations. Each 6.9 kV shutdown board can be connected to an offsite source through a Normal, Alternate, or Maintenance feeder breaker. Each of these feeder breakers close circuits are interlocked with the other two breakers through series 52b switches (52b is closed when its associated breaker is open). This arrangement will only allow a close signal (close coil energized) for a given breaker if both of the other breakers are open. (Anticipatory trip fast transfer scheme is not utilized on these boards.) All wiring for these interlocks is contained within the board, thus not subject to fire damage external to the board. All other busses can only be fed from either one offsite source or through mechanically interlocked breakers.

49.0 PWROG Scenario 49: Other Scenarios - Spurious isolation of various combinations of pump(s) suction valve(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 50

49.1. Description:

Note: Spurious operation of powered (i.e., MOVs, AOVs, SOVs) pump(s) suction valve(s) is most likely already included in the PRA logic and the safe shutdown cable analysis.

49.2. Notes:

- Suction flow paths for all credited pumps should be reviewed for MSO scenarios causing loss of suction and pump failure. An example of a pump suction MSO was previously identified in which both the VCT outlet valve(s) and RWST outlet valve(s) spuriously close.
- Another example involves pump suction cross-connect valves. Three pumps may be supplied from a common suction header that includes several cross connect valves. If two valves spuriously isolate, the pump drawing suction from the common header between the two isolated valves can lose suction and fail.
- The spurious operation of idle pumps after suction has been spuriously isolated should also be considered. Spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal.

49.3. WBN Unit 2 Safe Shutdown Compliance:

49.3.1. The primary pumps including associated suction and cross-connect valves that should be evaluated are the CCPs, CCS Pumps, and TDAFW/MDAFW Pumps, and ERCW Pumps. The CCPs are addressed in scenarios 10 (11, 12); the CCS pumps are addressed in scenario 39; the ERCW Pumps are addressed in scenario 42, and TDAFW/MDAFW are addressed in scenarios 26, 28, 31.

50.0 PWROG Scenario 50: Other Scenarios - Spurious isolation of various combinations of pump(s) discharge valve(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 51 and PWROG Rev. 3 (10/11) Scenario No. 53

50.1. Description:

Spurious isolation of pump discharge flow

OR

Spurious operation of various valves causing flow diversion

Note: Spurious operation of powered (i.e., MOVs, AOVs, SOVs) pump(s) discharge valve(s) are most likely already included in the PRA logic and the safe shutdown cable analysis.

50.2. Notes:

- Scenario causes pump operation at shutoff head and subsequent inoperability. All credited pumps should be reviewed for this scenario.
- Note that spurious starting of idle pump(s), in combination with isolation of discharge flow and recirculation, may cause inoperability of additional pumps. Spurious pump starting can occur for several reasons, including fire damage to control circuitry or a spurious ESFAS signal.
- All credited flow paths should be reviewed for MSO scenarios that can divert flow away from desired location. An example is AFW pump flow diversion through the recirculation flow path back to the emergency Feed water storage tank failing the AFW makeup to steam generator function.

50.3. WBN Unit 2 Safe Shutdown Compliance:

50.3.1. The primary pumps including associated discharge and cross-connect valves that should be evaluated are the CCPs, CCS Pumps, ERCW Pumps, and TDAFW/MDAFW Pumps. The CCPs are addressed in scenario 9; the CCS pumps are addressed in scenario 39; the ERCW Pumps are addressed in scenario 42, and TDAFW/MDAFW Pumps are addressed in scenario 27.

50.3.2. The primary pumps associated with valves causing flow diversion that should be evaluated are the CCPs, CCS pumps, ERCW pumps and TDAFW/MDAFW pumps. The CCPs are addressed in scenarios 2, 35a; the CCS pumps are addressed in scenario 41; the ERCW pumps are addressed in scenario 44; and the TDAFW/MDAFW pumps are addressed in scenarios 29, 31.

51.0 PWROG Scenario 51: Other Scenarios - Pump failure due to spurious closure of discharge valve(s) concurrent with failure to open or spurious closure of required minimum recirculation flow path(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 51 and PWROG Rev.3 (10/11) Scenario 52.

51.1. Description:

Spurious isolation of pump discharge flow path

AND

Spurious isolation of recirculation valve(s)

Spurious operation of various valves causing flow diversion

51.2. Notes:

- Scenario causes pump failure. All credited pumps should be reviewed for this scenario.
- Operation at shutoff head can occur, for example, if pump discharge flow spuriously isolates with the recirculation valves closed. Run-out can occur, for example, if the discharge header is at reduced pressure conditions.
- Note that spurious starting of idle pump(s), in combination with isolation of discharge flow and recirculation, may cause failure of additional pumps. Spurious pump starting can occur for several reasons, including fire damage to control circuitry or an inadvertent ESFAS signal.

