



**GULF STATES UTILITIES COMPANY**

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AREA CODE 409 838-6631

November 29, 1983

RBG- 16,438

File No. G9.5, G9.8.6.2

Mr. Harold R. Denton, Director  
Office of Nuclear Reactor Regulation  
U. s. Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Denton:

River Bend Station-Units 1 & 2  
Docket Nos. 50-458/50-459

Enclosed are Gulf States Utilities Company responses, indicated as forthcoming in the docketed correspondence dated November 8, 1983, to address the questions raised by the Chemical Engineering Branch (CHEB) reviewers. These open items were identified in the Draft Safety Evaluation Report and discussed with the CHEB reviewers in Bethesda, Maryland on May 25, 1983. Attachment 1 to this letter summarizes these responses and indicates changes to be made in the River Bend Station (RBS) Final Safety Analysis Report (FSAR). Attachment 2 includes a brief discussion of each open item, the action used to resolve it, and a summary of the response. Finally Enclosures 1 thru 3 contain the actual written changes to the RBS FSAR to reflect the resolution of each DSER open item as well as all accompanying inserts, tables, and figures. These changes, as well as those forwarded on the 8th, will be incorporated into the next amendment of the FSAR.

Sincerely,

*William J. Leach Jr.*  
for J. E. Booker  
Manager-Engineering  
Nuclear Fuels & Licensing  
River Bend Nuclear Group

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## ATTACHMENT 1

ITEM NUMBER	DSER SECTION	SUBJECT DESCRIPTION	FSAR CHANGE
1	9.5.1.1 Pg. 9-148	Safe Shutdown Capability	See Enclosure 1
2	9.5.1.1 Pg. 9-149	Fire Hazards Analysis	See Enclosure 1
3	9.5.1.4.A Pg. 9-151	Fire Doors	See Enclosure 2
4	9.5.1.4.C Pg. 9-152	Alternate Shutdown Capability	See Enclosure 1
5	-	Editorial Changes	See Enclosure 3



## ATTACHMENT 2

- Item No. 1 Safe Shutdown Capability (See Enclosure 1)
- Item No. 2 Fire Hazards Analysis (See Enclosure 1)
- Item No. 4 Alternate Shutdown Capability

Section 9A.2, Fire Hazard Analysis, has been revised to address the Staff's concerns regarding the mechanisms by which fire and fire fighting may cause simultaneous failure of redundant or diverse trains and measures taken to preclude such occurrence. Details are provided to demonstrate that for a fire in any single plant fire area, there exists at least one method to achieve and maintain a safe shutdown condition (using shutdown method 1 or 2 or alternate methods including various combinations of method 1, 2, and ECCS equipment) assuming a loss of offsite power. The acceptance criteria used is NRC BTP APCS 9.5-1 Appendix A with specific details provided to clarify differences from 10 CFR 50, Appendix R. Enclosure 1 contains the methodology used and an individual building analysis including a general discussion, a safe shutdown analysis, tables summarizing the results of the fire hazards analysis and fire loading calculations, and figures indicating fire areas/zones, suppression/detection systems, and the location/arrangement of both safety and nonsafety-related equipment/systems.

### Item No. 3 Fire Doors

The Staff has requested the applicant to test and label all fire door assemblies in accordance with NFPA 252 "Fire Tests of Door Assemblies" or provide a letter of equivalency from the manufacturer. Such a letter of equivalency has been obtained from the Mosler Safe Company-manufacturers of the pressure-tight and watertight doors at RBS. The comparisons are with existing fire labeled doors tested in accordance with the "Standard for Safety for Fire Test of Door Assembly-UL 10B for 3 Hour Fire Rating." However, the Peelle Company-manufacturers of the missile protected doors at RBS, cannot provide a letter of equivalency based upon a test of the solid steel doors for fire resistance. This situation exists industry-wide as missile resisting doors have no fire resistive ratings due to structural characteristics which make them difficult to combine with fire door construction. Enclosure 2 contains revised FSAR Section 9.5.1.2.14 to address this open item.

Item No. 5 Editorial Changes

In the process of revising the RBS Fire Hazard Analysis and providing responses to the items contained in the November 8, 1983 docketed correspondence, various pages, tables, and figures were revised to maintain consistency. These additional changes have been included in Enclosure 3.

ENCLOSURE 1

ENCLOSURE 1

7.4 SYSTEMS REQUIRED FOR SAFE SHUTDOWN	1.10
Systems required for safe shutdown include those needed for hot and cold shutdown which are defined as follows:	1.11 1.12
1. <u>Hot Shutdown</u>	1.19
A plant condition in which the reactor is subcritical, and the primary system temperature is sufficient to allow removal of decay heat by steam generation. This temperature is theoretically greater than 212°F; however, 300° to 350°F is the minimum practical range for this mode.	1.21 1.22 1.23 1.24
2. <u>Cold Shutdown</u>	1.26
A plant condition in which the reactor is subcritical and decay heat is removed by either the residual heat removal system or by other decay heat systems. The primary system temperature is reduced to below 212°F and the heat sink is a heat exchanger with a secondary coolant loop.	1.28 1.29 1.30 1.31
A safe hot shutdown condition is achieved when the following functions are satisfied:	1.33 1.34
1. Reactivity is controlled	1.36
2. Reactor coolant inventory makeup is provided	1.37
3. Decay heat removal is established and reactor pressure is controlled	1.38
4. Suppression pool cooling is established	1.39
5. System status monitoring is provided.	1.40
Once the reactor is placed in a hot shutdown condition, station personnel are able to provide equipment lineups, connections, and/or temporary repairs as needed to achieve and maintain a cold shutdown condition within 72 hours.	1.42 1.43 1.44
Numerous methods are available to achieve safe shutdown.	1.45
Normal reactor shutdown and cooldown utilizes the main condenser; off-normal reactor shutdown uses the RCIC and RHR steam condensing mode or combinations of redundant ECCS equipment. Normal shutdown can also be conducted using the steam condensing mode of RHR. Figure 7.4-3 shows this normal method and two methods of achieving shutdown using Category I redundant equipment <u>alternate</u> which is operable	1.46 1.48 1.49 X 1.51 1.52 X 1.53



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from onsite power. Electrical circuit protection,	1.54
comprehensive definition of equipment and cables, use of	1.55
separation and approved protection measures ensure that	
systems are available for safe shutdown after single	1.56
postulated events.	
7.4.1 Description	2.1
This section discusses the instrumentation and controls of	2.2
the following systems required for safe plant shutdown:	2.3
1. RCIC	2.5
2. RHR-RSCM	2.6
3. SLCS	2.7
4. RSS	2.8
Refer to Chapter 8 for a complete discussion of the	2.11
safety-related power sources.	
7.4.1.1 Reactor Core Isolation Cooling (RCIC) System	2.13
1. RCIC System Function	2.15
The RCIC system (Section 5.4.6) instrumentation is designed	2.19
to maintain or supplement reactor vessel water inventory	
during the following conditions:	
1. When the reactor vessel is isolated from its	2.21
primary heat sink (the main condenser) and	2.22
maintained in the hot standby condition.	
2. When the reactor vessel is isolated and accompanied	2.23
by a loss of normal coolant flow from the reactor	2.24
feedwater system.	
3. When the plant is being shut down and normal	2.25
coolant flow from the feedwater system is stopped	2.26
before the reactor is depressurized to a level	
where the RSCM of the RHR system can be placed into	2.27
operation.	
4. When required as a backup to the HPCS system to	2.28
mitigate the consequences of the rod drop accident	2.29
by automatically supplying cooling water to the	
reactor if vessel low water level is sensed.	2.30

