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

CNL-15-174

August 27, 2015

10 CFR 50.48

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
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 - UPDATED PAGES FOR UNIT 1/UNIT 2 AS-CONSTRUCTED FIRE PROTECTION REPORT AND LICENSE CONDITION 2.C(9) ADDITION REQUEST (TAC No. ME3091)**

References:

1. TVA Letter CNL-15-118 to NRC, "Watts Bar Nuclear Plant (WBN) Unit 2 - Transmittal of Unit 1/Unit 2 As-Constructed Fire Protection Report (TAC No. ME3091)," dated June 24, 2015 [ADAMS Accession No. ML15175A508]

2. TVA Letter CNL-15-185 to NRC, "Supplement to Application to Update Watts Bar Nuclear Plant Unit 1 License Condition 2.F to Allow Two-Unit Operation and Add License Condition (WBN-TS-15-01)," dated August 27, 2015

3. TVA Letter CNL-15-149 to NRC, "Application to Update Watts Bar Nuclear Plant Unit 1 License Condition 2.F to Allow Two-Unit Operation and Add License Condition 2.I (WBN-TS-15-01)," dated August 13, 2015 [ADAMS Accession No. ML15225A344]

The purpose of this letter is to provide revised pages for the Watts Bar Nuclear Plant (WBN) Unit 1/Unit 2 As-Constructed Fire Protection Report (U1/U2 FPR) provided in Reference 1. In addition, this letter proposes a license condition for WBN Unit 2 associated with the fire detection monitoring panel in the main control room.

By letter dated June 24, 2015 (Reference 1), Tennessee Valley Authority (TVA) submitted the WBN U1/U2 FPR. During a review of the WBN U1/U2 FPR, a number of revisions and updates were identified that need to be completed before the Nuclear Regulatory Commission (NRC) can issue a supplemental safety evaluation report. These revisions and updates were discussed with the NRC staff at an August 26, 2015 public meeting, and are provided in Enclosure 1 to this letter. Enclosure 1 provides a clean copy of the affected WBN U1/U2 FPR pages submitted in Reference 1. Revision bars are included for the affected pages of all parts of the FPR with the exception of Part V; Part V is resubmitted in its entirety and does not include revision bars.

During a review of the WBN U1/U2 FPR, a question was raised concerning the edition of the National Fire Protection Association (NFPA) code chosen for a design change and the Underwriters Laboratory (UL) standards utilized to test the functionality, safety, and reliability of system improvements made. This design change replaced obsolete equipment used in the WBN Unit 1 and Unit 2 fire detection monitoring panel. To resolve this question, TVA initiated a condition report (CR) as part of TVA's corrective action program (CAP), to identify the appropriate NFPA code for the design change that installed the fire detection monitoring panel and to document a detailed review of the alignment of the fire detection monitoring panel with the standards of a nationally recognized testing laboratory.

As noted in Reference 2, TVA proposed a license condition for WBN Unit 1 [License Condition 2.C(10)]. The proposed WBN Unit 1 license condition 2.C(10) is a WBN-specific license condition that provides time to further ensure the fire detection monitoring panel meets the appropriate designated standards or is tested and found suitable for its specified purpose. The need for this license condition was discovered during a review of the WBN U1/U2 FPR, and is applicable to WBN Unit 2, as well. Therefore, TVA proposes to include a similar license condition, 2.C(9), for WBN Unit 2. The proposed license condition 2.C(9) is included in Enclosure 2 of this letter. Reference 3, Enclosure 2, provides the bases for the proposed WBN Unit 2 license condition 2.C(9).

There are no new regulatory commitments contained in this letter. 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 27th day of August 2015.

Respectfully

J. W. Shea

Digitally signed by J. W. Shea
DN: cn=J. W. Shea, o=Tennessee Valley Authority, ou=Nuclear Licensing, email=jwshea@tva.gov, c=US
Date: 2015.08.27 11:17:26 -04'00'

J. W. Shea
Vice President, Nuclear Licensing

Enclosures

cc: See Page 3

Enclosures:

1. Revised and Updated Pages - WBN Unit 1/Unit 2 As-Constructed Fire Protection Report (FPR)
2. Proposed New WBN Unit 2 Facility Operating License Condition 2.C(9)

cc (w/Enclosures):

U.S. Nuclear Regulatory Commission, Region II
NRC Senior Resident Inspector, Watts Bar Nuclear Plant, Unit 2
NRC Project Manager, Watts Bar Nuclear Plant, Unit 2

Tennessee Valley Authority-TVA

Enclosure 1

Revised and Updated Pages
WBN Unit 1/Unit 2 As-Constructed Fire Protection Report (FPR)

Column 10: (III.G compliance for HSD)	Notations in this column indicate the method of compliance with 10 CFR 50 Appendix R Section III.G for achieving hot shutdown (HSD): • 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: o 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. o 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) o 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 . o 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. o 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 are addressed in the NRC’s review performed prior to Unit 2 startup (Part II, Reference 4.1.41). o 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 are addressed in the NRC’s review performed prior to Unit 2 startup (Part II, Reference 4.1.41).

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	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, 1-0, 2-0

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692.0-A2 - Gas Decay Tank Valve Gallery	No	No	No	No	Insignificant		3.1.1		
692.0-A3 - Gas Decay Tank Room	Yes	No	No	No	Insignificant		3.1.1, 6.4.2.4	Yes	1-O
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		
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				

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FIRE AREA 1-2:									
692.0-A19 - Safety Injection Pump 2A-A	Yes	Yes	Yes	No	Insignificant				
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				
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				

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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, 2-G
713.0-A2 - Air Lock	No	Yes	Yes	No	Low				
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		

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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	1-G, 2-G, 1-O
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		
FIRE AREA 9:									
713.0-A6 - Unit 1 Penetration Room	Yes	Yes	Yes	1 hour	Moderate		3.1.3, 3.2, 3.5		2c, 1-G, 1-O
713.0-A8 - Unit 1 Reactor Building Access Room	No	No	No	No	Insignificant		3.1.3		
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		

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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		0-G, 1-G, 2-G
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				
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	4.7			
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				

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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				1-G
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, 1-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	0-O, 0-G, 1-G, 1-O, 2-G, 2-O
737.0-A8 - Unit 2 Letdown Heat Exchanger	Yes	No	No	No	Low		3.1.7	Yes	0-O, 0-G, 1-G, 1-O, 2-G, 2-O
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, 0-O, 1-O
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, 1-G, 2-G
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, 1-G, 1-O, 2-G
737.0-A15 - Gross Failed Fuel Detector Room	No	No (Note 1)	Yes (Note 1)	No	Insignificant				

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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-G
757.0-A9 - Unit 1 Personnel and Equipment Access	Yes	Yes	Yes	1 hour	Moderate		8.3.24	Yes	2c , 0-G, 0-O, 1-G, 1-O, 2-G
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, 0-G, 1-G, 2-G
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, 0-G, 2-G
FIRE AREA 20:									
757.0-A1 - Auxiliary Control Room	Yes	Yes	Yes	1 hour	Moderate	2.1	8.3.19	Yes	2c, 0-G, 1-G, 1-O, 2-G, 2-O
FIRE AREA 21:									
757.0-A25 - Auxiliary Control Instrument Room 1A	Yes	Yes	Yes	1 hour	Severe				2c, 0-G, 1-G, 1-O
FIRE AREA 22:									
757.0-A26 - Auxiliary Control Instrument Room 1B	Yes	Yes	Yes	1 hour	Moderately Severe		8.3.32 & 65		2c, 1-G, 1-O, 2-G
FIRE AREA 23:									
757.0-A27 - Auxiliary Control Instrument Room 2A	Yes	Yes	Yes	No	Moderate		8.3.33, 63 & 64	Yes	2-G, 0-G, 1-G, 2-O
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, 1-O, 2-O

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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, 1-G, 1-O, 2-G
757.0-A12 - Reactor Building Access Room (Unit 1)	Yes	Yes	Yes	No	Moderate				1-G
782.0-A1 - Unit 1 Control Rod Drive Equipment Room	Yes	Yes	Yes	No	Moderate		8.3.51, 62 & 65		1-G, 1-O, 2-G
782.0-A2 - Pressurizer Heater Transformer Room 1	Yes	Yes	Yes	No	Moderate		8.3.52, 62 & 65		1-G, 1-O, 2-G
FIRE AREA 26:									
757.0-A11 - Unit 1 Reactor Bldg Equipment Hatch	Yes	Yes	Yes, Partial	1 hour	Low		6.1.1		2c, 1-G
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, 2-G, 1-O, 0-G, 2-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, 1-G, 1-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		1-G, 2-G, 0-G, 2-O
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, 0-G, 1-G, 2-G
FIRE AREA 31:									
757.0-A17 – Unit 2 Personnel and Equipment Access Room	Yes	Yes	Yes	No	Low		8.3.27, 62 & 65		1-G, 2-G, 0-G, 2-O
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, 2-G, 2-O

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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, 0-G, 0-O, 2-G
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-O, 0-G, 1-G, 1-O, 2-G
FIRE AREA 34:									
772.0-A3 - 125V Vital Battery Room II	Yes	Yes	No (Note 5)	No	Low				1-O, 1-G
FIRE AREA 35:									
772.0-A4 - 125V Vital Battery Room I	Yes	Yes	No (Note 5)	No	Low		8.3.38, 63 & 64		1-G, 1-O, 2-G, 0-G
FIRE AREA 36:									
772.0-A5 - 480V Transformer Room 1-B	Yes	Yes	Yes	1 hour	Moderate		8.3.39 & 62		2c, 1-G, 1-O, 0-G, 2-G
FIRE AREA 37:									
772.0-A6 - 480V Transformer Room 1-A	Yes	Yes	Yes	1 hour	Moderate		8.3.40 & 64	Yes	2c, 1-G, 0-G, 2-G
FIRE AREA 38:									
772.0-A7 - Unit 1 Mechanical Equipment Room	Yes	Yes	Yes	No	Moderately Severe	4.3			1-O, 0-G
FIRE AREA 39:									
772.0-A8 - Fifth Vital Battery and Board Room	Yes	Yes	Yes	No	Low		8.3.41, 62, 63, 64 & 65		0-G, 1-G, 1-O, 2-G, 2-O
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		1-G, 2-G, 0-G

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
FIRE AREA 41:									
772.0-A11 - 480V Transformer Room 2-B	Yes	Yes	Yes	1-hour	Moderately Severe		8.3.44 & 65		2c, 0-G, 1-G, 2-G
FIRE AREA 42:									
772.0-A12 - 480V Transformer Room 2-A	Yes	Yes	Yes	No	Moderately Severe		8.3.45 & 64	Yes	1-G, 1-O, 2-O, 2-G, 0-G
FIRE AREA 43:									
772.0-A13 - 125V Vital Battery Room IV	Yes	Yes	No (Note 5)	No	Low		8.3.46, 62 & 65		2-G, 2-O, 0-G
FIRE AREA 44:									
772.0-A14 - 125V Vital Battery Room III	Yes	Yes	No (Note 5)	No	Low		8.3.47, 63 & 64		2-G, 0-G, 2-O
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, 1-G
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, 1-G, 0-G, 2-G, 0-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				

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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				
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				

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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				
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				

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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	4.7			
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				
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				

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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, 4.7, 5.2			
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				