51.3. WBN Unit 2 Safe Shutdown Compliance:

51.3.1. The primary pumps including associated discharge and recirculation valves that should be evaluated are the CCPs, CCS Pumps, ERCW pumps, and TDAFW/MDAFW pumps. The discharge valves for CCPs are addressed in scenario 9; CCS pump discharge valves are addressed in scenario 39; the ERCW pump discharge valves are addressed in scenario 42; and the auxiliary feedwater pump discharge valves are addressed in scenario 27. The CCPs recirculation valves 1-FCV-62-98-A, -99-B are Locked Open. The CCS pumps and the TDAFW/MDAFW recirculation lines contain only normally open manual valves.

51.3.2. RHR pump spurious start concurrent with closure of the recirculation valves is evaluated in the FSSD analysis.

51.3.3. CCP run out is addressed in scenario 13a and MDAFW pump run out is addressed in scenario 30.

51a.0 PWROG Scenario xx: Other Scenarios - Spurious start of high head charging pump(s) concurrent with closing of required minimum flow path valve(s) results in failure of the pump(s)

51a.1 Description:

High head charging pump(s) spuriously starts

AND

Recirculation flow path valve(s) fails to open OR transfers closed

51a.2 Notes:

This scenario results in failure of the high head charging pump(s).

51a.3 WBN Unit 2 Safe Shutdown Compliance:

51a.3.1 The centrifugal charging pump recirculation valves, 2-FCV-62-98-A and -99-B are Locked Open.

51a.3.2 Overheating of the charging pump suction due to loss of component cooling system (CCS) flow to the seal water return heat exchanger has been addressed in the FSSD analysis.

51a.3.3 Loss of suction to the CCP has been reviewed and determined that one CCP will always survive considering multiple spurious of either VCT suction valve, loss of either RWST suction valves, loss of or multiple spurious start of CCPs, spurious SI, and loss of CCP HVAC. For AV-106, fire on the RWST suction valves, VCT must be isolated and RWST established by opening either suction valve within 75 minutes.

51b.0 PWROG Scenario 51b: Other Scenarios - Spurious start of high pressure safety injection pump(s) concurrent with closing of required minimum flow path valve(s) results in failure of the pump(s)

51b.1 Description:

High pressure safety injection pump(s) spuriously starts

AND

Recirculation flow path valve(s) fails to open OR transfers closed

51b.2 Notes:

This scenario results in failure of the high head injection pump(s).

51b.3 WBN Unit 2 Safe Shutdown Compliance:

51b.3.1 The safety injection pumps are intermediate head injection pumps and are not actively credited in the FSSD analysis. The FSSD analysis ensures that the pumps are stopped prior to decreasing RCS pressure below the SI pump injection pressure (60 minutes).

51c.0 PWROG Scenario 51c: Other Scenarios - Spurious operation of residual heat removal (RHR) shutdown cooling (SDC) / low pressure safety injection pump(s) concurrent with failure of associated minimum flow path valve(s) to open results in failure of the pump(s)

51c.1 Description:

Residual heat removal (RHR) / shutdown cooling (SDC) / low pressure safety injection pump(s) spuriously starts

AND

Recirculation flow path valve(s) fails to open OR transfers closed

51c.2 Notes:

None

51c.3 WBN Unit 2 Safe Shutdown Compliance:

51c.3.1 RHR pump spurious start concurrent with closure of the recirculation valves is evaluated in the FSSD analysis.

52.0 PWROG Scenario 52: Other Scenarios - Loss of credited heating, ventilation and air conditioning (HVAC) to component(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 54

52.1. Description:

Spurious isolation of HVAC to credited loads

52.2. Notes:

- Perform review to identify spurious failures that could cause isolation of HVAC to credited loads. Credited loads may include pump rooms, switchgear rooms and rooms containing solid state control systems. Examples of spurious failures include spurious damper isolation and spurious isolation of cooling flow to chillers.
- One should expect to find disconnects between PRA and safe shutdown success criteria with respect to HVAC requirements. While one might expect to find instances where the safe shutdown analysis requires HVAC and the PRA does not (i.e., where the safe shutdown analysis is more conservative), we have encountered at least one instance where the opposite was true (i.e., the PRA was more conservative and required pump room HVAC that the safe shutdown analysis did not require).