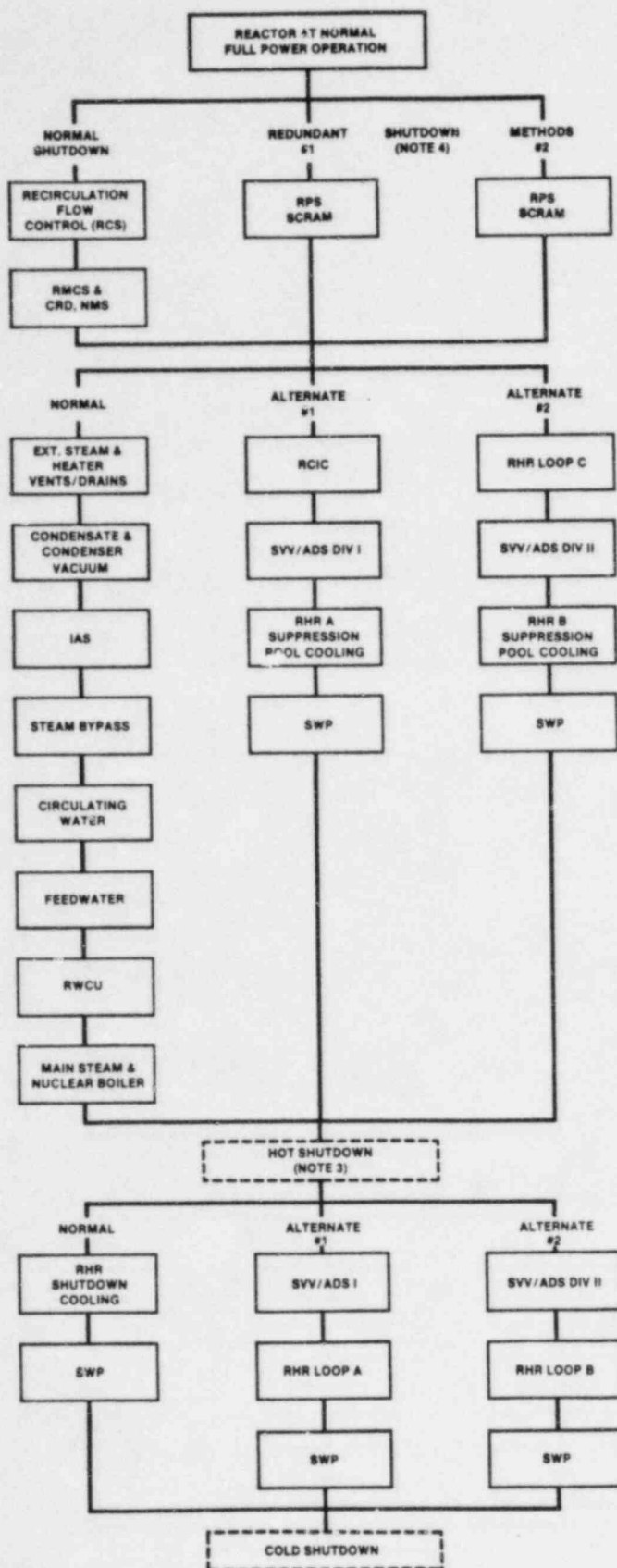
2. RCIC System Operation

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Schematic arrangements of system mechanical equipment and  
operator information display are shown in Fig. 5.4-8. RCIC  
system component control logic is shown in Fig. 7.4-1.

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- NOTES:
1. OTHER VARIATIONS OF SYSTEMS ARE POSSIBLE USING RHR (LPCS, ADS, AND LPCS, OR HPCS)
  2. ABBREVIATIONS  
 RCS — REACTOR RECIRCULATION SYSTEM  
 RPS — REACTOR PROTECTION SYSTEM  
 SLS — STANDBY LIQUID CONTROL SYSTEM  
 RMCS — REACTOR MANUAL CONTROL SYSTEM  
 CRD — CONTROL ROD DRIVE  
 NMS — NEUTRON MONITORING SYSTEM  
 RCIC — REACTOR CORE ISOLATION COOLING  
 HPCS — HIGH PRESSURE CORE SPRAY  
 RHR — RESIDUAL HEAT REMOVAL  
 SWP — SERVICE WATER SYSTEM  
 IAS — INSTRUMENT AIR SYSTEM  
 RWCU — REACTOR WATER CLEAN UP  
 SVV — SAFETY AND RELIEF VALVES  
 ADS — AUTOMATIC DEPRESSURIZATION SYSTEM
  3. SPENT FUEL COOLING IS ALSO MAINTAINED.
  4. SUPPORT SYSTEMS:  
 CMS — CONTAINMENT MONITORING SYSTEM  
 LSV — PENETRATION VALVE LEAKAGE CONTROL SYSTEM  
 HVN — VENTILATION CHILLED WATER SYSTEM  
 HVK — CONTROL BUILDING CHILLED WATER SYSTEM  
 RPCCW — REACTOR PLANT COMPONENT COOLING WATER SYSTEM  
 HVR — REACTOR PLANT VENTILATION SYSTEM  
 HVF — FUEL BUILDING VENTILATION SYSTEM  
 HVP — DIESEL GENERATOR VENTILATION SYSTEM  
 EGA — DIESEL GENERATOR AIR START SYSTEM  
 EGS — EMERGENCY DIESEL GENERATOR  
 EGF — EMERGENCY DIESEL FUEL SYSTEM

FIGURE 7.4-3

SYSTEMS REQUIRED FOR  
SAFE SHUTDOWN

RIVER BEND STATION  
FINAL SAFETY ANALYSIS REPORT

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SECTION 9A.2	1.10
FIRE HAZARDS ANALYSIS	1.12
9A.2.1 INTRODUCTION	1.15
The fire hazards analysis evaluates the effects of fires involving combustible materials, both fixed and transient, on the ability to safely shut down the plant and minimize radioactive releases to the environment.	1.16 1.17 1.18
The analysis is done by fire area and fire zone. A fire area is an area separated from adjacent areas by fire-rated barriers. Zones within fire areas are used to more clearly define concentrations of combustibles within larger fire areas, the location of safety-related equipment, and the effects of postulated fires. In some instances, zones are bounded by concrete walls, floors, and ceilings, but do not qualify as fire areas because of unprotected penetrations. Sections 9A.2.2 through 9A.2.19 describe each of the station buildings or structures. Subsections which address the major items contained in Enclosure 2 (see Attachment A) to the September 30, 1976, letter from Mr. R. S. Boyd entitled, Supplementary Guidance on Information Needed for Fire Protection Program Evaluation, are included. Each section also contains two tables, the first containing the summary of the fire hazards analysis. This information is supported and supplemented by the text in each section. The second table provides the results of the fire loading calculations. Both tables identify safety-related equipment located in the fire area or zone being considered. Fig. 9A.2-1 through 9A.2-13 and Table 9A.2-1 through Table 9A.2-34 contain information on fire areas and zones, suppression and detection systems, and the location and arrangement of safety and nonsafety-related equipment and systems.	1.26 1.27 1.28 1.29 1.30 1.31 1.32 1.33 1.34 1.35 1.36 1.38 1.39 1.40 1.41 1.43 1.44
A significant phase of the fire hazards analysis is the evaluation of the physical separation provided for safety-related equipment and for safety divisions of electrical cable. The effects of firefighting activities and fire suppression agents on safety-related systems were considered. The purpose of this analysis is to demonstrate that for a fire in any single plant fire area, there exists at least one method to achieve and maintain a safe shutdown condition assuming a loss of offsite power. Operation of Shutdown Method No. 1 equipment only, or operation of Shutdown Method No. 2 equipment only (as defined in Section 7.4.1) is sufficient to achieve safe shutdown, or another alternate method of shutdown consisting of various combinations of Method 1, Method 2, and ECCS equipment is	1.45 1.47 1.48 1.49 1.50 1.51 1.52 1.53 1.55 1.56 1.57 2.1 2.2 2.3

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9A.2-1

~~September 1983~~  
January 1984

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utilized as necessary. The equipment required for these	2.4
other alternate methods has been analyzed to assure that it	2.5
is independent of the fire area being evaluated, or	2.6
acceptable fire protection is provided. The acceptance	2.8
criteria is NRC BTP APCSB 9.5-1 Appendix A. The fire area	2.10
analysis (Sections 9A.2.2 through 9A.2.19) notes specific	2.11
design features which meet the acceptance criteria but which	2.12
require clarification with respect to 10CFR50 Appendix R.	
Definitions are contained in NRC BTP APCSB 9.5-1.	2.13
Separation is achieved by distance, barriers, fire proofing,	2.14
or any combination	2.15



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thereof provided between components which accomplish similar functions within redundant systems, for redundant components within the same system, and for the power and control wiring associated with the components.