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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		0-G, 1-G, 2-G
IPS EL 741 West - Screen Wash and HPFP A Pump Room	Yes	No	No	No	Low	2.6.2.1, 5.1	3.3		0-G, 1-G, 2-G
IPS EL 722 West - ERCW Strainer Room A	Yes	Yes	No	No	Insignificant	4.1			0-G, 1-G, 2-G
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		1-G, 2-G
IPS EL 741 East - HPFP B Pump Room	Yes	No	No	No	Low	5.1	3.3		1-G, 2-G
IPS EL 722 East - ERCW Strainer Room B	Yes	Yes	No	No	Insignificant	4.1			1-G, 2-G
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		2b, 0-G, 1-G, 2-G
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, 1-G

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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	Low	4.7			
FIRE AREA 63:									
Turbine Building	Yes	Yes, Partial	Yes, Partial	No	N/A	2.6.4, 2.7.3			
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		0-G, 1-G, 2-G
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		2-O
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, 2-G

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
FIRE AREA 68:									
692.0-A23 - Charging Pump 2A-A	Yes	Yes, Partial	Yes, Partial	No	Moderate		3.1.1		
FIRE AREA 69:									
692.0-A26 - Turbine Driven Aux Feedwater Pump 2A-S Room	Yes	Yes	Yes	No	Low				
FIRE AREA 70:									
692.0-A25 - Unit 2 Penetration Room	Yes	Yes	Yes, Partial	No	Insignificant		8.3.3		2-G
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		
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			

TABLE I-1 SUMMARY COMPLIANCE FIRE PROTECTION

Revision XXX

Room Number and Name	Safe Shutdown Equipment or Cables Y/N	Automatic Detection Y/N, Partial (Note 6)	Automatic Suppression Y/N, Partial (Note 6)	Fire Rated Wraps (Note 6)	Combustible Load, Fire Severity (Note 6)	Deviation Number in Part VII (Note 6)	Evaluation Number in Part VII (Note 6)	CSD Repairs req'd in any room due to fire in room (Note 7)	III.G Compliance for HSD
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 ,1-G, 2-G
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		1-G, 2-G, 2-O
782.0-A3 - Unit 2 CRD Equipment Room	Yes	Yes	Yes	No	Moderate		8.3.53, 63 & 64		1-G, 2-G, 2-O
782.0-A4 - Pressurizer Heater Transformer Room 2	Yes	Yes	Yes	No	Moderate		8.3.54, 63 & 64		1-G, 2-G, 2-O
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-G
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			

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.

Note 7: The CSD repair described in Part V, Section 3.3 may be applied for a fire in any room and is therefore not included in Table I-1.

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 xx, Safety Evaluation Report Related to the Operation of Watts Bar Nuclear Plant, Unit 2, (add date later)

4.1.42 Deleted

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”

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”

4.2.77 Procedure 1-MI-0.047, “Appendix R Safe Shutdown Repairs”

4.2.78 Procedure 2-MI-0.047, “Appendix R Safe Shutdown Repairs”

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"

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 is also the medical response personnel so should there be a fire and an injured person found, the fire brigade would address the medical issue as needed to stabilize the patient and then return to fire fighting. The long term response to the fire could require maintenance personnel to implement cold shutdown repairs; however, the Fire Brigade duties would have been completed by this time and thus there would be no conflict if one of the maintenance persons had been on the fire brigade.

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.

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 CO_2 protected areas, when a CO_2 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 CO_2 discharge. Fire dampers are provided with appropriately rated fusible links based on the ambient temperatures in the location. The fire dampers provided with CO_2 suppression system isolation capability are actuated by CO_2 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.

(A) Mechanical Pipe Penetrations

Mechanical penetrations in fire walls and floors/ceilings are sealed with fire resistance seals that are based on F rating testing performed in accordance with ASTM E-814-83 section 10.1. The F rating ensures the seal is capable of preventing the passage of flame or gases hot enough to ignite cable, fire stop material or other combustibles on the unexposed side for a period equal to the required fire rating and following the fire duration will pass a hose stream test. The F rating is acceptable for mechanical pipe penetrations where the penetrant is a steel, non-combustible pipe and the types of construction and material for floors and walls are noncombustible steel or concrete and do not have combustible internal construction materials or combustible surface finishes (e.g., carpet) on the unexposed side. At WBN, transient combustibles that might be introduced due to work activities are addressed by NPG-SPP-18.4.7, "Control of Transient Combustibles"; consequently, transient combustible material would be restricted on the unexposed side of the seal. Most areas of the plant have detection and suppression on the unexposed side of the seal which would limit the ability of a fire on the unexposed side of a seal to affect a significant amount of equipment. Areas which do not have full suppression and detection are evaluated in Part VII, Section 3.1. Section 3.1 concluded that the addition of full suppression and detection in these rooms is not required for FSSD. The seal must be able to accommodate the service temperature and any thermal or mechanical movement of the pipe

ASTM E-814-83 Section 10.2 also contains provisions for establishing a T rating for mechanical penetrations. The T rating ensures the unexposed side temperature of the seal (not the penetrant) is sufficiently low to preclude ignition where combustible walls/floors, interiors, transient combustibles, etc. are present. A T rating is not needed for mechanical pipe penetrations where the types of construction materials, such as used in nuclear power plants, for floors and walls are noncombustible steel or concrete and do not have combustible construction materials or combustible surface finishes (e.g., carpet) on the unexposed side of the seal.

Based on the above discussion, the F rating of the mechanical penetration seals along with the seal passing the hose stream test will be considered as acceptable to maintain the integrity of the fire barriers. See Engineering Report 0006-00922-02 (Reference 4.2.44) for further evaluations of the WBN Penetration Seals.

(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^{o} 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.

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 operation 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

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 accordance with the provisions of Part II, Section 13.1 and OR 14.3.1.b.2.b and OR 14.3.1.b.3.b, an evaluation (see Part VII, section 6.1) has been performed to justify that no alternate compensatory actions inside the room when the shield blocks are installed, normally during power operation are required nor are practical for the two Reactor Building Equipment Hatch Rooms (757.0-A11 & A15). OR 14.3.1.a compensatory actions will be performed inside the room, as applicable, when the shield blocks are removed and alternate compensatory actions will be performed outside the room when the shield blocks are installed.

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.

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.

(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 available for operation to perform its fire safe shutdown requirements (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.

Fire related equipment failures (Item 7 above) can affect the reactor coolant system (RCS) thermodynamic or thermohydraulic conditions (i.e., system pressure, liquid level, etc) and lead to the parameter actually exceeding the setpoint for initiation of a safety injection (SI) (i.e,, not initiated by false indications or fire-induced logic circuit failure). The opening of a pressurizer power operated relief valve (PORV) causes both the RCS pressure to decrease and the RCS mass inventory to decrease. Excessive pressurizer spray due to a pressurizer spray valve failing open coupled with a running reactor coolant pump (RCP) will result in a decrease in RCS pressure. Other fire induced failures such as failure to close the main steam isolation valves, failure to close the main feedwater isolation valves, injection of excessive auxiliary feedwater, or the uncontrolled opening of a steam generator PORV can cause excessive cooling of the secondary side of the steam generators and hence excessive cooling of the RCS. Cooling of the RCS will result in a decrease in both RCS pressure and pressurizer liquid level. Long term inventory releases to the primary containment via the pressurizer PORVs through the pressurizer relief tank will raise the atmospheric pressure inside primary containment. If these conditions are not corrected in a timely manner, the parameter could actually exceed its setpoint

for creating an SI signal, and an SI would be initiated (i.e., additional water injected into the RCS).

In addition to fire damage causing plant parameters to actually reach an SI signal setpoint, the fire itself can damage circuitry such that a spurious safety injection signal is generated (i.e,, initiated by false indications or fire-induced logic circuit failure), as discussed in item 6 above. In this case, the plant parameters are actually within normal bounds; however, the fire damage causes the false signal to be generated.

The SI function is designed to restore RCS inventory and pressure in the event a parameter exceeds a design basis setpoint indicative of an event with the potential to result in fuel damage. The above described events could lead to actually exceeding an SI setpoint. However, once the plant condition and the applicable parameter that generated the signal is corrected, the SI can be secured, and the SI signal reset. The SI function's design basis includes events in which the RCS pressure boundary is ruptured. Since Appendix R events are not postulated concurrent with design basis accidents such as an RCS rupture and the resulting loss of RCS inventory, valves opened due to fire induced failures such as the pressurizer PORVs can be closed by Appendix R procedures. Only a short duration injection with SI related systems is expected after which the system parameters must be controlled in a manner to reach cold shutdown within 72 hours.

The WBN analysis considers both the scenario of fire damage generating an SI signal directly (false indications or fire-induced logic circuit failure) and fire related failures causing actual plant parameters to reach the SI setpoint. The fire safe shutdown analysis, and hence plant fire response procedures, contain steps that attempt to correct the plant condition before the RCS parameter actually reaches the SI setpoint ("prevent SI"). These steps close valves, control flows, etc. to reduce or eliminate (i.e., correct) the unwanted effect which could result in an SI. In case these actions are not successful (i.e., either not performed soon enough or the fire prevents successful completion of the action) or the SI signal is generated directly due to fire damage, the analysis and plant procedures contain reactive steps to correct the plant condition that induced the SI; secure and reset SI to preserve RCS integrity; and continue managing plant conditions to reach cold shutdown within 72 hours ("mitigate SI").

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 350^0 F.
Hot Shutdown (Mode 4)	Reactor at zero power, K_{eff} less than 0.99 and average RCS temperature T_{avg} less than 350^0F and greater than 200^0F.
Cold Shutdown (Mode 5)	Reactor at zero power, K_{eff} less than 0.99 and average RCS temperature T_{avg} below or equal to 200^0F.
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).

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. These signals are referred to in the FPR as ‘inadvertent’ to differentiate them from “spurious” safety injection signals. Spurious signals are a direct result of the fire and are not caused by the plant conditions reaching a safety injection setpoint. An assumed spurious SI signal cannot be prevented since it is caused directly by the fire. Inadvertent safety injection signals result from fire induced equipment operations which cause the plant conditions to reach the safety injection setpoint. Inadvertent SI signals can be prevented if actions can be performed in time to prevent the plant conditions from reaching the setpoint. Regardless of whether the SI is initiated due to a spurious or inadvertent signal, the Appendix R procedures contain steps to respond to the event and restore the plant to a condition for proceeding to cold shutdown. 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

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.

Main control room abandonment due to a fire requires alternative shutdown capability in accordance with Appendix R Section III.G.3 and Regulatory Guide 1.189, Section 5.3.1.3. OMAs associated with alternative shutdown capability may be credited without NRC approval as described in Regulatory Guide 1.189, Section 5.3.1.3. Actions 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 as discussed in paragraph 2.1.2.1.C. OMAs for alternative shutdown performed in other plant areas are also evaluated against the criteria provided in Section 2.1.2.1.C.

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 at the time of Unit 2 initial startup 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. The acceptance criteria for Unit 1 OMA demonstrated performance times is established in SSER 18, Appendix FF, Section 3.5. Feasibility and reliability timing criteria 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. Feasibility and reliability timing criteria 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).

3. OMAs for Unit 2 and common required for fire safe shutdown will be evaluated by the NRC as part of their review of the as-constructed dual unit fire protection report prior to Unit 2 startup.

TVA may make changes to the approved fire protection program without prior approval of the NRC, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire. New required for fire safe shutdown OMAs require prior approval of the NRC. Feasibility and reliability of new or revised OMAs are evaluated as

described below. Those OMAs requiring prior NRC approval are documented as engineering evaluations in Part VII, Section 8 of this FPR.

2.1 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 and new Unit 1 OMAs 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). Operator manual actions and operator actions associated with main control room abandonment are evaluated against a 100% margin (i.e., factor of 2) timing criteria as described in 2.1.2 below.