52.3. WBN Unit 2 Safe Shutdown Compliance:

52.3.1. The HVAC systems (including ERCW supply, temperature control valves and dampers) listed below are included in the FSSD analysis to ensure adequate cooling for credited equipment for each fire scenario:

Lower Compartment coolers

Control Rod Drive Mechanism coolers

Main Control Room coolers

RHR Pump Room coolers

Centrifugal Charging Pump Room coolers

TDAFW Pump Room Exhaust Fan

CCS & MDAFW area coolers

Diesel Generator Building Exhaust fans

Shutdown Board Transformer Room Exhaust fans

53.0 PWROG Scenario 53: Other Scenarios - Spurious motor operated valve (MOV) operation concurrent with fire-induced failure of torque and / or limit switches

Note: PWROG Rev. 1 (6/5/09) Scenario No. 55

53.1. Description:

Spurious motor-operated valve operation

AND

Wire-to-wire short(s) bypass torque and limit switches

53.2. Notes:

- General scenario is that fire damage to motor-operated valve circuitry causes spurious operation. If the same fire causes wire-to-wire short(s) such that the valve torque and limit switches are bypassed, then the valve motor may stall at the end of the valve cycle. This can cause excess current in the valve motor windings as well as valve mechanical damage. This mechanical damage may be sufficient to prevent manual operation of the valve.
- This scenario only applies to motor-operated valves.
- This generic issue may have already been addressed during disposition of NRC Information Notice 92-18. This disposition should be reviewed in the context of multiple spurious operations and multiple hot shorts.

53.3. WBN Unit 2 Safe Shutdown Compliance:

53.3.1. WBN's standard MOV control circuit design provides full compliance with IN 92-18. Damage from a control building fire cannot bypass the valve end of travel limit/torque switch.

53.3.2. For all MOV's required to be manually operated to achieve cold shutdown following a fire outside the control building, a review has been performed to ensure that, if fire damage could cause spurious valve operation and the limit/torque switch could be bypassed, the MOV motor stall torque could not damage the valve operator such that the valve could not be manually operated. Modifications have been incorporated as needed to prevent valve stalling and ensure that the valve can be manually operated.

53.3.3. WBN Unit 1 identified this condition in PER 227808.

54.0 PWROG Scenario 54: Other Scenarios - Spurious engineered safeguards actuation signal (ESFAS)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56

54.1. Description:

Fire induced spurious ESFAS signal

54.2. Notes:

- Fire-induced spurious ESFAS signals (e.g., safety injection, containment isolation, etc), combined with other fire-induced failures, can adversely affect safe shutdown capability. An example of a fire-induced ESFAS signal is a fire causing open circuits on 2/3 main steam pressure instruments on one loop resulting in a spurious safety injection signal. ESFAS signals can result from open circuits, shorts to ground, and/or hot shorts. Fire-induced failure of instrument inverters may also cause spurious ESFAS signals. The plant should perform a systematic review to assess the potential for fire-induced spurious ESFAS to adversely affect safe shutdown capability. Some examples are shown in PWR Owners Group scenarios 54a, 54b, 54c, 54d and 54e.

54.3. WBN Unit 2 Safe Shutdown Compliance:

- 54.3.1. FSSD design changes have been incorporated to provide adequate physical separation between redundant sensing instruments and cables such that fire damage cannot cause a spurious ESFAS except for a control building fire. The control building is an alternative shutdown area. For control building fires that could cause a spurious ESFAS the control room will be abandoned and safe shutdown achieved from the auxiliary control system stations.

54a.0 PWROG Scenario 54a: Other Scenarios - Spurious start of makeup / injection pump(s) due to a spurious safety injection signal with concurrent spurious isolation of pump suction valve(s)

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56a

54a.1 Description:

Spurious safety injection signal

AND

Spurious isolation of makeup pump suction

54a.2 Notes:

Safety injection signal starts multiple RCS makeup pumps. Fire causes makeup pump suction valves to fail closed. Scenario results in cavitation / inoperability of multiple RCS makeup pumps.

54a.3 WBN Unit 2 Safe Shutdown Compliance:

54a.3.1 Inadvertent SI: Safety Injection Signal received due to a component failure that leads to a RCS cool down or depressurization and therefore a low pressurizer pressure condition. Inadvertent SI is postulated to occur in certain fire zones in the Control, Auxiliary, and Reactor Buildings. For the Auxiliary and Reactor buildings fires, inadvertent SI actuations can occur within a short time span and prompt MCR action may or may not be successful in preventing the actuation (e.g. closure of pressurizer block valve for spurious pressurizer PORV opening or stop RCPs for spurious opening of RCS spray valves). If preventive actions are not successful, then mitigation actions are performed as identified in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12). For control building fires a SI actuation is mitigated as plant control is transferred to the ACS. Spurious closure of the normal CCP suction source (VCT) opens the RWST outlet valve ensuring suction to the CCP.