The effects of single failures of the fire detection and protection systems were analyzed. All areas containing safety-related components are protected by primary and backup fire suppression systems. Since safety-related areas are provided with more than one detector, failure of a detector to operate does not cause a loss of system function. Also, the detection system is a supervised system and its failure is alarmed in both control rooms.

The fire protection systems in areas containing Seismic Category I equipment are seismically supported so that during a Seismic event, system components do not impair the ability of redundant engineered safety features to safely shut down the plant or limit the release of radioactivity to the environment.

## 9A.2.1.1 Methodology

The methodology for safe shutdown analysis is given in Figure 9A.2-35. This section discusses specific RBS design features which are important in the analysis.

1. The safe shutdown equipment and cables include those that meet acceptable definitions for associated circuits. (See Section 7.4.1 for a definition of safe shutdown methods.)

2. A transient fire is considered to be caused due to the combustibles required to be used in the plant area for the purpose of repair, maintenance, and fuel loading operations. These combustibles are neither fixed quantity nor fixed quality. These combustibles include paper, wood, rags, packing materials, lubricating oils, etc. These combustibles are under the scrutiny of administrative control. Transient combustible loading is not allowed in the drywell during power operation.

Transient fires are not considered in these two cases.

3. Inadvertent actuation of a sprinkler system in one fire area is analyzed to ensure that there is not a loss of redundant safety-related equipment.

4.	Fire protection for the main control room is analyzed separately and is described in GE Topical Report NEDO-10466A. Section 4.0 of this report describes the details. The NRC accepted this report for reference in license applications on July 13, 1978. The PGCC design separates the Division I/II/III cables with fire stops and fire seals within raceways, and provides barriers in panels in those cases where separate panels are not provided. The main control room is continuously manned and access is controlled to limit the introduction of personnel and combustibles. Therefore, fire in more than a single electrical division is not postulated.	1.51 1.53 1.54 1.55 1.56 1.57 1.58 2.1
5.	Spurious valve operation was analyzed separately. Redundant switchgear, load centers, and motor control centers and the control circuits are located in separate fire areas separated by fire barriers or protected using an acceptable method. A failure in the control circuitry caused by a fire could affect at most one shutdown method except as described below in Sections 9A2.1.2 and 9A2.1.3.	2.2 2.3 2.4 2.5 2.6
9A.2.1.2	<u>High Pressure/Low Pressure Interface Valves</u>	2.9
	There are five high pressure/low pressure interfaces that are each isolated by two motor-operated valves in series. The five pairs of isolation valves are as follows:	2.10 2.12
1E12*MOVFO08	RHR/recirculation system interface and	2.16
1E12*MOVFO09	containment isolation valves for RHR shutdown cooling mode.	2.17 2.18
1E12*MOVFO52A	RHR/RCIC system interface isolation	2.22
1E12*MOVFO87A	valves for RHR steam condensing mode	2.23 2.24
1E12*MOVFO52B	RHR/RCIC system interface isolation	2.28
1E12*MOVFO87B	valves for RHR steam condensing mode	2.29 2.30
1E12*MOVFO40	RHR/radwaste system interface isolation	2.34
1E12*MOVFO49	valves for RHR flushing mode	2.35
1MSS*MOVFO01	Main <sup>system</sup> steam/reactor building equipment	2.39
1MSS*MOVFO02	<sup>main</sup> steam interface isolation valves	2.40
drain	for reactor pressure vessel hydrostatic test venting	2.41 2.42

1. Valves 1E12\*MOVFO08 and 1E12\*MOVFO09 are in series; but in the event of a fire, hot shorts in the control circuits will not cause spurious operation of both valves. These valves are located in two different fire areas, electrically powered and controlled from two independent divisional motor control centers, and cable runs that are also located in different fire areas or adequately separated. The pressure interface *is* maintained by one of the two valves during a fire. 2.47  
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 2.49  
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- (WHERE A HOT SHORT IS DEFINED AS THE SHORTING OF AN ENERGIZED CONDUCTOR OR A CONDUCTOR OF AN INDEPENDENT CIRCUIT)
2. Valves 1E12\*MOVFO40 and 1E12\*MOVFO49 are in series, but in the event of a fire, hot shorts in the control circuits do not cause spurious operation of both valves. These valves are located in the same fire area; however, they are electrically powered and controlled from ~~the~~ independent divisional motor control centers and cable runs that are located in different fire areas or adequately separated. A single fire cannot cause spurious operation of both valves simultaneously, and the pressure interface is maintained by one of the two valves during a fire. 2.52  
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 3.1
- two
3. Valves 1E12\*MOVFO52A and 1E12\*MOVFO87A are in series and in the event of a fire, hot shorts in control circuits may cause spurious opening of both valves. These valves are located in the same fire area and share the same electrical power supplies, motor control centers, and cable runs. Spurious operation of these valves during a fire may cause reactor coolant to flow to the suppression pool. However, safe shutdown of the plant is maintained. The required reactor coolant makeup is within the capability of the high pressure coolant injection systems, i.e., the reactor core isolation cooling (RCIC) system or the high pressure core spray (HPCS) system. An inadvertent opening of these valves permits reactor pressure vessel steam to flow into the RHR system loop A heat exchangers. The RHR system relief valves pass this steam flow to the suppression pool. During safe shutdown the operator can release reactor coolant steam to the suppression pool through the main steam safety relief valves and make up the reactor coolant loss with high pressure core spray and RCIC. An additional reactor coolant steam flow path and rate ~~route~~ to the suppression pool through the RHR system that does not exceed the capability of the high pressure core spray and RCIC systems does not 3.7  
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degrade plant safe shutdown. The Division 2 RHR system loop is used for shutdown. 3.24

One loop of the RHR is sufficient in this event to achieve safe shutdown of the plant. Initially, the RHR loop is placed in the suppression pool cooling mode. Later in the shutdown operation, the RHR loop is ~~started~~ shifted to alternate shutdown cooling. This dual service of the single RHR loop can be utilized without reaching unacceptable suppression pool temperatures or otherwise degrading safe shutdown. 3.26  
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4. Valves 1E12\*MOVFO52B and 1E12\*MOVFO87B have the same condition as valves 1E12\*MOVFO52A and 1E12\*MOVFO87A from 3 above. The Division 1 RHR system Loop A is used for shutdown. 3.37  
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5. Valves 1MSS\*MOVFO01 and 1MSS\*MOVFO02 are in series and in the event of a fire, hot shorts in the electrical circuits may cause spurious operation of both valves. These valves are in the same fire area and share the same electrical power supplies, motor control centers, and cable runs. Spurious operation of these valves during a fire would cause reactor coolant to flow to the drywell; but safe shutdown of the plant is maintained. An inadvertent opening of these valves permits reactor pressure vessel steam to flow into the drywell equipment drain sump and then into the drywell atmosphere. The steam flow would then vent to the suppression pool through the drywell vents. The drywell is designed for steam flow and the required reactor coolant makeup is within the capability of the high pressure core spray (HPCS) system. During safe shutdown the operator would release reactor coolant steam to the suppression pool through the main steam safety relief valves and make up the reactor coolant loss with high pressure core spray. An additional reactor coolant flow path and rate to the suppression pool through the drywell vents that does not exceed the makeup capability of the high pressure core spray systems does not degrade plant shutdown. These valves are not required for safe shutdown. 3.40  
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#### 9A2.1.3 Safety Relief Valve Spurious Operation 4.1

Each safety relief valve (SRV) is equipped with an A solenoid and a B solenoid, either of which if energized 4.2  
4.5



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from the respective separate division opens the SRV (see Section 5.2.2.4.1). Inadvertent SRV opening is analyzed in 4.6  
 Section 15.1.4. The control cables for the SRV 4.7  
 solenoids are routed in different fire areas outside containment, in different quadrants inside containment, and 4.8  
 run in separate conduit throughout the plant including the drywell. Each circuit is protected by fuses to ensure that 4.9  
 a short circuit in an individual solenoid circuit is mitigated. Mechanical overpressure relief protection is 4.10  
 inherent in the valve design.