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 combustible 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 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 toxic 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 Feasibility and Reliability Acceptance Criteria

OMAs and operator actions associated with abandoning the main control room 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).

2.1.2.1 Adequate Time Available to Perform Actions

2.1.2.1.A. - OMAs Required for Fire Safe Shutdown – For calculated allowable time ≥10 minutes to perform actions (t=0 is defined in Section 2.2.2) and:

a. When use of self-contained breathing apparatus (SCBA) is not required and the room of fire origin is equipped with cross zoned smoke detection to ensure early detection and NAUO recall, and is not subject to spurious reactor trip, the demonstrated performance time shall be less than 50% of the allowable time (100% margin).

b. Additionally, the following uncertainty allowances, as applicable, should be added to the demonstrated performance time before comparing to the 50% of the allowable time (100% margin):

i. If SCBA is needed and not utilized 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,

ii. 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).

iii. A ten (10) minute delay for visual fire confirmation for a fire in the IPS duct bank.

iv. A five (5) minute delay for NAUO recall if a fire in the room could cause spurious reactor trip.

At the time of Unit 2 initial startup, all Unit 1, 2 and common OMAs Required for Fire Safe Shutdown meet the criteria stated above.

2.1.2.1.B - OMAs Important for Fire Safe Shutdown - OMAs shall meet either: 1) 2.1.2.1.B.a and 2.1.2.1.B.b or 2) 2.1.2.1.B.c.

a. For calculated allowable time ≥10 minutes to perform actions (t=0 is defined in Section 2.2.2) and when use of self-contained breathing apparatus (SCBA) is not required and the room of fire origin is equipped with cross zoned smoke detection to ensure early detection and NAUO recall, and is not subject to spurious reactor trip, the demonstrated performance time shall be less than 50% of the allowable time (100% margin), and

b. Additionally, the following uncertainty allowances, as applicable, should be added to the demonstrated performance time before comparing to the 50% of the allowable time (100% margin):

i. If SCBA is needed and not utilized 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,

ii. 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).

iii. A ten (10) minute delay for visual fire confirmation for a fire in the IPS duct bank.

iv. A five (5) minute delay for NAUO recall if a fire in the room could cause spurious reactor trip.

c. Important to safe shutdown OMAs with either: 1) the calculated allowable time of ≤10 minutes (t=0 is defined in Section 2.2.2) or 2) OMAs not meeting the 100% time margin criteria require an evaluation and approval by TVA Engineering. The evaluation shall be based on the guidance and performance factors described in Reference 4.1.44 and address defense in depth measures as applicable and conclude that the OMA can be completed including uncertainties in less than or equal to two thirds of the allowable time (50% margin). For example, an OMA with an allowed time of 30 minutes and a demonstrated time of 20 minutes has 10 minutes of margin which results in 50% margin compared to the demonstrated time.

At the time of Unit 2 initial startup, all Unit 1, 2 and common OMAs Important for Fire Safe Shutdown meet the criteria stated above in paragraphs 2.1.2.1.B.a. and 2.1.2.1.B.b with the exception of the following OMAs which are evaluated using 2.1.2.1.B.c:

i. OMA 1667 Unit 2
ii. OMA 1668 Unit 2
iii. OMA 105 Unit 1
iv. OMA 106 Unit 1

New or revised important to safe shutdown OMAs which do not meet the criteria stated above in either paragraph 2.1.2.1.B.a. or 2.1.2.1.B.b and are approved using 2.1.2.1.B.c above will be added to the above list of OMAs.

There is no uncertainty allowance for either OMAs required for fire safe shutdown, or important for fire safe shutdown, 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.

2.1.2.1.C Operator Actions and Operator Manual Actions associated with abandoning the MCR

a. Operator Actions and Operator Manual Actions associated with abandoning the MCR are excluded from NUREG 1852. Operator actions performed at auxiliary control system stations (e.g., Auxiliary Control Room) and operator manual actions performed in other areas of the plant following main control room abandonment shall have allowed times of $\geq$10 minutes (except as described below) and are evaluated by ensuring the demonstrated performance time is less than or equal to 50% of the allowable time (100% margin).

b. An exception to the $\geq$10 minute criteria is for OMAs performed by the control room operator on the way to the auxiliary control station. The evaluation of actions shall include a delay for diagnosis of the event and shall be demonstrated to have at least one minute of margin. The evaluation shall consider the available defense in depth measures.

At the time of Unit 2 initial startup, all Unit 1 and 2 OMAs associated with abandoning the MCR meet the 2.1.2.1.C.a criteria stated above with the exception of the following OMAs which are evaluated using 2.1.2.1.C.b:

i. OMA 1638 Unit 1
ii OMA 1639 Unit 2

Actions 1638 and 1639 are 5 minute actions to isolate the letdown path and are performed by the control room operator on the way to the auxiliary control station in order to protect the letdown heat exchanger from over pressurization by the reactor coolant system. These actions are performed in case cooling is lost to both the regenerative and letdown heat exchangers. The letdown heat exchanger is in the preferred path for long term letdown to the Hold Up Tank (HUT). In the event this path is damaged/lost due to the OMA not being performed in time, there are other letdown paths which could be utilized such as letdown to the primary containment or to the refueling water storage tank. It was demonstrated that the action can be performed (including travel time) in less than 1 minute. Assuming 1 minute for diagnosis of the event prior to leaving the control room, the total time for performance of the action is 2 minutes which provides 3 minutes (150%) time margin.

2.1.2.2 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 time margin allowances from paragraph 2.1.2.1.A and 2.1.2.1.B above ensures adequate time to reach the control location and perform the action. Due to the fire compartmentation (walls and doors) and multiple routes to access rooms, the NAUO will be able to avoid the direct fire effects of smoke and toxic gasses and thus there is no additional uncertainty added for the effects of smoke and toxic gasses other than the effects of wearing SCBA as discussed above. 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 Intra-plant 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.

2.1.2.3 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.

2.1.2.4. Plant procedures are available for the affected room (see Section 2.2 below)

2.1.2.5. 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 1 hour.

The following assumptions may be applied (if appropriate) in the feasibility and reliability analysis:

1. A bounding analysis can be used for OAs and OMAs 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, CO_2 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, on an operator-by-operator basis, the locations and sequence in which the OAs and 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 performed in less than 2-hours following a reactor trip as a result of the declared Appendix R fire. The less than 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. For control building fires, they can be dispatched from either the MCR or the Auxiliary Control Room. 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, CO_2 initiation or sprinkler initiation) or visual observation, in accordance with 0-AOI-30.1, “Plant Fires” (Part II, Reference 4.2.59), 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 result in abandonment of the MCR to ensure fire safe shutdown capabilities. The control building is considered an alternative shutdown area in accordance with Appendix R, Section III.L and Regulatory Guide 1.189, Section 5.4.

Prior to leaving the MCR, the following actions are performed:

- Trip reactor to place the reactor in a safe reactivity condition,
- Close the block valves upstream of the pressurizer power operated relief valve (PORV) and close the PORVs to prevent mass release from the reactor coolant system (RCS)
- Trip reactor coolant pumps (RCPs) and open the RCP start bus breakers to prevent RCS depressurization due to pressurizer spray valve operation
- Close the Main Steam Isolation Valves (MSIVs) to prevent RCS depressurization and overcooling due to secondary side steam release
- Close the Main Feedwater Isolation Valves to prevent RCS depressurization and overcooling due to steam generator overcooling and overfilling
- Close the Steam Generator Power Operated Relief Valves (SG PORVs) to prevent RCS depressurization and overcooling due to steam generator overcooling
- Open supply valves from the refueling water storage tank to the centrifugal charging pumps

The block valves for the pressurizer power operated relief valves and the PORVs themselves are closed to prevent unrestricted mass loss from the reactor coolant system (RCS) which would also lead to RCS depressurization. The reactor coolant pumps are tripped and the RCP start bus breakers are opened/tripped in order to terminate pressurizer spray which could lead to the RCS depressurizing to the setpoint for initiation of a safety injection. The closure of the PORV discharge path and the tripping of the reactor coolant pumps are performed to prevent fire induced direct effects on the RCS. In addition to these actions, other actions are performed to prevent a safety injection due to secondary side effects and to protect the centrifugal charging pumps for inventory makeup. After leaving the MCR, the operating staff operates transfer switches located in the auxiliary control room and on electrical power boards in the auxiliary building to electrically isolate the control building circuits from the auxiliary control system circuits. The staff then performs confirmatory actions to ensure the actions taken prior to leaving the MCR remain effective and cannot be negated by subsequent spurious actuation signals resulting from the postulated fire.

10 CFR 50 Appendix R, Section III.L states, “Alternative or dedicated shutdown capability provided for a specific fire area shall be able to (a) achieve and maintain subcritical reactivity conditions in the reactor; (b) maintain reactor coolant inventory; (c) achieve and maintain hot standby conditions for a PWR; (d) achieve cold shutdown conditions within 72 hours; and (e) maintain cold shutdown conditions thereafter. During the postfire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal a.c. 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.”

The tripping of the reactor (and the subsequent maintaining of required RCS boron levels) is performed to achieve and maintain subcritical reactivity conditions in the reactor (Criteria a

above). Reactor coolant system (RCS) inventory is maintained via preventing mass loss through the pressurizer PORVs and by ensuring liquid injection is maintained from the charging pumps via charging through the reactor coolant pump seals (Criteria b above). Mass release through the PORVs is prevented by the redundant actions of the closing of the PORV block valves and the PORVs themselves. Actions are taken to protect the centrifugal charging pumps by ensuring the pumps maintain a suction path from the refueling water storage tank. Steam generator inventory and hence reactor coolant system cooling is maintained via the auxiliary feedwater (AFW) system which is automatically actuated in response to the reactor trip. In the event the AFW system does not automatically actuate, actions are performed in the plant demonstrated to be completed within 10 minutes to ensure the system is running and injecting to the steam generators. Operation of the AFW system ensures the ability to achieve and maintain hot standby conditions (Criteria c above). No actions are required prior to abandoning the MCR in order to initiate AFW. The ability to achieve and maintain cold shutdown conditions (Criteria d and e above) are not related to the actions performed in the MCR prior to abandonment.

Appendix R, Section III.L.2.b states, “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.” This criteria is further interpreted by NEI-00-01, Appendix D, Section D.4, Revision 2 as, “When utilizing the alternative or dedicated shutdown capability, transients, e.g. fire-induced spurious operations that cause deviations in system process variables from those expected conditions for a normal shutdown resulting from a loss of normal a.c. have been previously evaluated. A short-duration partial core uncovery (approved for BWRs when using alternative or dedicated shutdown capability) and a short duration of RCS level below that of the level indication in the pressurizer for PWRs are two such transients. These transients do not lead to unrestorable conditions and thus have been deemed to be acceptable deviations from the performance goals.”

Actions are also performed in the MCR prior to abandonment to prevent a safety injection due to low RCS pressure. The redundant closing of the pressurizer PORVs and pressurizer PORV block valves and the redundant tripping of the RCPs and the RCP start bus breakers via OMAs provides assurance that the actions will be successful. In the event a safety injection occurs, the RCS inventory will increase and thus does not lead to the RCS level below that of the level indication in the pressurizer for PWRs. Following closure of the pressurizer PORV path and tripping the RCPs, the Appendix R response procedures contain actions to respond to a safety injection and maintain or restore water level to within the level indication in the pressurizer. With the pressurizer PORV or block valve closed by the OMAs, the water level meets the Appendix R, Section III.L.2.b criteria. Section 2.3.2 below discusses the system response if the safety injection does not occur in response to a safety injection signal with a PORV path open.