54b.0 PWROG Scenario 54b: Other Scenarios - Spurious isolation of reactor coolant pump(s) thermal barrier cooling due to a spurious containment isolation signal with a concurrent isolation of seal injection

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56c (similar)

54b.1 Description:

Spurious containment isolation signal isolates component cooling water (CCW) to the thermal barrier heat exchangers for all reactor coolant pumps (RCPs)

AND

Spurious isolation of seal injection header flow

54b.2 Notes:

Scenario causes loss of all RCP seal cooling and subsequent RCP Seal LOCA.

54b.3 WBN Unit 2 Safe Shutdown Compliance:

54b.3.1 For Auxiliary and Reactor building fires, the containment pressure will be monitored using available indicators to maintain indicated containment pressure below the SI and CI setpoint by starting and stopping the containment air return fans. These actions will prevent an inadvertent CI/SI and thus isolation of CCW and seal injection header flow.

54c.0 PWROG Scenario 54c: Other Scenarios - Spurious isolation of reactor coolant pump(s) thermal barrier cooling due to a spurious containment isolation signal with a concurrent isolation of charging

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56c

54c.1 Description:

Spurious containment isolation signal isolates CCW to the thermal barrier heat exchangers for all RCPs

AND

Spurious opening of charging injection valve(s) causing insufficient flow to seals

54c.2 Notes:

Scenario causes loss of all RCP seal cooling and subsequent RCP Seal LOCA.

54c.3 WBN Unit 2 Safe Shutdown Compliance:

54c.3.1 See Section 54b.3.1 above..

54d.0 PWROG Scenario 54d: Other Scenarios - Spurious start of containment spray pump(s) due to a spurious containment spray signal

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56d

54d.1 Description:

Spurious high containment pressure on multiple channels causing spurious containment spray signal

54d.2 Notes:

Scenario causes a pumped RWST drain down via the containment spray pumps and containment spray ring.

54d.3 WBN Unit 2 Safe Shutdown Compliance:

54d.3.1 See Section 54b.3.1 above.

54d.3.2 For all AVs except AV-042 and AV-057, either the containment spray pumps can be tripped from the main control room or the containment spray header isolation valves are closed which will prevent RWST drain down via the containment spray ring. For a fire inside the 6.9kv shutdown board room A (AV-042) and B (AV-057), the board is de-energized by tripping the feeder breakers (normal and auxiliary) and the EDG within 10 minutes. De-energizing the board stops the containment spray pump.

54e.0 PWROG Scenario 54e: Other Scenarios - Spurious opening of PORV(s) due to spurious high pressurizer pressure signals on multiple channels

Note: PWROG Rev. 1 (6/5/09) Scenario No. 56e

54e.1 Description:

Spurious high pressurizer pressure on multiple channels causes high pressurizer pressure signal

54e.2 Notes:

Spurious high pressurizer pressure on multiple channels causes high pressurizer pressure signal

54e.3 WBN Unit 2 Safe Shutdown Compliance:

54e.3.1 Spurious opening of the PORVs is evaluated in the FSSD analysis. The pressure sensing instrumentation and cables are included in the analysis. For every fire scenario either the PORV or its in-line block valve is credited for maintaining RCS pressure. See scenarios 17 and 18 for additional details.

54f.0 PWROG Scenario 54f: Other Scenarios - Spurious Recirculation Actuation Signal (RAS) starting and aligning pumps to a dry containment sump.

Added on 6/5/09 NEI 00-01 Rev 2 list (Item 56f)

54f.1 Description:

Spurious Recirculation Actuation Signal (RAS) starting and aligning pumps to a dry containment sump.

54f.2 Notes:

- None

54f.3 WBN Unit 2 Safe Shutdown Compliance:

54f.3.1 WBN design, upon a high containment sump level, in conjunction with a low RWST level and SI signal, will initiate opening of the containment sump valve and as these valves begin to open the RHR pump suction valve will begin to close(concurrently). There are no AVs where a high containment sump level will occur. For a control building fire that could cause a spurious or inadvertent SI signal, control of the containment sump and RHR pump suction valves will be transferred to the auxiliary control system stations. The containment sump valve will be closed in the allowable time as identified in the dual unit Operator Manual Action Calculation, EDQ00099920090016 (ref. 3.12).