## 9A.2.1.4 General Results 4.12

1. One train of systems necessary to achieve and maintain hot shutdown conditions from either the main control room or remote shutdown panel(s) is free of fire damage. 4.14  
 4.15
2. Systems necessary to achieve and maintain cold shutdown from either the main control room or remote shutdown panel(s) are free of fire damage or can be repaired within 72 hours. 4.17  
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9A.2-3b

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## 9A.2.2 REACTOR BUILDING 1.12

Tables 9A.2-1 and 9A.2-2 provide data and information required for the fire hazards analysis and loading of the reactor building. 1.14 1.15

The reactor building contains safety-related components including piping and cables of the following systems: 1.18 1.19

1. Residual Heat Removal (RHR) 1.22
2. Control Rod Drive (CRD) Scram Components 1.24
3. High Pressure Core Spray (HPCS) 1.25
4. Fuel Pool Cooling (SFC) 1.26
5. Standby Liquid Control (SLC) 1.27
6. Standby Service Water (SSW) 1.28
7. Low Pressure Core Spray (LPCS) 1.29
8. Reactor Water Cleanup (RWCU) 1.30
9. Reactor Recirculation (RCS) 1.31
10. Reactor Building Ventilation (HVR) 1.32
11. Hydrogen Recombiners 1.33
12. Reactor Pressure Vessel 1.34
13. Reactor Core Isolation Cooling (RCIC) 1.36
14. Main Steam 1.38
15. Feedwater (FWS) 1.39
16. Main Steam Drain 1.40
17. Containment Hydrogen Mixing (CPM) 1.41
18. Main Steam Safety and Relief Valves 1.42
19. Containment Isolation Valves for the following systems not listed previously: 1.44 1.45
  - a. Containment Hydrogen Purge 1.46
  - b. Reactor Plant Floor Drains 1.48
  - c. Reactor Building Equipment Drains (DER) 1.50
  - d. Service Air (SAS) 1.52
  - e. Instrument Air (IAS) 1.53
  - f. Condensate Makeup and Draw-off (CNS) 1.54
  - g. Ventilation Chilled Water 1.55
  - h. Fire Protection - Water 1.56
  - i. Inclined Fuel Transfer Tube 1.57
  - j. Containment and Drywell Purge 1.58
  - k. Reactor Plant Component Cooling Water (RPCCW) 2.1
20. Leakage Monitoring (LMS) 2.2

The reactor building consists of a circular reinforced concrete superstructure (shield building), a steel containment, reinforced concrete drywell structure, and the steel reactor pressure vessel. The 5-ft space between the shield building and the steel containment is defined as the annulus. The working area of the containment is approximately 20 ft wide. 2.5 2.6 2.7 2.8 2.9

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9A.2-4

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THE EXTERIOR WALL OF THE ANNULUS, EL 95'-9", CONTAINS A LOW FIRE-RATED CONTAINMENT VESSEL EQUIPMENT HATCH AND PLUG. COMBUSTIBLE LOADING ON BOTH SIDES OF THIS MISSING PROTECTED PLUG IS NEGLIGIBLE, THEREFORE FIRE RATING OF THE PLUG WAS NOT PROVIDED.

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## 9A.2.2.1 Safe Shutdown Analysis

1.12

The physical separation and acceptable protection methods provided for equipment required for safe plant shutdown are adequate to prevent a postulated fire from affecting redundant components. Fire loadings in most areas are negligible. For the elevations containing the cable trays, el 114'-0" and 141'-0", redundant safety divisions are separated. Fire loadings within the zones approximate 30 min, which is considered minimal for flashover between divisions. Further spread of fire is prevented by structural walls as shown in Fig. 9A.2-3 and 9A.2-4 for el 114'-0", 141'-0", and 162'-3".

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The principal potential fire hazard in the drywell is the lubricating oil contained within the two reactor recirculation pump motors. Each motor utilizes oil-lubricated bearings. The lubricating oil is cooled by cooling coils installed within the reservoirs.

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This design minimizes piping connections to the oil reservoir. The heavy construction and nonpressurized design of this lubricating system minimizes the susceptibility of the system to leakage. Also, if a leak were to occur, ignition-enhancing spray would be unlikely. Therefore, an exposure fire due to ignition of the recirculation pump lubricating oil is not credible and additional fire protection measures for the recirculation pumps are not required.

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Substantially all cables in the drywell are installed within conduit raceway. The amount of exposed combustible is negligible. Therefore, cable fires are not postulated.

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The drywell is inaccessible during operation and when opened, stringent administrative controls and procedures are implemented to monitor personnel and equipment ingress and egress. Therefore, an exposure fire from transient combustibles is not postulated.

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## 9A.2.2.2 Radioactive Release Analysis

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The portions of the reactor plant ventilation system (which includes the auxiliary building) which are provided to mitigate a possible release of radiation to the atmosphere are the containment/drywell purge system, the annulus pressure control system, and the annulus mixing system, as described below.

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The purge system is designed to either continuously purge the containment or recirculate air during periods of testing the containment. The system has the capability of being operated at two different capacities. The normal system operating capacity is 7,000 cfm. This system consists of a centrifugal supply fan, ductwork, dampers, and an iodine filter unit with a centrifugal exhaust fan. A second system is provided to operate in the event of either a mechanical failure of the normal operating system or to purge the containment at a faster rate for pre-entry. This system has a capacity of 25,000 cfm and consists of a vaneaxial supply and exhaust fan, ductwork, piping, and dampers. The 25,000 cfm is passed through the standby gas treatment system (SGTS) using both filter trains before being exhausted to the atmosphere. Containment space cooling is provided by recirculation unit coolers. The purge system is classified as nonnuclear safety, with the exception of the containment and drywell isolation valves. During a LOCA, the containment and drywell are automatically isolated.

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The annulus pressure control system is provided to maintain a subatmospheric pressure in the annulus during normal reactor operation. The system contains two 100 percent exhaust fans with associated dampers and takes suction from the annulus and exhausts directly to the plant exhaust stack. Classified as nonnuclear safety, the system is automatically isolated in the event of a LOCA. In the event

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of high radiation within the annulus, the exhaust is 1.10  
diverted to the standby gas treatment system. 1.11

The annulus mixing system contains two 100 percent redundant 1.13  
fans to recirculate air through the annulus to allow for 1.14  
decay of airborne radioactive contaminants. This system is 1.15  
idle during normal plant operation and is actuated to  
maintain the subatmospheric pressure required in the annulus 1.16  
by a LOCA signal, or when high radiation exists in the  
annulus. A portion of the recirculated air is discharged to 1.17  
the atmosphere via the SGTS. The annulus mixing system is 1.18  
nuclear safety-related and is required to mitigate the 1.19  
release of radioactive contaminants to the atmosphere.

Components of all systems are well separated and not subject 1.21  
to damage in the event of a single fire event. 1.22

## 9A.2.2.3 Fire Suppression - Detection 1.25

The containment building is provided with a zoned detection 1.27  
system arranged to alarm locally and in both control rooms. 1.28  
Thermal detection, also arranged to alarm at the containment 1.30  
building fire alarm panel and in both control rooms, is 1.31  
provided for the reactor recirculation pumps located in the 1.32  
drywell.

Portable extinguishers and water hose stations are provided 1.34  
in the containment. The drywell is inaccessible during 1.36  
normal operation and has no fixed or portable suppression 1.37  
equipment. Administrative controls are established to limit 1.38  
the introduction of combustibles and to provide fire 1.39  
protection equipment and manpower during shutdown. The 1.41  
annulus is treated similarly.