The closure of the MSIVs and steam generator PORVs is performed to prevent overcooling of the RCS due to steam release from the secondary side of the steam generators which could lead to the RCS pressure reaching the safety injection setpoint. The closure of the main feedwater isolation valves is performed to prevent overcooling of the RCS due to excess cold water which could lead to the RCS pressure reaching the safety injection setpoint. The RCS water level is maintained above the level indication in the pressurizer either with or without a safety injection as required by Appendix R, Section III.L.2.b.

Since the occurrence of a safety injection will result in an RCS mass increase (as opposed to a mass decrease), a safety injection will not result in the plant violating the low reactor water level requirements of Appendix R, Section III.L. Since the plant has procedures to control water level

in response to a safety injection, the RCS inventory will remain above the acceptance limit and the procedures will allow the operators to restore a high water level to within the indicating range without challenging the pressure boundary. The plant maintains conformance with the requirements of Appendix R, Section III.L with or without the performance of the confirmatory actions.

The following provides additional information regarding the basis for success for each of the actions prior to main control room abandonment.

2.3.1 Trip Reactor - There are two independent switches in the control room which are located approximately 20 feet apart and on different boards. The spatial separation and board separation will serve to slow the effects of a fire so that the operation can be successfully completed prior to MCR abandonment.

Tripping the reactor prior to MCR abandonment will ensure the plant's ability to meet the reactivity requirements of Appendix R, Section III.L.

2.3.2 Close Pressurizer Power Operated Relief Valves (PORVs) and block valves - The two pressurizer PORVs and their two associated block valves are in series and are closed to prevent spurious depressurization and mass release from the reactor coolant system (RCS). If either valve in the path closes, mass release and depressurization are prevented. Each PORV and its related block valve have independent switches to close the valve. Each PORV and its related block valve have independent power supplies from opposite train power (PORV powered from a battery board; block valve powered from a Reactor MOV board). The PORVs fail closed on loss of power.

Procedures direct operators in the main control room (MCR) to promptly close both pressurizer PORVs by placing their hand switches in the closed position. Next, the procedures direct operators to close both pressurizer PORV block valves. Following direction to abandon the MCR, operators proceed to the auxiliary control room. When in the auxiliary control room, procedures direct the operators to take auxiliary control of all four valves. Procedures direct operators to close any spuriously open pressurizer PORV and ensure both pressurizer PORVs are closed via the auxiliary control station switches. Finally, the procedures direct operators to close the associated pressurizer PORV block valves via auxiliary control station switches. These actions are performed to either prevent or mitigate a plant condition induced safety injection.

If plant conditions indicate the need for a safety injection but fire damage prevents automatic or manual safety injection actuation from the MCR prior to abandoning the MCR, reactive actions can be taken as a defense in depth measure. TVA engineering analysis (Reference 4.2.17) shows that for the ten minute delay needed to manually actuate emergency core cooling system related components from the associated electrical power boards, pressurizer level may drop below the indicating range but no core uncovery will occur and the water level will recover as a result of the manually initiated injection. Stable plant conditions (pressure, level, natural circulation, etc.) will be restored and no unrecoverable conditions will be created following this short duration for remote manual emergency core cooling system component initiation.

The combination of the valves failing to the closed position along with the MCR actions and actions outside the MCR ensure the plant's ability to meet the inventory requirements of Appendix R, Section III.L.

2.3.3 Trip Reactor Coolant Pumps and Open RCP Start Bus Breakers - The reactor coolant pumps are tripped and the RCP Start Bus breakers are tripped either of which will prevent the effects of spurious opening of a pressurizer spray valve which could cause rapid RCS depressurization and SI initiation. Tripping the reactor coolant pumps and tripping the RPS Start Bus breakers prior to abandonment will be successful in preventing the safety injection because the RCP breakers are more than 30 feet from the RCP start bus breakers and thus both sets of switches would not be immediately affected by a fire. Each RCP has a independent breaker hand switch and thus the fire would have to affect multiple hand switches to prevent the trip. RCP number 2 is the only RCP which will result in significant spray flow. In order for the spray flow to occur, the fire would have to result in the spurious opening of the spray valve in addition to the failure of the above steps to stop the RCPs and thus the possibility of a spray induced SI is further diminished. For confirmation and to ensure the RCPs cannot restart, the RCP bus breakers in the yard are ensured to be tripped within 20 minutes after abandoning the MCR.

The combination of the actions performed in the MCR and outside the MCR along with the physical separation of the involved circuits ensures the plant's ability to meet the inventory requirements of Appendix R, Section III.L.

2.3.4 Close Main Steam Isolation Valves (MSIV) - Failure of the MSIVs to automatically close following reactor trip concurrent with the steam dump valves failing open could over cool the primary system resulting in SI actuation. Operator action to close the MSIVs prior to abandoning the MCR prevents SI actuation because it takes both an open MSIV and spurious opening of the steam dump valves to overcool the primary system. The MSIVs fail closed on loss of power or air. There are two independent trains from the Engineered Safeguards system either of which will automatically cause the MSIVs to close. Upon control room abandonment, confirmatory actions are performed by the MCR staff in the auxiliary control transfer switch rooms. Transfer switch operation for either train ensures closure of the MSIVs. Spurious re-opening of a single MSIV prior to transfer would not result in an SI which requires two independent spurious actuations (i.e., MSIV opening and the steam dump valves failing open).

The combination of the valves failing to the closed position along with the MCR actions and actions outside the MCR ensure the plant's ability to meet the inventory requirements of Appendix R, Section III.L.

2.3.5 Main Feedwater Isolation - Main feedwater can be isolated using hand switches in the main control room. Additionally, the Main Feedwater Isolation (MFI) signal closes the main feedwater isolation valves and normally follows reactor trip within a few seconds as the reactor coolant system average temperature (TAVG) signal drops or SG level increases. In addition to isolating feedwater due to the closing the main feedwater isolation valves, closure of the main steam isolation valves would isolate the steam supply for the turbine driven main feedwater pumps and thus would significantly reduce flow to the steam generators. In order to prevent main feedwater isolation, a fire would have to affect both hand switches in the control room and result in failure of the feedwater isolation signals resulting from high steam generator water level. In addition to closure of the main feedwater isolation valves, the main feedwater regulating valves located in the turbine building fail closed on loss of power or air. Confirmatory actions at the reactor MOV boards isolate the control building circuits and ensure the main feed water isolation valves are closed. A smaller bypass feed water line is provided to each steam generator for use during low flow conditions. A very low tempering flow is maintained in the bypass line during normal operation for Unit 2. As part of the MCR abandonment, the bypass line isolation valves are closed by removing power from the solenoid by operating a disconnect

switch in the 125vdc Vital Battery Board Room. Operation of the unit 2 disconnect switch also de-energizes the main feed water line and bypass line regulating valve solenoids causing the valves to close. As part of the MCR abandonment, for Unit 1 the switch disconnects and isolates the bypass line isolation valve solenoid cable to ensure valve closure. For both units, main feed water isolation is assured by the automatic main feedwater isolation (MFI) signal, operator action in the MCR, and backup actions outside the MCR.

The combination of the valves failing to the closed position along with the MCR actions and actions outside the MCR ensure the plant's ability to meet the inventory requirements of Appendix R, Section III.L.

2.3.6 Close SG Power Operated Relief Valves (PORV) - Spurious opening of a SG PORV could cause overcooling of the primary system resulting in an SI actuation signal. In order for the SG PORV to open, the fire must affect both the bistable handswitch and the controller. The SG PORV fails closed if either of the two independent trained solenoids is energized which isolates the air supply and vents the air line to the SG PORV which causes the SG PORV to fail closed. To prevent SI actuation, the MCR operator closes the SG PORVs by energizing both redundant train solenoids. Energizing either train blocks the air supply to the valve and vent the air causing the SG PORV to fail closed. Since either train will close the valve, a single spurious would not reopen the valve before the transfer switch operation isolates the control building portion of the circuit. After transfer to the ACS, the SG pressure is controlled by the ACR pressure controllers if auxiliary control air is available or by manual operation via the nitrogen control stations. Even if the fire could prevent the operator from closing the SG PORV before evacuating the MCR, the worst case scenario would be SI actuation which is managed by mitigation actions in the AOIs.

The combination of the valves failing to the closed position along with the MCR actions and actions outside the MCR ensure the plant's ability to meet the inventory requirements of Appendix R, Section III.L.

2.3.7 Centrifugal Charging Pump (CCP) suction transfer to Refueling Water Storage Tank (RWST) - The CCP normally draws suction from the volume control tank (VCT), and is connected to the RWST as its safety-related water supply. Suction from the RWST occurs by opening at least one of the two parallel RWST outlet valves (which have independent, opposite train vital power supplies). Either valve is sufficient to supply a suction path.

For a fire in the control building, possible spurious closure of either of the VCT outlet valves would automatically open both of the RWST outlet valves due to local interlocks at the valves. The interlock to open the RWST outlet valve with a VCT outlet valve closing is an automatic preventive measure to prevent loss of suction for both CCPs. Procedures then direct operators to promptly open both RWST outlet valves as a back up action prior to abandoning the MCR. Following direction to abandon the MCR, operator manual actions ensure opening of both RWST outlet valves. Both RWST outlet valves are opened in case one spuriously recloses prior to completion of the transfer to the auxiliary control system (ACS). If the fire prevents performance of the transfer to RWST and the single spurious action is closure of the VCT outlet valve, the running CCP could be damaged. In the event both CCPs are damaged and as a reactive action for defense in depth, 0-AOI-30.2 C.69 procedure references the MCR crew to follow the guidance in 1/2-AOI-20 (Malfunction of Pressurizer Level Control System) Section 3.3 for a loss of both CCPs. This 1/2-AOI-20 section will give the necessary guidance to reduce RCS pressure below the shutoff head of a Safety Injection Pump (SIP) for RCS makeup capability.

The combination of the automatic actions to transfer the CCP suction to the RWST along with the procedural steps to provide the CCP suction path from the RWST from either actions in the MCR or actions performed in the auxiliary building after MCR abandonment will ensure stable conditions meeting Appendix R Section III.L. Additionally, the procedural guidance for responding to a loss of both CCPs will prevent an unrecoverable condition and conditions can be restored to meeting Appendix R Section III.L.

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 (References 4.2.77 and 4.2.78) 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, -A3, -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, -A3, -A8
3. Room 713.0-A1A, -A1B, -A1C, -A27, -A28
4. Room 737.0-A1B, -A1N, -A7, -A8

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 and/or -9-B. The repair requires the installation of a jumper on 1-MCC-213-A1-A in Room 772.0-A1 when the control cable for 1-FCV-74-1-A is 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 during the first 8 hours of the Appendix R response and in access and egress routes to these locations. Portable or temporary lighting will be used for OMAs having times after 8 hours. 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.

(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 except control building fires. 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

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: The justification for the 1-1/2 hour dampers in the 3 hour fire barrier between the Waste Package Area (729.0-A4) and the CDWE is documented in Part VII, Section 4.7.

Evaluations: None.