54f.3.2 There are no AVs where a spurious start of RHR pump occurs concurrently with a spurious closure of the respective suction valve (2-FCV-74-3-A, -21-B). The common suction valve from the RWST (2-FCV-63-1) is open with power removed.

Appendix B

UNIT 2 RESOLUTIONS

MSO#	Resolutions	Comment
5 Section 5.3.2	<u>Resolution</u> RCP Seal Leakoff valves have been added to the FSSD analysis. Plant modifications have been incorporated to ensure MCR operator actions for reactor building non-essential control air header isolation (2-FCV-32-111-B) and venting (2-XSV-32-112A1, -112A2, -112B1, & -112B2) to fail open the seal leakoff valves on loss of control air.	Unit 1 PER 227833 EDCR 57938 DCN 58390
5 5.3.3	<u>Resolution</u> Relocated the cables for 2-FCV-62-22 and 2-FCV-62-48 out of AV-057.	EDCR 53421 FCR 60953
15, 36, 54d Sections 15.3.1 15.a.3.1 36.3.1 54d.3.2	Train A and B 6.9kv Maintenance breaker shall be in open position during normal operation.	
22 Section 22.3.1	A third "C" solenoid of opposite train from the existing "A & B" solenoid valves has been added to Unit 2. It is located in a separate fire zone and its cables are routed separately from the "A & B" solenoid valves for each PORV.	Previously identified design change EDCR 53178
26 Section 26.3.1	For AV-038 the cables listed below have been relocated out of AV-038 to prevent spurious isolation of the steam supply to the TDAFW pump. Cables 2V2635B, 2V2633B, 2V2623A, 2V1831A, 2PV83A, 2V1832A, 2V1833A, 2V2625A, 2V2621A.	EDCRs 54631, 54636, 57938, FCR 55494, PIC 56638
26a Section 26a.3.2	<u>Resolution:</u> Evaluation of non-credited TDAFWP steam supply isolation is included in the FSSD analysis.	Unit 1 PER 227804 Complete
32 Section 32.3.1	<u>Resolution:</u> Evaluation of steam generator overfill scenario has been added to the FSSD to document compliance.	Complete
32 Section 32.3.5	Based on the baseline FSSD analysis a design change has been incorporated to modify the bypass feedwater line isolation and regulating valve control circuits to ensure line isolation for all postulated fire locations.	Previously identified design change EDCR 54144 FCR60653
46 Section 46.3.1	Implementation of DCN 54912 relocated cables 2PL5145 out of AV-037C to ensure that fire damage in AV-037C could not overload EDG 2A-A..	Unit 1 PER 227839 DCN 54912 PIC 56638

MSO#	Resolutions	Comment
53 Section 53.3.2	For all MOV's required to be manually operated to achieve cold shutdown following a fire outside the control building, a review has been performed to ensure that, if fire damage could cause spurious valve operation and the limit/torque switch could be bypassed, the MOV motor torque will not damage the valve operator such that the valve cannot be manually operated. Valve circuit modifications have been incorporated as needed to prevent valve stalling and ensure that the valves can be manually operated.	Unit 1 PER 227808
54 54a 54b 54c 54d Sections 54.3.1 54a.3.1 54b.3.1 54c.3.1 54d.3.1	Modifications have been incorporated to provide adequate physical separation between redundant sensing instruments and cables such that fire damage cannot cause a spurious ESFAS except for a control building fire. The control building is an alternative shutdown area. For control building fires that could cause a spurious ESFAS the control room will be abandoned and safe shutdown achieved from the auxiliary control system stations.	Previously identified design change

Appendix C

UNIT 1/COMMON RESOLUTIONS

MSO#	Resolutions	Comment
15 Section 15.3.1 15a Section 15a.3.1 36 Section 36.3.1	Modification DCN 58383 added a switch to L-11A and/or L-11B that will select between main control room and auxiliary control room and the EDG trip circuit is powered from a 125V Vital Battery Board feed whose cable is not be routed in the board room. Associated cables to the MCR and DG building kill switches are routed outside the board room. This modification has been done for each of the four EDGs.	Unit 1 PER 227839 Complete
46 Section 46.3.1	Implementation of DCN 58383 renamed cables 1B27G, 1B32G, 1PL5396B, and 1PL5398B to 1B20G, 1B21G, 1PL1191B, and 1PL1192B and relocated them out of AV-059 to ensure that EDG-1B-B could not be overloaded due to fire damage in AV-059.	Unit 1 PER 227839 Complete