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## 9A.2.3 FUEL BUILDING 1.11

Tables 9A.2-3 and 9A.2-4 provide data and information required for the fire hazards analysis and loading of the fuel building. 1.13 1.14

The fuel building contains safety-related components including piping and cables for the following systems: 1.18 1.19

1. Fuel Pool Cooling (SFC) 1.22
2. Reactor Plant Component Cooling Water (RPCCW) 1.23
3. Fuel Handling and Storage 1.24
4. Fuel Building Ventilation (HVF) 1.25
5. Containment penetration valve of the Control Rod Drive 1.26 1.27
6. Fuel Transfer (FTS) 1.28
7. Termination Cabinets. 1.29

The building is a reinforced concrete structure, including exterior and interior walls and roof. 1.33 1.34

### 9A.2.3.1 Safe Shutdown Analysis 1.36

Fuel pool cooling pumps and heat exchangers required for decay heat removal in the fuel storage pool are located in separate 3 ft thick, reinforced concrete enclosures on el 70'-0" and would not be subject to simultaneous damage in a single fire event. Divisional cables supplying power to these components are not subject to simultaneous damage. Other than the fuel pool cooling pumps and heat exchangers, there is no single fire area which contains redundant safety-related equipment or combinations of equipment required for safe plant shutdown. Acceptable methods of protection are provided for one division for spent fuel cooling. Divisional cables are arranged so that Division I is in the west sections and Division II is in the east sections of the building. Separation of divisional and nondivisional cables follows Regulatory Guide 1.75. Continuity of combustibles is negligible, as are area fire loadings. 1.39 1.41 1.42 1.43 1.44 1.45 1.46 1.47 1.48 1.49 1.50 1.51

### 9A.2.3.2 Radioactive Release Analysis 1.54

The fuel building ventilation system consists of a supply air subsystem, unit coolers subsystem, exhaust air subsystem, and charcoal filtration subsystem, with their associated fans, filters, ductwork, dampers, and controls. Cooling is provided by air conditioning unit and fan coil unit coolers for various cubicles. During normal operation, ventilation air is exhausted directly to the atmosphere through the roof of the building by exhaust fans. Upon detection of high airborne radioactivity concentration 1.56 1.58 2.1 2.2 2.3 2.5 2.6 2.7

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exceeding set point, air is automatically diverted through  
 redundant charcoal filtration units (alarming the main  
 control room operator simultaneously), thereby preventing an  
 unacceptable release of radioactivity to the environment.  
 During fuel handling operation, all ventilation air is  
 routed through charcoal filtration units before exhausting  
 to atmosphere.

The fuel building is maintained at a negative pressure of  
 1/4 in W.G. relative to outdoor atmosphere, which further  
 reduces possible radiation releases. Each filter unit is  
 sized to provide adequate filtration and reduce radioactive  
 releases. Redundant radiation monitors are provided in the  
 exhaust duct near the roof to detect release of  
 radioactivity to the environment and alarm the main control  
 room operators.

## 9A.2.3.3 Fire Suppression - Detection 1.27

The building is provided with a zoned detection system  
 arranged to alarm locally and in both control rooms.  
 Automatic sprinklers are provided for the new fuel receiving  
 area (el 95'-0") and in general areas at el 70'-0" and  
 el 113'-0". Automatic dry pipe sprinklers are installed in  
 the railroad bay. Charcoal filters have individual water  
 spray systems manually actuated by the openings of local  
 valves. Thermistor detectors in the charcoal filters  
 provide alarm functions at and through the local fire alarm  
 panel to both control rooms. Waterflow is alarmed locally  
 and in both control rooms by means of the building fire  
 alarm panel. Fire loadings do not justify fixed fire  
 suppression systems in remaining areas of the building.  
 Portable extinguishers and water hose stations are provided  
 throughout.

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## 9A.2.4 AUXILIARY BUILDING 1.10

Tables 9A.2-5 and 9A.2-6 provide data and information 1.12  
required for the fire hazards analysis and loading of the 1.13  
auxiliary building.

The auxiliary building contains safety-related components 1.17  
for the following systems: 1.18

1. Residual Heat Removal (RHR) 1.21
2. High Pressure Core Spray (HPCS) 1.22
3. Low Pressure Core Spray (LPCS) 1.24
4. Reactor Core Isolation Cooling (RCIC) 1.25
5. Standby Service Water (SSW) piping and valves 1.27  
1.28
6. Standby Gas Treatment System (SGTS) 1.30
7. Auxiliary Building Ventilation (HVR) 1.31
8. Main Steam 1.32
9. Feedwater 1.33
10. Annulus Mixing System 1.34
11. Containment Isolation Valves for the following systems: 1.36  
1.37
  - a. Reactor Plant Floor Drains (DFR) 1.38
  - b. Reactor Building Equipment Drains 1.40
  - c. Service Air 1.41
  - d. Instrument Air 1.42
  - e. Condensate Makeup and Draw-off 1.43
  - f. Reactor Plant Component Cooling Water (RPCCW) 1.44  
1.45
  - g. Fire Protection - Water (FPW) 1.46
  - h. Reactor Water Cleanup (RWCU) 1.47
  - i. Main Steam Drains 1.48
12. Class 1E Electrical Distribution System 1.49

Piping and electrical cables pass through the building in 1.52  
tunnels in order to service equipment in adjacent buildings 1.53  
as well as the auxiliary building. The building is a 1.54  
reinforced concrete structure, including exterior and  
interior walls and the roof. 1.55



9A.2.4.1	Safe Shutdown Analysis	1.11
	Redundancy is provided for components required for safe	1.14
	plant shutdown. These components are located in separate	1.16
	minimum 3-hr, fire-resistive cubicles and would not be	1.17
	simultaneously subject to damage from a single fire event.	
	Components of multiple systems which operate together for	1.18
	safe shutdown are similarly protected. Divisional cables	1.19
	supplying power to these components are not subject to	
	simultaneous damage. The majority of the divisional cables	1.20
	are arranged so that Division I is in the west sections and	1.21
	Division II is in the east sections of the building. The	1.22
	cubicles and east and west sections define separate fire	
	areas. Where Division I cables that are required for safe	1.23
	shutdown enter a predominantly Division II area, acceptable	1.24
	protection is provided. Where Division II cables that are	1.25
	required for safe shutdown enter a predominantly Division I	1.26
	area, acceptable protection is provided. Installation of	1.27
	equipment and cable trays satisfies the requirements of	
	Regulatory Guide 1.75. Continuity of combustibles in these	1.28
	trays does not exist. Therefore, both divisions would not	1.29
	be subject to damage in a single fire event.	
9A.2.4.2	Radioactive Release Analysis	1.38
	The building ventilation system consists of an air supply	1.41
	system and air exhaust system, each including two	1.43
	100 percent fans and associated viscous impingement type	
	filters, dampers, and ductwork. Cooling is provided by unit	1.44
	coolers. The exhaust system is capable of discharging	1.45
	directly to the plant exhaust duct or diverting the exhaust	1.46
	to the standby gas treatment system (SGTS) charcoal filters.	
	There are two 100 percent redundant SGTS filter trains each	1.47
	located in a separate 3-hr, fire-rated enclosure. Radiation	1.48
	levels are monitored in the exhaust duct, and high levels	
	sound an alarm in the main control room from which the	1.49
	operator manually diverts exhaust through the SGTS.	
	Concurrently, the supply air system is isolated, creating a	1.50
	slight negative pressure within the building, further	1.51
	prohibiting release of radiation to the atmosphere.	
9A.2.4.3	Fire Suppression - Detection	1.54
	The building is provided with a zoned detection system	1.56
	arranged to alarm locally and in both control rooms.	1.58
	Automatic sprinklers are provided in various areas of the	2.1
	building where electrical cable trays are arranged in stacks	2.2
	of seven trays or more. The RCIC pumproom has an automatic	2.3
	preaction type sprinkler system for protection against a	2.4
	potential oil type fire. The standby gas treatment charcoal	2.5

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filters have individual water spray systems manually 2.6  
 actuated by the opening of local valves. Thermistor 2.7  
 detectors in the charcoal filters provide alarm functions at  
 and through the local fire alarm panel to both control 2.8  
 rooms. Waterflow is alarmed locally and in both control 2.9  
 rooms by means of the building fire alarm panel. Fire 2.10  
 loadings do not justify fixed fire suppression systems in  
 remaining areas of the building. Portable extinguishers and 2.11  
 water hose stations are provided throughout.

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## 9A.2.5 CONTROL BUILDING

1.11

Tables 9A.2-7 and 9A.2-8 provide data information 1.13  
required for the fire hazards analysis and ing of the 1.14  
control building.