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-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	75
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	75
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	75
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	75
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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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-62-9	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-1-18-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	25
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-32-112	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-32-112	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-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

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-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	75
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	75
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	75
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	75
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

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-62-9	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-1-18-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	25
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-32-112	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-32-112	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-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

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-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	75
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	75
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	75
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	75
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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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-62-9	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-1-18-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	25
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-32-112	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-32-112	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-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

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-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	75
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	75
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	75
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	75
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 BOARD AS	118

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
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	25
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-32-112	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-32-112	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-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
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

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-LCV-62-132-A	713-A7	MUST CLOSE	HANDWHEEL	70
1-PCV-1-23	757-A5	OPEN/CLOSE	1-ISIV-1-407E2	75
1-PCV-1-30	757-A5	OPEN/CLOSE	1-ISIV-1-406E2	75
2-PCV-1-23	757-A24	OPEN/CLOSE	2-ISIV-1-407E2	75
2-PCV-1-30	757-A24	OPEN/CLOSE	2-ISIV-1-406E2	75
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

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-62-9	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-1-18-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	25
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-32-112	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-32-112	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-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

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 and the justification for not requiring compensatory measures inside the room when the shield blocks are installed if fire protection related equipment in the room is impaired is documented in Part VII, Section 6.1 of the FPR.

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	75
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	75
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	75
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	75
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	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	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-32-110A-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-32-110A-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-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	25
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

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	75
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	75
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	75
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	75
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	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	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	EXTERNAL	10

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		DEENERGIZE	SOURCE BREAKERS	
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-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-32-110A-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-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	25
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

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	75
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	75
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	75
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	75
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	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	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-32-110A-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

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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-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	25
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

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	75
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	75
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	75
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	75
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	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	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	EXTERNAL	10

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
		DEENERGIZE	SOURCE BREAKERS	
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-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-32-110A-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-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	25
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

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	75
1-PCV-1-5	757-A2	OPEN/CLOSE	1-ISIV-1-408E2	75
2-PCV-1-12	757-A21	OPEN/CLOSE	2-ISIV-1-405E2	75
2-PCV-1-5	757-A21	OPEN/CLOSE	2-ISIV-1-408E2	75
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	713-A1BN	OPEN	HANDWHEEL	1140
2-FCV-70-156-A	772-A16	MUST OPEN	2-BKR-70-156-A	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	10

MCR OPER ACTION COMPONENT	CONTROL LOCATION	FUNCTION PERFORMED	CONTROL OPERATED	WHEN REQUIRED
			BREAKERS	
2-BD-211-B-B	755-C12	MUST DEENERGIZE	TRIP SOURCE BREAKERS	10
1-FCV-62-22	755-C12	MUST BE OPEN	1-HS-32-110A-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
1-FCV-62-90-A	755-C12	MUST CLOSE	1-HS-62-90A-A	25
2-FCV-62-90-A	755-C12	MUST CLOSE	2-HS-62-90A-A	25
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

3.55 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 CO_2 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 Area 54, Room 760.5-D2	II-35A II-35A	3 Hours 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 CO_2 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: The justification for the 1-1/2 hour damper in the 3 hour fire barrier between the Unit 1 1A-A Air Exhaust Room (760.5-D3) and the Corridor (742.0-D9A) is documented in Part VII, Section 4.7.

Evaluations: 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. The justification for the 1-1/2 hour damper in the 3 hour fire barrier between the Unit 1 1A-A Air Exhaust Room (760.5-D3) and the Corridor (742.0-D9A) is documented in Part VII, Section 4.7. 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.

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 low.

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 Area 11, Room 729.0-A4	II-38A II-38A	3 Hours 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: The justification for the 1-1/2 hour dampers in the 3 hour fire barrier between the Waste Package Area (729.0-A4) and the CDWE is documented in Part VII, Section 4.7.

Evaluations: 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 and the justification for not requiring compensatory measures inside the room when the shield blocks are installed if fire protection related equipment in the room is impaired is documented in Part VII, Section 6.1.

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS EXCEPT CONTROL BUILDING FIRES

End Device	Function Performed	Control Operated[5]	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
0-MTR-67-28-A[1,10]	START	0-HS-67-28A-A (MCR)	0
0-MTR-67-32-A[1,10]	START	0-HS-67-32A-A (MCR)	0
0-MTR-67-36-A[1,10]	START	0-HS-67-36A-A (MCR)	0
0-MTR-67-40-A[1,10]	START	0-HS-67-40A-A (MCR)	0
1-MTR-70-46-A[1,11]	START	1-HS-70-46A-A (MCR)	0
2-MTR-70-59-A[1,11]	START	2-HS-70-59A-A (MCR)	0
0-MTR-70-51-S[11]	START	0-HS-70-51A-S (MCR)	0
1/2-MTR-62-108-A[1]	START	1/2-HS-62-108A-A (MCR)	4
TDAFW_PUMP_2A-S	TRIP	2-HS-46-55A-S (MCR)	13
TDAFWP_A-S	TRIP	1-HS-46-55A-S (MCR)	13
1/2-LCV-3-156[1]	CONTROL	1/2-LIC-3-156A (MCR)	13
1/2-LCV-3-164[1]	CONTROL	1/2-LIC-3-164A (MCR)	13
1/2-MTR-3-118-A[1]	START	1/2-HS-3-118A-A (MCR)	13
1/2-MTR-3-128-B[1]	STOP	1/2-HS-3-128A-B (MCR)	13
1/2-FCV-62-55[1,12]	CLOSE	1/2-HS-62-55A (MCR)	14
1/2-FCV-62-69-A[8,9,12]	CLOSE	1/2-HS-62-69A-A (MCR)	14
1/2-LCV-62-135-A[1,9]	OPEN	1/2-HS-62-135A-A (MCR)	14
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
1/2-HTR-68-341A/A1-A7	DEENERGIZE	1/2-HS-68-341A (MCR)	25
1/2-HTR-68-341D/B1-B7	DEENERGIZE	1/2-HS-68-341D (MCR)	25
1/2-HTR-68-341H/C1-C6	DEENERGIZE	1/2-XS-68-341H	25
1/2-HTR-68-341F/D1-D6	DEENERGIZE	1/2-HS-68-341F (MCR)	25
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

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS EXCEPT CONTROL BUILDING FIRES

End Device	Function Performed	Control Operated[5]	When Required (Minutes)
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
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-ISV-62-550[1,3]	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-PCV-68-340A-A[1,2]	OPEN/CLOSE	1/2-HS-68-340AA-A (MCR)	60
1/2-LCV-62-132-A[1]	CLOSE	1/2-HS-62-132A-A	70
1/2-MTR-30-38-A[13]	OPERATE	1/2-HS-30-38A-A	100
1/2-MTR-30-39-B[13]	OPERATE	1/2-HS-30-39A-B	100
1/2-MTR-30-74-A[1]	OPERATE	1/2-HS-30-74A-A	120
1/2-MTR-30-77-A[1]	OPERATE	1/2-HS-30-77A-A	120
1/2-MTR-30-83-A[1]	OPERATE	1/2-HS-30-83A-A	120
1/2-MTR-30-88-A[1]	OPERATE	1/2-HS-30-88A-A	120
0-MTR-31-12[1,6]	START	0-HS-31-12A	240
0-PMP-24-10[4]	OPEN BREAKER	0-BKR-24-10	1140
0-PMP-24-13[4]	OPEN BREAKER	0-BKR-24-13	1140
0-PMP-24-141[4]	OPEN BREAKER	0-BKR-24-141	1140
0-PMP-24-144[4]	OPEN BREAKER	0-BKR-24-144	1140
0-PMP-24-17[4]	OPEN BREAKER	0-BKR-24-17	1140
0-PMP-24-20[4]	OPEN BREAKER	0-BKR-24-20	1140
0-PMP-24-7[4]	OPEN BREAKER	0-BKR-24-7	1140
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	1140
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	1140
1/2-HCV-74-36	THROTTLE AS REQUIRED	HANDWHEEL	1140
1/2-HCV-74-37	THROTTLE AS REQUIRED	HANDWHEEL	1140

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS EXCEPT CONTROL BUILDING FIRES

End Device	Function Performed	Control Operated[5]	When Required (Minutes)
LIGHTS[6]	DEENERGIZE	0-LAC-228-131 (BRKS 8, 9, & 10)	1440
LIGHTS[6]	DEENERGIZE	0-LAC-228-231 (BRKS 8, 9, & 10)	1440
1/2-FSV-68-394-A[3,7]	ENERGIZE	1/2-SW-68-394-A (MCR)	(Note 2)
1/2-FSV-68-397-A[3,7]	ENERGIZE	1/2-SW-68-394-A (MCR)	(Note 2)
1/2-FSV-68-395-B[3,7]	ENERGIZE	1/2-SW-68-395-B (MCR)	(Note 2)
1/2-FSV-68-396-B[3,7]	ENERGIZE	1/2-SW-68-395-B (MCR)	(Note 2)

1. Configuration as shown if Train-A is chosen. May be different if Train-B is chosen. Also applies to other redundant components.

2. De-pressurize RCS by opening a pressurizer PORV. Alternatively the reactor vessel head vent valves can be used for depressurization by alternately draining fluid from the pressurizer and allowing it to refill. Since the reactor vessel head vents is an alternate method, no required time is specified. The pressurizer PORV's can be used for RCS inventory reduction in addition to pressure control.

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. Using the SG PORVs to control cool down rate is the preferred method for inventory control, i.e. makeup = shrinkage. Maintain pressurizer level by adjusting RCS cooldown rate such that RCS volume shrinkage offsets makeup through the reactor coolant pump seals. The RCS head vents can also be used to reduce RCS inventory if they are available.

8. 1,2-FCV-62-69 letdown valve cannot be closed via the MCR hand switch unless the letdown orifice valves are closed (i.e. -69 valve circuitry prevents closure from MCR unless orifice valves are closed).

9. CCP suction should be transferred from VCT to RWST prior to isolating normal letdown even when OMAs identify different required times for these actions (i.e. If an OMA has required time for RWST transfer step, that time shall be used for transfer step. If not, the normal letdown required time shall be used for RWST transfer step.).

TABLE 6-1
LOCAL OPERATOR MANUAL ACTIONS AND
MAIN CONTROL ROOM OPERATOR ACTIONS FOR ALL AVS EXCEPT CONTROL BUILDING FIRES

10. Two ERCW pumps on each train, one per each shutdown board preferred, are normally supplying cooling water requirements for two unit plant operation.

11. One CCS pump is normally supplying cooling water requirements for each CCS Train A header with the other pump in standby. Also, the CCS Pump C-S is normally supplying water requirements for the CCS Train B header.

12. Isolation of Non-essential air opens the RCP seal return FCVs, isolates RCS letdown, opens containment cooling TCVs and TCOs, and isolates excess letdown.

13. Monitor the containment pressure using available indicators 1/2-PDI-30-42-K, 1/2-PDI-30-43-J, 1/2-PDI-30-44-K, or 1/2-PDI-30-45-J to maintain containment pressure<0.6 psig (setpoint is 1.5 psig) by starting and stopping the containment air return fans.

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 marinite 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 marinite boards. The M20A and M20C average HRR was <10 kW/m^2 and the average THR was <5kJ. The average HRR for gypsum board was 134.1 kW/m^2 with an average THR of 31.3kJ. The average HRR for marinite 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 marinite board, but no quantifiable effective heat of combustion for the M20A and M20C. The average mass loss of the material showed marinite 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 marinite 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, WBN requests approval of this deviation.

This deviation applies to room(s) U1 Annulus and U1 Containment.

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

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 insignificant amounts of combustibles (see FPR Part VI Section 3.54.17 for combustible loading in the showers, FPR Part VI Section 3.54.18 for combustible loading in the corridor and space above the living quarters and FPR Part VI Section 3.54.20 for the Telephone Room).

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:

Room Name	Room No.	Fire Severity
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.

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 (IPS only), 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 (IPS only); 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

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 III.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.

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).
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

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, .c and .d 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

closed by manual operation of the flow controller in the main control room. Therefore the cable protection ERFBS listed in 2.9.9.1.d 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.c 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 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.

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.

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 the radiant energy shield discussed in 2.9.15.1.b is not necessary.

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 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 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 area and access is administratively controlled. No significant quantities of transient combustibles are anticipated in the room during power operation.

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 Doors

REQUIREMENT - Fire doors shall be tested and approved by a nationally recognized laboratory and the tests shall bound the installed configuration.

EVALUATION - The doors (Door A63 Unit 1, Door A76 Unit 2) into the Volume Control Tank (VCT) Rooms were originally purchased with a fire damper in the door and were a labeled fire door. The damper was a blade type damper and restricted the air flow through the opening. The damper in each unit was replaced with a curtain type damper. The fire doors have not been tested with the curtain type damper.

Doors A63/A76 are in the wall that separates the VCT Room (713.0-A7 Unit 1, 713.0-A20 Unit 2) from the Penetration Room (713.0-A6 Unit 1, 713.0-A19 Unit 2) Each Penetration Room has a combustible loading of approximately 150,000 Btu/ft^2 of which approximately 80% 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.). Each VCT Room has a combustible loading of approximately 6000 Btu/ft^2. Both the pipe gallery and the VCT room (except the entrance labyrinth) are provided with automatic detection and suppression.

The entrance to the VCT Room (Doors A63/A76) is located near the entrance to the Penetration Room (Doors A62/A75) from Room 713.0-A1. Due to the close proximity of the entrances, there is no significant amount of in situ combustibles located near the door. The access/egress path to the Reactor Building is through doors A62/A75; therefore, the storage of transient combustibles does not present a hazard.

The opening size in the doors 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.

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.

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 - Based on the information provided in section 2.9.10 above, TVA requests approval for not providing automatic detection and suppression for the Refueling Room and the New Fuel Storage Vault.

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

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 CO_2 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.

4.7 Fire Dampers in 3-hour Rated Barriers Require a 3-hour Fire Resistance Rating

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." The section continues, "Penetrations for ventilation systems should be protected by a standard "fire door damper" where required. (Refer to NFPA 80, "Fire Doors and Windows.")" Section F.9 of Appendix A to BTP 9.5-1 states, "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." Section F.14 of Appendix A to BTP 9.5-1 states, "The Radwaste Building should be separated from other areas of the plant by fire barriers having at least three hour ratings."

DEVIATION - Fire damper 0-ISD-30-620 located in the 3-hour fire rated floor separating the Diesel Generator Building Corridor from the Unit 1 A-A Diesel Generator Exhaust Room is a 1-1/2 hour fire resistance rated damper. Fire dampers 0-ISD-31-2427 and 0-ISD-31-2429 located in the 3-hour fire rated wall separating the Waste Packaging Room (729.0-A4) from the Condensate Demineralizer Waste Evaporator (CDWE) Building are 1-1/2 hour fire resistance rated dampers.

EVALUATION - The Diesel Generator Building Corridor (742.0-D9A, Fire Area 53, AV-081A) has a low in situ combustible loading (less than 1-hour) and the Exhaust Room (760.5-D3, Fire Area 49, AV-077) has a moderate in situ combustible loading (less than 2-hours). A fire damper with a 1-1/2 hour fire resistance rating can be used in barriers with fire resistance rating of up to 2 hours. The damper is therefore considered to be appropriate for the fire hazards present. In addition a fire in either room does not adversely impact fire safe shutdown of the plant since the Appendix R fire safe shutdown (FSSD) analysis does not rely on any of the diesels for a fire in the Diesel Generator Building. A fire in the Diesel Generator Building would not result in a loss of offsite power; therefore, the fire response for a fire anywhere in the Diesel Generator Building relies upon offsite power. A fire in the Diesel Generator Building would be addressed in accordance with Abnormal Operating Instruction AOI-30.1, Plant Fires. Manual suppression is available from hose stations and hydrants at the Diesel Generator Building. The only time these

rooms would be needed for fire safe shutdown is for fires in other buildings and areas of the plant. Also, there is detection in both rooms and an automatic pre-action sprinkler system in the Corridor.

The Waste Packaging Room (729.0-A4, Fire Area 11, AV-033) has a moderate (less than 2 hours) in situ combustible loading and CDWE (Fire Area 62, AV-093) has a low (less than 1 hour) in situ combustible loading. A fire damper with a 1-1/2 hour fire resistance rating can be used in barriers with fire resistance rating of up to 2- hours. These dampers are therefore considered to be appropriate for the fire hazards present. In addition a fire in either room does not adversely impact fire safe shutdown of the plant since the Appendix R fire safe shutdown (FSSD) analysis does not rely on any equipment in either building for a fire in either building or any other location. A fire in either building would be addressed in accordance with Abnormal Operating Instruction AOI-30.1, Plant Fires. Manual suppression is available from hose stations in the CDWE and the Auxiliary Building Railroad Bay (the adjoining room to 729.0-A4). Also, there is detection and an automatic pre-action sprinkler system in the Waste Packaging Room.

The above identified 1-1/2 hour fire resistance rated dampers provide adequate fire protection for the penetrations located in the Diesel Generator Building and between the Waste Packaging area and the CDWE based on the low amount of combustibles and the fire protection features available in the areas.

This deviation applies to room(s) 742.0-D9A, 760.5-D3, 729.0-A4, and the CDWE Building.

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.

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.

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 Reactor Building Equipment Hatches 757.0 A11 (Unit 1) And 757.0 A15 (Unit 2) - Justification for Relaxation in Surveillance Frequency for the Fire Protection Equipment and Evaluation of Alternate Compensatory Actions

6.1.1 Statement of Condition

The Reactor Building Equipment Hatches (757.0 A11 (Unit 1) and 757.0 A15 (Unit 2)) are inaccessible during plant operations by the closure of the equipment hatch doors and placement of the concrete shield blocks. There are no other personnel access doors into these rooms. Consequently, the periodic surveillance of sprinklers, fire detectors, penetration seals, and Thermo Lag (757.0 A11 only) fire wrap cannot be physically accessed nor performed per the regular schedules. The following provides justification for performing surveillances for these items only during outages when the room is accessible. Additionally, the following provides an evaluation regarding the applicability of implementing alternate compensatory actions inside the room when the shield blocks are installed, normally during power operation per the requirements of Part II, Section 13.1 and Operational Requirement OR 14.3.1.b.2.b and OR 14.3.1.b.3.b in the event of impaired Regulatory Required (REG) fire protection systems and features in these areas. OR 14.3.1.a compensatory actions will be performed inside the room, as applicable, when the shield blocks are removed and alternate compensatory actions will be performed outside the room when the shield blocks are installed.

6.1.2 Discussion and Justification

These rooms are the equipment access areas between the Refueling Room and each unit's Reactor Building. The rooms are not accessible during plant operation due to the placement of the concrete shield blocks and closure of the equipment hatch doors and the corresponding at power radiological concerns. The are no personnel access doors into these rooms. The rooms 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 cables in the 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. Since there is no access to the rooms, no transient combustibles can be brought into the rooms.

6.1.3 Conclusion

Performing the required surveillance during plant outages and not implementing alternate compensatory measures inside the room when the shield blocks are installed, normally during power operation in the event of an impairment of the fire protection equipment for the room is acceptable for the following reasons:

1. The rooms are not accessible during plant operations due to at power radiological concerns. Consequently personnel cannot enter the room to perform surveillances except during refueling outages. Since personnel cannot enter the room during normal operation, there is no potential for work activities to damage a fire protection device. In the event of an equipment impairment, fire watches could not enter the area nor could personnel enter to implement alternate monitoring equipment or suppression equipment.

2. Transient combustibles are not present during plant operations. Since personnel cannot enter the area except during refueling outages, there is no potential for transient combustible material to threaten fire safe shutdown.

3. No ignition sources are in the rooms during operation and thus the likelihood of a fire starting is minimal.

4. There is more than adequate fire compartmentation. The walls are rated as three hour barriers. Based on the combustible loading in the room, the fire severity rating is low (<1 hour). The adjacent rooms have combustible loads which are less than 3 hours. Thus the 3 hour rated walls will be capable of preventing a fire in the room from spreading to or propagating from adjacent rooms.

Based on these reasons, it is acceptable to perform equipment surveillances only during refueling outages and it is acceptable to not implement alternate compensatory actions inside the room when the shield blocks are installed, normally during power operation in the event fire detection/suppression systems in the room are impaired during an operating cycle. OR 14.3.1.a compensatory actions will be performed inside the room, as applicable, when the shield blocks are removed and alternate compensatory actions will be performed outside the room when the shield blocks are installed.

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

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 Nuclear Auxiliary Unit Operators (NAUOs) 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 NAUOs report to the MCR for their assignments.

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.

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 1185 – Operate Steam Generator Relief Valve 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 (SG) #4 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-31C-A) which prevents the ability to modulate the PORV 2-PCV-1-30 to relieve pressure on #4 SG, when needed. The fire safe shutdown requirement for a fire in 757.0-A2 is to have a pneumatic source for 2-PCV-1-30 within 75 minutes to maintain pressure control of the #4 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. OMA 1185 for SG #4 is performed at the same time and the same location as OMA 1184 for SG #3.

OMA 1185 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 OMA 1185 must be completed. OMAs 1185 and 1184 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1185 and 1184 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1185 must be completed. OMAs 1185 and 1184 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1185 and 1184 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A2, OMAs 1185 and 1184 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A24 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A2 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 which impede smoke from migrating from the fire into room 757.0-A5. The NAUO will perform the OMAs in

757.0-A24 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A24 from a fire in the adjoining room 757.0-A2 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

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. The air handling units supplying room 757.0-A2 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 will impede smoke from migrating from the fire into room 757.0-A5 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A24 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 17 (Rooms 757.0-A9 or 757.0-A2) would not affect the functionality and accessibility of equipment necessary to perform this OMA. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.20.4 OMA 1184 – Operate Steam Generator Relief Valve 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 (SG) #3 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-24B-A) which prevents the ability to modulate PORV 2-PCV-1-23 to relieve pressure on #3 SG, when needed. The fire safe shutdown requirement for a fire in 757.0-A2 is to have a pneumatic source for 2-PCV-1-23 within 75 minutes to maintain pressure control of the #3 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. OMA 1184 for SG #3 is performed at the same time and the same location as OMA 1185 for SG #4.

OMA 1184 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 OMA 1184 must be completed. OMAs 1184 and 1185 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1184 and 1185 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1184 must be completed. OMAs 1184 and 1185 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total

time for the NAUO to perform the two OMAs 1184 and 1185 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A2, OMAs 1184 and 1185 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A24 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A2 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 which impede smoke from migrating from the fire into room 757.0-A5. The NAUO will perform the OMAs in 757.0-A24 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A24 from a fire in the adjoining room 757.0-A2 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

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. The air handling units supplying room 757.0-A2 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 will impede smoke from migrating from the fire into room 757.0-A5 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A24 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 17 (Rooms 757.0-A9 or 757.0-A2) would not affect the functionality and accessibility of equipment necessary to perform this OMA. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 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 SCBA and 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.