The control building contains the major controls and related 1.24  
equipment necessary to start up, operate, and shut down the 1.25  
plant. It is a four-story reinforced concrete structure 1.27  
including walls, floors, and roof. Minimum 3-hr fire 1.28  
barriers are located throughout to mitigate the consequences  
of a fire. All penetrations in these barriers are also 1.29

rated for 3 hr. El 70'-0" contains cable and air 1.30  
conditioning equipment areas. El 98'-0" contains the 1.31

standby switchgear rooms, and the equipment room containing 1.33  
chillers and cable areas. El 115'-0" contains an additional

switchgear room, battery rooms, motor generator areas, cable 1.34  
chases, and air conditioning equipment rooms and charcoal 1.35  
filter trains. The main control room is at el 136'-0".

Cable chases extending from el 70'-0" to the control room 1.36  
level contain the PGCC equipment cables, and are enclosed with 1.37  
3-hr, fire-rated barriers. Fire protection of the PGCC is 1.38

described in NEDO-10466A. Remote shutdown capability for Division I 1.41  
and Division II are provided to shut down the reactor in the event that

9A.2.5.1 Safe Shutdown Analyses the main control room becomes 1.41  
uninhabitable.

Safety-related cables in trays are arranged so that 1.43  
Division I is located in the west section, Division II in 1.44

the east section and Division III in separate equipment 1.46  
rooms. Adequate separation, by minimum 3-hr, fire-rated 1.47  
walls is provided except for the walls separating the

redundant Division I and II chillers and air-conditioning 1.48  
equipment rooms. Area C-4 contains the Division I and II 1.49  
redundant HVAC equipment on the west and east sides of the

wall, respectively. The equipment ensures adequate 1.51  
ventilation for the respective standby switchgear rooms. As 1.52

listed in Table 9A.2-8, the combustible loading consists of 1.54  
the air-conditioning unit's motor insulation. The loading

due to cables is negligible since cables are run in conduit. 1.55  
Area C-13 contains the Division I and II redundant chiller 1.56  
equipment necessary to air-condition the main control room

on the west and east sides of the wall, respectively. 1.57  
Combustible loading consists of cable in tray, approximately

7 ft from the wall, see Table 9A.2-8. The walls dividing 2.1  
these areas are 1 hour fire-resistant partitions as defined 2.2  
in NFPA 90A with 1 1/2 hour rated doors. Automatic fixed 2.3  
suppression systems and fire detection are provided.

Separation of divisional and nondivisional cables complies 2.4  
with Regulatory Guide 1.75. Separation provided is such 2.5

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that a single fire event can not damage redundant equipment or services required for safe plant shutdown.	2.6
9A.2.5.2 Radioactive Release Analysis	2.9
The control building contains no radioactive material,	2.11
therefore no radioactive release from the building is possible.	2.12
Electrical equipment within the control building for control	2.15
and operation of safety-related system components located in	2.16
other buildings is arranged and segregated so that	2.17
radioactive release from those buildings to the atmosphere is prevented.	



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## 9A.2.5.3 Fire Suppression - Detection

1.11

The building is provided with a zoned detection system 1.13  
 arranged to alarm locally and in both control rooms. 1.14  
 Automatic sprinklers are provided in the cable chases and 1.16  
 HVAC equipment rooms (air handling units, el 70'-0" and 1.17  
 chillers, el 98'-0"). Zoned automatic water spray systems 1.18  
 are provided for cable tray areas in el 70'-0". Charcoal 1.19  
 filters have individual water spray systems manually  
 actuated by the opening of local valves. Thermistor 1.20  
 detectors in the charcoal filters provide alarm functions at  
 and through the local fire alarm panel to both control 1.21  
 rooms. Waterflow is alarmed locally and in both control 1.22  
 rooms by means of the building fire alarm panel. The cables 1.23  
 in the PGCC are protected by detectors and automatically  
 actuated Halon 1301 systems. Each PGCC module is a zone and 1.24  
 flow is alarmed in both control rooms. Fire loadings do not 1.25  
 justify fixed fire suppression system in remaining areas of  
 the building.

Portable extinguishers and water hose stations are provided 1.27  
 throughout.

Battery room ventilation fans operate continuously to 1.29  
 prevent the buildup of hydrogen and fan/~~flow~~ failure is 1.30  
 monitored in the main control room through the use of ~~flow~~ 1.31  
 sensors in the discharge ducts. flow

( 9A.2.6 DIESEL GENERATOR BUILDING 1.11

Tables 9A.2-9 and 9A.2-10 provide data and information 1.13  
required for the fire hazards analysis and loading of the 1.14  
diesel generator building.

THE EXTERNAL  
WALL ON THE  
EAST SIDE OF  
THE DIESEL  
GENERATOR  
BUILDING CONTAINS  
THREE (3) MISSILE  
PROTECTED PLUGS.  
THE COMBUSTIBLE  
LOADING ON THE  
EXTERIOR SIDE  
OF THESE PLUGS  
IS NEGLIGIBLE,  
THEREFORE, A  
FIRE-RATING FOR  
THE PLUGS WAS

The diesel generator building contains the Division I and II 1.18  
and HPCS diesel generator systems on automatic start standby 1.19  
service. These three systems provide power to essential 1.21  
equipment if both normal and preferred station service power 1.22  
sources are lost. The building is a reinforced concrete 1.23  
structure with 3 ft thick reinforced concrete barrier walls 1.24  
provided to separate each diesel system. \* Fuel oil storage 1.25  
tanks are in sand-filled reinforced concrete vaults beneath 1.26  
each diesel generator room and do not expose the systems to 1.27  
fire. One 550-gal diesel engine fuel oil day tank is  
located in each diesel room.

9A.2.6.1 Safe Shutdown Analysis 1.30

Fire wall separation of the Division I and II diesel 1.32  
generator systems preclude a fire in one section from 1.33  
disabling both systems. The HPCS diesel generator system 1.35  
located between the Division I and II systems and is also 1.36  
separated by minimum 3-hr, fire-rated barriers.

( NOT 9A.2.6.2 Radioactive Release Analysis 1.39  
PROVIDED

There is no source of radioactivity in this building. 1.41  
Redundancy and arrangements described previously would 1.42  
preclude a single fire event in this building from 1.44  
compromising the functions required to prevent a release of 1.45  
radiation from sources outside the building.

9A.2.6.3 Fire Suppression - Detection 1.48

Each diesel generator room and fuel oil day tank is 1.50 | "  
protected by an automatically actuated preaction sprinkler 1.51  
system. Actuation is through a heat detection system which 1.53  
is arranged to alarm locally and in both control rooms. 1.55 | "  
Portable extinguishers are provided in each room. Hose  
coverage is possible by use of equipment located at outside  
yard hydrant and hose houses. Inside hose stations are not  
considered to be useful for secondary suppression  
capability, since access to these rooms would be expected to  
be difficult in event of a fire reaching proportions  
requiring hose use. 1.56  
1.57  
1.58

## 9A.2.7 TURBINE BUILDING

Tables 9A.2-11 and 9A.2-12 provide data and information required for the fire hazards analysis and loading of the turbine building.

WITH THE EXCEPTION OF THE NUCLEAR BOILER SYSTEM PRESSURE TRANSMITTERS The turbine building does not contain safety-related equipment. It consists of three main areas, the heater bay, condensate demineralizer area, off-gas area, and fire protection equipment room.

## 9A.2.7.1 Safe Shutdown Analysis

There is no equipment in this building required for safe plant shutdown.

## 9A.2.7.2 Radioactive Release Analysis

The turbine building ventilation and cooling system consists of one supply air handling unit and five exhaust fans. Cooling is by unit coolers.

The air ejector off-gas treatment system reduces the activity level of the noncondensable fission gases removed from the main condenser prior to their release to the atmosphere. Noncondensable gas removed from the main condenser, including air in-leakage, is diluted with steam to give less than 4 percent (by volume) hydrogen in the last stage noncondensing jet of the air ejector assembly. The diluted off gas is superheated and then passed through a catalytic recombiner to remove the hydrogen and oxygen by combining them into water. The off-gas effluent from the recombiner, containing only traces of hydrogen, is passed through a condenser cooled by plant condensate.