8.3.20.5 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

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 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 1185 – Operate Steam Generator Relief Valve 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), several cables supporting board 0-BD-236-3-F, and control cables (2V4034A and 2V4035A) to the Steam Generator (SG) #4 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-31C-A) which prevents the ability to modulate the PORV 2-PCV-1-30 to relieve pressure on #4 SG, when needed. The fire safe shutdown requirement for a fire in 757.0-A9 is to have a pneumatic source for 2-PCV-1-30 within 75 minutes to maintain pressure control of the #4 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. OMA 1185 for SG #4 is performed at the same time and the same location as OMA 1184 for SG #3.

OMA 1185 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 OMA 1185 must be completed. OMAs 1185 and 1184 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1185 and 1184 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1185 must be completed. OMAs 1185 and 1184 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1185 and 1184 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A9, OMAs 1185 and 1184 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A24 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A9 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 which impede smoke from migrating from the fire into room 757.0-A5. The NAUO will perform the OMAs in 757.0-A24 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A24 from a fire in room 757.0-A9 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

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. The air handling units supplying room 757.0-A2 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 will impede smoke from migrating from the fire into room 757.0-A5 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A24 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 17 (Rooms 757.0-A9 or 757.0-A2) would not affect the functionality and accessibility of equipment necessary to perform this OMA. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.24.4 OMA 1184 – Operate Steam Generator Relief Valve to Control Secondary Pressure

A fire in room 757.0-A9 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 (SG) #3 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-24B-A) which prevents the ability to modulate PORV 2-PCV-1-23 to relieve pressure on #3 SG, when needed. The fire safe shutdown requirement for a fire in 757.0-A9 is to have a pneumatic source for 2-PCV-1-23 within 75 minutes to maintain pressure control of the #3 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1000) in 757.0-A24. OMA 1184 for SG #3 is performed at the same time and the same location as OMA 1185 for SG #4.

OMA 1184 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 OMA 1184 must be completed. OMAs 1184 and 1185 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1184 and 1185 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. There is adequate time available to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1184 must be completed. OMAs 1184 and 1185 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1184 and 1185 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A9, OMAs 1184 and 1185 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A24 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A9 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 which impede smoke from migrating from the fire into room 757.0-A5. The NAUO will perform the OMAs in 757.0-A24 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A24 from a fire in room 757.0-A9 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

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. The air handling units supplying room 757.0-A2 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A2 and 757.0-A5 will impede smoke from migrating from the fire into room 757.0-A5 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A24 as well as the fire affected room. It is anticipated that

the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 17 (Rooms 757.0-A9 or 757.0-A2) would not affect the functionality and accessibility of equipment necessary to perform this OMA. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 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 SCBA and 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.

8.3.24.5 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 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.

NAUOs 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 ft^2 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 1037 – Operate Steam Generator Relief Valve to Control Secondary Pressure

A fire in room 757.0-A17 could potentially damage control cables (2V4010B, 2V4011B, 2V4012B, and 2V4013B) to the Steam Generator (SG) #1 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1- 6C-B) and a control cable (2PM1371) to the PORV Modifier (2-PM-1-6) which prevents the ability to modulate the PORV 2-PCV-1-5 to relieve pressure on #1 Steam Generator (SG) when needed. The fire safe shutdown requirement for a fire in 757.0-A17 is to have a pneumatic source for 2-PCV-1-5 within 75 minutes to maintain pressure control of the #1 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21. OMA 1037 for SG #1 is performed at the same time and the same location as OMA 1038 for SG #2.

OMA 1037 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 OMA 1037 must be completed. OMAs 1037 and 1038 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1037 and 1038 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1037 must be completed. OMAs 1037 and 1038 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1037 and 1038 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A17, OMAs 1037 and 1038 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A21 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A21 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 which impede smoke from migrating from the fire into room 757.0-A21. The NAUO will perform the OMAs in 757.0-A21 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A21 from a fire in room 757.0-A17 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

An NAUO would have sufficient time to ensure reliability even considering a potential 5 minute delay in NAUO recall due to a spurious reactor trip. As discussed above, the OMA might be initiated early (depending on the environmental conditions) in which case there is ample time to compensate for a 5 minute delay. If the environmental conditions prevent early performance of the OMAs, the 5 minute delay due to NAUO recall time would occur during the time when the fire is being extinguished and thus would not affect the demonstrated performance time of the OMA.

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. The air handling units supplying room 757.0-A21 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 will impede smoke from migrating from the fire into room 757.0-A21 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A21 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth.
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. A fire in fire area 31 (Rooms 757.0-A17 or 757.0-A24) would not affect the functionality and accessibility of equipment necessary to perform this OMA. Backdraft dampers are installed to prevent smoke mitigation from room 757.0-A24 to 757.0-A21. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.27.4 OMA 1038 – Operate Steam Generator Relief Valve to Control Secondary Pressure

A fire in room 757.0-A17 could potentially damage many control cables to the Control Air Compressor (0-MTR-32-86-B) and a control cable (2V7570B) to the Steam Generator (SG) #2 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-13B-B) which prevents the ability to modulate the PORV 2-PCV-1-12 to relieve pressure on #2 SG when needed. The fire safe shutdown requirement is to have a pneumatic source for 2-PCV-1-12 within 75 minutes for operation of the PORV and thereby maintain pressure control of the #2 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in 757.0-A21. OMA 1038 for SG #2 is performed at the same time and the same location as OMA 1037 for SG #1.

OMA 1038 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 OMA 1038 must be completed. OMAs 1038 and 1037 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1038 and 1037 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1038 must be completed. OMAs 1038 and 1037 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1038 and 1037 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A17, OMAs 1038 and 1037 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A21 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A21 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 which impede smoke from migrating from the fire into room 757.0-A21. The NAUO will perform the

OMAs in 757.0-A21 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A21 from a fire in room 757.0-A17 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

An NAUO would have sufficient time to ensure reliability even considering a potential 5 minute delay in NAUO recall due to a spurious reactor trip. As discussed above, the OMA might be initiated early (depending on the environmental conditions) in which case there is ample time to compensate for a 5 minute delay. If the environmental conditions prevent early performance of the OMAs, the 5 minute delay due to NAUO recall time would occur during the time when the fire is being extinguished and thus would not affect the demonstrated performance time of the OMA.

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. The air handling units supplying room 757.0-A21 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 will impede smoke from migrating from the fire into room 757.0-A21 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A21 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 31 (Rooms 757.0-A17 or 757.0-A24) would not affect the functionality and accessibility of equipment necessary to perform this OMA. Backdraft dampers are installed to prevent smoke mitigation from room 757.0-A24 to 757.0-A21. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.27.5 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 NAUOs, three Unit 1 actions are performed by two NAUOs, and one Unit 1 and two "common" actions are performed by one NAUO for a total of six NAUOs. Therefore, the staffing of eight NAUOs 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 ft^2 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 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

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 ft^2 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 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 1037 – Operate Steam Generator Relief Valve to Control Secondary Pressure

A fire in room 757.0-A24 could potentially damage control cables (2V4010B, 2V4011B, 2V4012B, and 2V4013B) to the Steam Generator (SG) #1 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1- 6C-B) and a control cable (2PM1371) to the PORV Modifier (2-PM-1-6) which prevents the ability to modulate the PORV 2-PCV-1-5 to relieve pressure on #1 Steam Generator (SG) when needed. The fire safe shutdown requirement for a fire in 757.0-A24 is to have a pneumatic source for 2-PCV-1-5 within 75 minutes to maintain pressure control of the #1 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) in 757.0-A21. OMA 1037 for SG #1 is performed at the same time and the same location as OMA 1038 for SG #2.

OMA 1037 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 OMA 1037 must be completed. OMAs 1037 and 1038 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1037 and 1038 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1037 must be completed. OMAs 1037 and 1038 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, "Appendix R Walkdown of Manually Operated Components Required Following a Fire", Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1037 and 1038 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A24, OMAs 1037 and 1038 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A21 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A21 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 which impede smoke from migrating from the fire into room 757.0-A21. The NAUO will perform the OMAs in 757.0-A21 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A21 from a fire in the adjoining room 757.0-A24 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

An NAUO would have sufficient time to ensure reliability even considering a potential 5 minute delay in NAUO recall due to a spurious reactor trip. As discussed above, the OMA might be initiated early (depending on the environmental conditions) in which case there is ample time to compensate for a 5 minute delay. If the environmental conditions prevent early performance of the OMAs, the 5 minute delay due to NAUO recall time would occur during the time when the fire is being extinguished and thus would not affect the demonstrated performance time of the OMA.

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. The air handling units supplying room 757.0-A21 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 will impede smoke from migrating from the fire into room 757.0-A21 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A21 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth.
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. A fire in fire area 31 (Rooms 757.0-A17 or 757.0-A24) would not affect the functionality and accessibility of equipment necessary to perform this OMA. Backdraft dampers are installed to prevent smoke mitigation from room 757.0-A24 to 757.0-A21. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.31.4 OMA 1038 – Operate Steam Generator Relief Valve 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 Steam Generator (SG) #2 Power Operated Relief Valve (PORV) Solenoid Valve (2-PSV-1-13B-B) which prevents the ability to modulate the PORV 2-PCV-1-12 to relieve pressure on #2 SG when needed. The fire safe shutdown requirement is to have a pneumatic source for 2-PCV-1-12 within 75 minutes for operation of the PORV and thereby maintain pressure control of the #2 SG. Nitrogen supply is provided for operation of the PORV, which is actuated by an OMA at the SG PORV Nitrogen Station (PNL-2-L-1001) located in 757.0-A21. OMA 1038 for SG #2 is performed at the same time and the same location as OMA 1037 for SG #1.

OMA 1038 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 OMA 1038 must be completed. OMAs 1038 and 1037 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1038 and 1037 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds which is within the total allowed time of 75 minutes. This is adequate time to perform the action.

b. Adequate Time Available to Ensure Reliability

The operator has 75-minutes before OMA 1038 must be completed. OMAs 1038 and 1037 are performed by one NAUO at the same time and at the same location to align the nitrogen source to two steam generator PORVs. Verification and validation using 0-AOI-30.2 C-series procedures were performed and documented per the requirements of Technical Instruction, 0-TI-2018, “Appendix R Walkdown of Manually Operated Components Required Following a Fire”, Revision 1 (Part II, Reference 4.2.61 and 4.2.27). The demonstrated transit time plus the total time for the NAUO to perform the two OMAs 1038 and 1037 including a 15% penalty to account for the use of SCBA was 7 minutes 56 seconds.

For a fire in Room 757.0-A24, OMAs 1038 and 1037 are the only two OMAs assigned to this NAUO and they are performed at the same time and in the same location. Thus the actions in Room 757.0-A21 can begin immediately. Defense in depth features are provided to ensure the reliability of the actions. First, the air handling units supplying Room 757.0-A21 will be shutdown per 0-AOI-30.1 very early in the event to facilitate fire fighting coupled with the back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 which

impede smoke from migrating from the fire into room 757.0-A21. The NAUO will perform the OMAs in 757.0-A21 unless smoke accumulation impairs visibility. Should smoke accumulate in Room 757.0-A21 from a fire in the adjoining room 757.0-A24 and impair visibility, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue perform the OMAs. Starting the action early provides additional defense in depth. When the demonstrated performance time is added to the worst case 60 minute delay, the total time for completion is 67 minutes 56 seconds which is within the total allowed time of 75 minutes. Additionally, the demonstrated performance time of 7 minutes 56 seconds provides 7 minutes and 4 seconds of margin compared to the remaining time of 15 minutes if the NAUO is delayed for 60 minutes due to the environment. This additional 7 minutes and 4 seconds is sufficient time to ensure the reliability of the OMAs even if the NAUO is delayed due to the environment.

An NAUO would have sufficient time to ensure reliability even considering a potential 5 minute delay in NAUO recall due to a spurious reactor trip. As discussed above, the OMA might be initiated early (depending on the environmental conditions) in which case there is ample time to compensate for a 5 minute delay. If the environmental conditions prevent early performance of the OMAs, the 5 minute delay due to NAUO recall time would occur during the time when the fire is being extinguished and thus would not affect the demonstrated performance time of the OMA.

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. The air handling units supplying room 757.0-A21 will be shutdown per AOI 30.1 to facilitate fire fighting. The back draft dampers in the return air openings in the wall between 757.0-A21 and 757.0-A24 will impede smoke from migrating from the fire into room 757.0-A21 which will assist in maintaining suitable environmental conditions. Under the worst case environmental smoke conditions, the action may not be initiated until 60 minutes. This maximum delay ensures there is sufficient time to initiate smoke removal from 757.0-A21 as well as the fire affected room. It is anticipated that the SCBA equipped NAUO could actually initiate the action prior to 60 minutes if environmental conditions allowed. The NAUO would continue to perform the OMA unless smoke accumulation impaired visibility. In which case, the NAUO could leave the area and return upon fire extinguishment and smoke abatement (60 minutes) to continue preparation for OMA performance within the 75 minutes allowed. Starting the action early would provide additional margin for defense in depth. 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. A fire in fire area 31 (Rooms 757.0-A17 or 757.0-A24) would not affect the functionality and accessibility of equipment necessary to perform this OMA. Backdraft dampers are installed to prevent smoke mitigation from room 757.0-A24 to 757.0-A21. 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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in FPR Part II, Section 14.10.

h. Personnel Protection Equipment

Only SCBA and 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.

8.3.31.5 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 NAUOs, three Unit 1 actions are performed by two NAUOs, and one Unit 1 and two “common” actions are performed by one NAUO for a total of six NAUOs. Therefore, the staffing of eight NAUOs 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 ft^2 and a nominal ceiling height of 14-feet.

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

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 manually operating the handwheels to close 2-ISV-3-827 and 2-ISV-3-828 in room 737.0-A1B within 22 minutes.

[These actions are listed in Part VI with a time earlier than 22 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 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. The Validation Walkdown for this action

demonstrated that the time to travel and to perform the action was 8 minutes 38 seconds which provides 13 minutes 22 seconds 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 validated time to travel to the room 737.0-A1B and manually close 2-ISV-3-827 and 2-ISV-3-828 to accomplish this action (8 minutes 38 seconds) provides 13 minutes 22 seconds (154%) margin compared to the 22 minutes time limit for the required for FSSD action to prevent steam generator overfill. Based on this margin, there is sufficient time available to perform these OMAs reliably.

For a fire in Room 772.0-A15, two of the three AFW pumps (one motor driven pump and the turbine driven pump) are tripped from the main control room within 13 minutes. The fire safe shutdown analysis has confirmed the ability to trip all three AFW pumps from the main control room. Additionally, the fire response procedures for a fire in this room contain non-credited steps for the main control room operators to attempt to throttle the AFW flow for the remaining pump from the main control room in parallel with the NAUO performing the credited action of manually throttling the valves in the auxiliary building. The action for the MCR to throttle AFW flow from its associated controller is considered prudent while non-credited, since the ability to throttle from the main control room may be negated by fire damage.

In addition to tripping the two pumps, OMA Actions 1667 and 1668 are performed to manually throttle two AFW valves. These tripping and throttling actions are performed for two purposes/functions. The first purpose is an important to safe shutdown function to prevent the plant conditions from reaching the setpoint to initiate a safety injection. The second purpose is a required for safe shutdown action to prevent overfilling of the steam generators. Both the tripping action and the throttling action have an allowed time of 13 minutes in the fire protection report and associated procedures which represents the shorter of the two time limits (i.e., 13 minute SI signal generation time limit versus the longer 22 minute steam generator overfill time limit).

In addition to tripping the two pumps and attempting to throttle the AFW flow from the MCR and completing OMAs 1667 and 1668, the fire response procedures for a fire in this room also contain a non-credited (yet FSSD analysis validated as discussed above), reactive step for the main control room operator to trip the final credited AFW pump if steam generator level is not controlled and level continues to rise above a set value.

The calculated allowed time limit for OMAs 1667 and 1668 is 13 minutes and is based on a conservative, bounding thermal-hydraulic analysis which assumes all three AFW pumps run at maximum flow until isolated/tripped. The thermal hydraulic analysis conservatively does not reflect that two of the pumps are tripped from the main control room. The 13 minutes represents the shortest time when the flow reduction must occur with the assumption that all three AFW pumps are running in order to prevent the plant conditions from reaching a condition where a safety injection is initiated. The allowed time for preventing steam generator overfill (22 minutes discussed above) is based on a similar conservative bounding thermal hydraulic analysis which assumes all three AFW pumps run at maximum flow until isolated/tripped. This analysis concluded that the flow must be controlled within 25 minutes (Unit 1) or 30 minutes (Unit 2) to prevent steam generator overfill. The 25 minute limit was conservatively reduced to 22 minutes. These analyses were performed with this bounding assumption of all three pumps running until tripped in order to bound the condition in any WBN fire area. As stated above, for

a fire in Room 772.0-A15, two of the three AFW pumps can be and are tripped from the main control room within 13 minutes which slows the initiation of a safety injection signal and extends the 25 minute analyzed time for prevention of steam generator overfill. This time extension provides even more time for the operators to control the AFW flow to the remaining two steam generators to prevent the initiation of a safety injection signal and control steam generator overfill.

[This action 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-inducted 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.

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

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 N_2 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 NAUO, four Unit 2 actions are performed by three NAUOs and four Unit 1 actions are performed by three NAUOs for a total of seven NAUOs. Therefore, the staffing of eight NAUOs 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-A22*	8.3.29	772.0-A8	8.3.41
757.0-A28	8.3.34	772.0-A13*	8.3.46
772.0-A2 East	8.3.36	772.0-A15 East	8.3.48
		772.0-A15 West	8.3.49
		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 N_2 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 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 NAUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above.

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 N_2 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 N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 station is assured by the Operational Requirements and Testing and Inspection program as described in Part II, Section 14.10.

h. Personnel Protection Equipment

g. Portable Equipment

No portable equipment is expected to be needed for Unit 2 actions. Spare N_2 cylinders for SG PORV control are available, if needed. The reliability of the N_2 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 NAUO 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-A22*	8.3.29	772.0-A15 West	8.3.49
757.0-A26	8.3.32	782.0-A1	8.3.51
757.0-A28	8.3.34	782.0-A2	8.3.52
772.0-A2 East	8.3.36	DBIPS-B**	8.3.56
772.0-A8	8.3.41	IPS-B	8.3.58
		IPS-C (East)	8.3.59
		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 N_2 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:

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 NAUO would have sufficient time to ensure reliability even considering the potential fire validation delays indicated by asterisks above. A fire in room 772.0-A11 could damage the manual reactor trip cable causing reactor trip while the NAUOs 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 N_2 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.

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 NAUO 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 1 minute 15 seconds. This action is to be performed in the same room as the fire and assuming the NAUO will be delayed for 60 minutes (worst case) because of fire suppression activities this leaves 10 minutes to perform an action that takes 1 minute 15 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 1 minute 15 seconds. This provides 8 minutes 45 seconds margin. There is time available to ensure reliability.

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
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.		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.	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). 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.
Penetrations for ventilation systems should be protected by a standard "fire door damper" where required. (Refer to NFPA 80, "Fire Doors and Windows.")		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. .	Ventilation openings without dampers were considered in the Safe Shutdown Analysis. Refer to Part II, Section 12 of the FPR. Refer to Part VII, Section 4.7 of the FPR for justification of specific 1-1/2 hour dampers in a 3 hour barrier.
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.	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).		

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
F.6 Remote Safety-Related Panels 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.	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.		
F.7 Station Battery Rooms 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.	The required 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.		Vital Battery V is a spare that can be used for any of the other 4 vital batteries.

Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
F.9 Diesel Generator Areas			
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.	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.	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.	Refer to Part VII, Section 4.7 of the FPR for justification of a 1-1/2 hour damper in the 3-hour fire rated floor separating the Diesel Generator Building Corridor from the Unit 1 A-A Diesel Generator Exhaust Room.
Automatic fire suppression such as AFFF foam, or sprinklers should be installed to combat any diesel generator or lubricating oil fires.		Each diesel generator and its associated electrical board room are protected by an automatic, total flooding CO_2 suppression system that has been evaluated against NFPA 12-1973. The pipe gallery and corridor are protected by a preaction sprinkler system.	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.
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.	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.		
Day tanks with total capacity up to 1100 gallons are permitted in the diesel generator area under the following conditions:			Each diesel generator room has two 550-gallon day tanks, one for each diesel engine. 225 kVA Diesel Generators each have a double wall 185 gallon tank.

	Appendix A Guidelines	Plant Conformance	Alternatives	Remarks
	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.	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.		
	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.	The storage configuration of the new fuel precludes criticality for water density that might occur during fire protection water application.		
F.13	Spent Fuel Pool Area			
	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.	Standpipes, hose stations and portable fire extinguishers are provided in the area.	Detection is not provided in the spent fuel pool area. Refer to Part VII, Section 4.5 of the FPR.	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.
F.14	Radwaste Building			
	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.		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.	There is no Radwaste Building. Refer to Part VII, Section 4.7 of the FPR for justification of 1-1/2 hour dampers in the 3-hour fire rated wall separating the Waste Packaging Room (729.0-A4) from the Condensate Demineralizer Waste Evaporator (CDWE) Building.

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 operable.			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.

Appendix R Requirements	Plant Conformance	Alternatives	Remarks
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 operable 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.	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. An adequate inventory of fuses is available onsite.		Portable ventilation is available if normal HVAC is lost.
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.			No systems were installed for alternate or dedicated safe shutdown.

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.
- Specific 1-1/2 hour fire dampers installed in a 3 hour barrier are evaluated 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

NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix

Code Section	Summary	Topic/Remarks
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. For additional information refer to Unit 1 License Condition 2.C(10) and Unit 2 License Condition 2.C(9) which state "By May 31, 2018, TVA shall ensure that a listing organization acceptable to the NRC (as the Authority Having Jurisdiction) determines that the fire detection monitoring panel in the main control room either meets the appropriate designated standards or has been tested and found suitable for the specified purpose."
1220	N/A	Title, Operating Personnel

NFPA 72D-1975,
"Installation, Maintenance and Use of Proprietary Signaling Systems"
TVA System 13 Compliance Summary Matrix

Code Section	Summary	Topic/Remarks
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. For additional information refer to Unit 1 License Condition 2.C(10) and Unit 2 License Condition 2.C(9) which state "By May 31, 2018, TVA shall ensure that a listing organization acceptable to the NRC (as the Authority Having Jurisdiction) determines that the fire detection monitoring panel in the main control room either meets the appropriate designated standards or has been tested and found suitable for the specified purpose."
2024	N/A	Maintenance agreement
2030 and 2031	N/A	Title, Installation and Design, and general information

Tennessee Valley Authority

Enclosure 2

Proposed New WBN Unit 2 Facility Operating License Condition 2.C(9)

New Operating License Condition 2.C(9)

(9) By May 31, 2018, TVA shall ensure that a listing organization acceptable to the NRC (as the Authority Having Jurisdiction) determines that the fire detection monitoring panel in the main control room either meets the appropriate designated standards or has been tested and found suitable for the specified purpose.