An enlarged pipe volume provides a 10-min holdup for decay of the N-13, N-16, O-19, and source krypton and xenon isotopes. During this decay period, daughter products are removed through condensation on the wall of the pipe.

The charcoal adsorbers provide the final delay for the radioactive gases, reducing the release rate to within the specified range. Two parallel trains of charcoal adsorbers are used to minimize back pressure. Heat is removed from the vault which houses the adsorbers to maintain the charcoal beds at an operating temperature of 0°F. The off-gas effluent from the adsorbers is passed through another high-efficiency filter prior to discharge.



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The normal building exhaust, the charcoal filter exhaust, and the off-gas system discharge are all through the plant exhaust duct.	1.11 1.12	
Main control room personnel are alerted to high radiation levels. The operator has the ability to shut down supply and exhaust systems in the building to prevent unacceptable radioactive release to the atmosphere.	1.15 1.16 1.17 1.18	
Automatic heat actuated unit vents are provided in the building roof. Fusible links are set to release at about 350°F. These vents are provided to prevent roof collapse in the event of a fire at the turbine generator on the operating level.	1.21 1.22 1.23 1.24	
9A.2.7.3 Fire Suppression - Detection	1.27	
The building is provided with a zoned detection system arranged to alarm locally and in both control rooms.	1.29 1.30	
Automatic sprinkler systems are provided for protection of general areas of the basement, condenser pit, and mezzanine levels, except the heater bay, fire protection room, switchgear areas, and other small enclosed areas which do not contain combustibles. Automatic water spray systems are provided for the hydrogen seal oil unit, the turbine oil storage room, and the lube oil system room. Zoned manual water spray and automatic high-pressure carbon dioxide systems are provided for the turbine generator bearings and oil lines at the bearings. The main generator exciter enclosure is provided with an automatic total-flooding, high-pressure carbon dioxide system, and charcoal filters have individual water spray systems manually actuated by opening of local valves. Thermistor detectors in the charcoal filters provide alarm functions at and through the local fire alarm panel to both control rooms.	1.33 1.35 1.36 1.37 1.38 1.39 1.40 1.41 1.43 1.44 1.45 1.46 1.47 1.48	
Flow for all suppression systems is alarmed locally and in both control rooms by means of the building fire alarm panel.	1.50 1.51	
Fire loadings do not justify fixed fire suppression systems in remaining areas of the building.	1.53 1.54	
Portable extinguishers, and water hose stations are provided throughout.	1.56	



9A.2.8 ADMINISTRATION COMPLEX	1.11
The administration complex does not contain safety-related equipment. The administration complex consists of the office building, services building, primary access point (guard house), and warehouse.	1.13 1.14 1.16
9A.2.8.1 Safe Shutdown Analysis	1.19
There is no equipment in this complex required for safe plant shutdown.	1.22
9A.2.8.2 Radioactive Release Analysis	1.26
There is no equipment in this complex capable of releasing radioactivity to the atmosphere.	1.28
9A.2.8.3 Fire Suppression - Detection	1.32
Automatic sprinkler protection is provided in the warehouse.	1.34
Automatic total flooding Halon 1301 systems actuated by individually zoned detection systems are provided in the PBX, records and computer/records storage rooms and in the underfloor cable spaces of the computer/computer equipment and safety parameter display rooms in the services building.	1.35 1.36 1.38 1.39 1.40
Similar Halon 1301 systems are provided in the contract document vault, file room and computer room in the office building. No fixed fire suppression systems are provided in the primary access point (PAP) building.	1.41 1.42 1.43 1.44
Fire loadings do not justify fixed suppression systems in the remaining areas of the complex. Portable extinguishers are provided throughout.	1.46 1.48
All buildings contain a fire and evacuation alarm system (pull stations and alarms). Suppression systems detection and actuating circuits, and flow alarms are integrated into this system. All alarms are sounded locally and in both control rooms.	1.50 1.52 1.53 1.54

9A.2.9 RADWASTE BUILDING	1.12
Tables 9A.2-15 and 9A.2-16 provide data and information required for the fire hazards analysis and loading of the radwaste building.	1.14 1.15
The radwaste building does not contain safety-related equipment. The equipment housed in the radwaste building is dedicated to the collection and processing of liquid and solid radioactive waste material.	1.18 1.19 1.20
9A.2.9.1 Safe Shutdown Analysis	1.23
There is no equipment in the radwaste building required for safe plant shutdown.	1.26
9A.2.9.2 Radioactive Release Analyses	1.30
The radwaste building ventilation and cooling system for general areas and cubicles consists of five supply air unit coolers and three 50 percent exhaust fans. Exhaust from the tank area is through redundant charcoal filters. Ventilation and cooling in the sampling room, laundry room, and solidification area consist of redundant unit coolers. Normal building exhaust is through ducts in the exhaust penthouse on the building roof. A radiation monitor is provided in the exhaust penthouse to alert operating personnel in the auxiliary control room of high radiation levels. The operator has the ability to shut down all supply and exhaust systems in the building to prevent radioactive release to the atmosphere. The building essentially becomes closed up at this time.	1.33 1.35 1.36 1.37 1.38 1.39 1.40 1.41 1.42 1.43 1.44
9A.2.9.3 Fire Suppression - Detection	1.47
The building is provided with a zoned detection system arranged to alarm locally and in both control rooms. Automatic sprinklers are provided for the baling area, laundry area, drum storage area, and truck pit. Charcoal filters have individual water spray systems manually actuated by opening of local valves. Thermistor detectors in the charcoal filters provide alarm functions at and through the local fire alarm panel to both control rooms. Waterflow is alarmed locally and in both control rooms. Fire loadings do not justify fixed fire suppression systems in remaining areas of the building. Portable extinguishers and water hose stations are provided throughout.	1.49 1.50 1.51 1.54 1.56 1.57 1.58 2.1 2.2 2.4 2.5

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9A.2.10	NORMAL SWITCHGEAR BUILDING	2.8
Tables 9A.2-17 and 9A.2-18	provide data and information required for the fire hazards analysis and loading of the normal switchgear building.	2.10 2.11
The normal switchgear building	does not contain safety-related equipment.	2.14
It is provided with a cable	spreading area in the basement and enclosures for electrical switchgear batteries, inverters, and related equipment,	2.16
including central alarm station (CAS),	in the two floors above grade.	2.17 2.18
9A.2.10.1	Safe Shutdown Analysis	2.21
There is no equipment in this building	required for safe plant shutdown.	2.24
9A.2.10.2	Radioactive Release Analysis	2.28
There is no equipment in this building	capable of releasing radioactivity to the atmosphere.	2.31
9A.2.10.3	Fire Suppression - Detection	2.35
The building is provided with zoned	detection systems arranged to alarm locally and in both control rooms.	2.37 2.40
Zoned water spray systems	are provided for protection of cables in trays in the basement spreading area.	2.41
A Halon 1301 system	is provided for protection of the underfloor cables in the CAS room.	2.42 2.43
Suppression flow is alarmed	in both control rooms.	2.44
Fire loadings do not justify	fixed fire systems in remaining areas of the building.	2.45
Portable extinguishers and	water hose stations are provided throughout the floors above grade.	2.47 2.48

9A.2.11 AUXILIARY CONTROL BUILDING	2.51
Tables 9A.2-19 and 9A.2-20 provide data and information required for fire hazards analysis and loading of the auxiliary control building.	2.53 2.54
The auxiliary control building does not contain safety-related equipment. The building houses a mechanical equipment room, offices, and an auxiliary control room. The auxiliary control room contains controls for balance of plant (BOP) and fire protection microprocessor and accessories.	2.57 2.58 3.2 3.3   "
9A.2.11.1 Safe Shutdown Analysis	3.6
There is no equipment in this building required for safe plant shutdown.	3.9
9A.2.11.2 Radioactive Release Analysis	3.13
There is no equipment in this building capable of releasing radioactivity to the atmosphere.	3.15
9A.2.11.3 Fire Suppression - Detection	3.19
Halon 1301 fire suppression system is provided for protection of cables below the floor of the auxiliary control room. Detectors, portable extinguishers and water hose stations provide complete building coverage. Fuel suppression system flow alarms sound locally and in both control rooms. Fuel loadings do not justify fixed fire suppression systems in remaining areas of the building.	3.21 3.22 3.24 3.25 3.26 3.28 3.29   "

9A.2.12	AUXILIARY BOILER AND WATER TREATMENT BUILDING	3.33
	Tables 9A.2-21 and 9A.2-22 provide data and information required for the fire hazards analysis and loading of the auxiliary boiler and water treatment building.	3.36 3.37 3.39
9A.2.12.1	Safe Shutdown Analysis	3.42
	There is no equipment in this building required for safe plant shutdown.	3.45
9A.2.12.2	Radioactive Release Analysis	3.49
	There is no equipment in this building capable of releasing radioactivity to the atmosphere.	3.51
9A.2.12.3	Fire Suppression - Detection	3.55
	The building is provided with a zoned detection system arranged to alarm locally and in both control rooms.	3.57 3.58
	Portable extinguishers and water hose stations provide complete building coverage. Fire loadings do not justify fixed fire suppression systems in the building.	4.2 4.4 4.5



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9A.2.13	STANDBY SERVICE WATER PUMP HOUSE	1.12	
Tables 9A.2-23 and 9A.2-24	provide data and information required for the fire hazards analysis and loading of the standby service water pump house.	1.14 1.15	
The pump house	contains the following safety-related equipment:	1.19 1.20	
1.	Four standby service water pumps	1.23	
2.	Two motor control centers	1.24	
3.	Ventilation system.	1.25	
The standby cooling tower	including the standby service water pump house is constructed of reinforced concrete.	1.29 1.30	
9A.2.13.1	Safe Shutdown Analysis	1.33	
Redundancy is provided	for components required for safe plant shutdown.	1.36	
These components are located	in different rooms separated by a 3-hr fire wall (fire areas PH-1 and PH-2, Fig. 9A.2-7) and are not simultaneously subject to damage from a single fire event.	1.40 1.41	
9A.2.13.2	Radioactive Release Analysis	1.44	
There is no equipment	in this building capable of releasing radioactivity to the atmosphere.	1.46	
9A.2.13.3	Fire Suppression - Detection	1.50	
The building is provided	with a zoned detection system arranged to alarm locally and in both control rooms.	1.55 1.56	
Portable extinguishers	are provided. Hose coverage is possible by use of equipment located at an outside yard hydrant and hose houses. Fire loading in the building does not justify fixed fire suppression systems.	2.1 2.2	

9A.2.14 MOTOR-GENERATOR BUILDING	2.5
Tables 9A.2-25 and 9A.2-26 provide data and information required for the fire hazards analysis and loading of the motor-generator building.	2.7 2.8
The motor-generator building does not contain safety-related equipment. The building houses two 200-kVA motor-generator sets, with 250-hp motors and two motor-generator control panels used for operating the reactor recirculation pump at slow speed.	2.12 2.15 2.16
9A.2.14.1 Safe Shutdown Analysis	2.19
There is no equipment in this building required for safe plant shutdown.	2.22
9A.2.14.2 Radioactive Release Analysis	2.26
There is no equipment in this building capable of releasing radioactivity to the atmosphere.	2.28
9A.2.14.3 Fire Suppression - Detection	2.32
The building is provided with a zoned detection system arranged to alarm locally and in both control rooms. Portable extinguishers are provided. Fire loading in the building does not justify fixed fire suppression systems.	2.35 2.37 2.40

HOSE COVERAGE IS  
POSSIBLE BY USE  
OF EQUIPMENT LOCATED  
AT AN OUTSIDE YARD  
HYDRANT AND HOSE  
HOUSES.

## 9A.2.15 PIPE TUNNELS 2.43

Tables 9A.2-27 and 9A.2-28 provide data and information 2.45  
required for the fire hazards analysis and loading of the 2.46  
pipe tunnels.

These tunnels contain piping associated with the following 2.51  
systems:

- |     |                                       |      |
|-----|---------------------------------------|------|
| 1.  | Service Water                         | 2.54 |
| 2.  | Reactor Plant Component Cooling Water | 2.56 |
| 3.  | Condensate Makeup and Draw-off        | 2.57 |
| 4.  | Makeup Water                          | 2.58 |
| 5.  | Control Rod Drive                     | 3.1  |
| 6.  | Fuel Pool Cooling and Cleanup         | 3.2  |
| 7.  | Radioactive Liquid Waste              | 3.3  |
| 8.  | Service Air                           | 3.4  |
| 9.  | Instrument Air                        | 3.5  |
| 10. | Turbine Plant Equipment Drains        | 3.6  |
| 11. | Reactor Water Cleanup                 | 3.7  |
| 12. | High Pressure Core Spray              | 3.8  |
| 13. | Turbine Building Floor Drains         | 3.9  |
| 14. | Reactor Building Equipment Drains     | 3.10 |
| 15. | Reactor Building Floor Drains         | 3.11 |
| 16. | Auxiliary Steam                       | 3.12 |
| 17. | Auxiliary Boiler Steam                | 3.13 |

Division I and II, and nondivisional, cable trays are also 3.17  
located in these tunnels. Trays are installed in accordance 3.18  
with Regulatory Guide 1.75. The portion of the pipe tunnels 3.19 | "  
located within the auxiliary building is included in 3.20  
Section 9A.2.3.

## 9A.2.15.1 Safe Shutdown Analysis 3.23

Cables for one method of shutdown are protected with an 3.25  
approved method ensuring that, in the event of a fire, one 3.27 | "  
method of shutdown is available.

## 9A.2.15.2 Radioactive Release Analysis 3.30

The pipe tunnels are not considered susceptible to 3.33  
uncontrolled radioactive releases. No system components 3.35  
within the tunnels can in themselves cause such a release in  
other areas which cannot be controlled by equipment within 3.36  
those areas.

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9A.2.15.3 Fire Suppression - Detection

3.39

- ii | Zoned detection systems are provided and arranged to alarm 3.41
- locally and in both control rooms. Zoned water spray 3.44
- systems are provided for protection of cable trays in these 3.45
- tunnels. These systems are designed to actuate upon 3.46
- operation of zoned detectors. System operation is indicated 3.47
- in both control rooms. Portable extinguishers are provided. 3.48
- ii | Tunnel areas can be reached by manual hose stations located 3.49
- either in a tunnel area or in an adjoining building.

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9A.2.16 ELECTRICAL TUNNELS	3.52
Tables 9A.2-29 and 9A.2-30 provide data and information required for the fire hazards analysis and loading of the electrical tunnels.	3.54 3.55
The electrical tunnels contain Division I, II, and III, and nondivisional, cables in trays.	3.58   " 4.1   "
9A.2.16.1 Safe Shutdown Analysis	4.4
The separation and acceptable methods of protection provided are such that a single fire event cannot damage redundant equipment or <del>sources</del> <u>Services</u> required for safe plant shutdown.	4.6   " 4.8   "
9A.2.16.2 Radioactive Release Analysis	4.11
There is no equipment within electrical tunnels capable of releasing radioactive materials. Electrical equipment within the tunnels for control and operation of safety-related systems components located in other buildings is arranged and segregated so that radioactive release from those buildings to the atmosphere is prevented.	4.13 4.15 4.16 4.17
9A.2.16.3 Fire Suppression - Detection	4.20
Zoned detection systems are provided and arranged to alarm locally and in both control rooms. Zoned water spray systems are provided throughout the electrical tunnels. These systems are arranged to actuate upon operation of zoned detectors. Operation is indicated in both control rooms. Portable extinguishers are provided. Tunnel areas can be reached by manual hose stations located either in a tunnel area or in an adjoining building.	4.22 4.25   " 4.26 4.27 4.28 4.29   " 4.30   "



# RBS FSAR

9A.2.17	FIRE PUMP HOUSE	4.33
Tables 9A.2-31 and 9A.2-32	provide data and information required for the fire hazards analysis and loading of the fire pump house.	4.35 4.36
The fire pump house	does not contain safety-related equipment. The building houses equipment required to be activated in case of fire in the plant area. Fire pumps are separated by fire-rated barriers.	4.40 4.41 4.43
9A.2.17.1	Safe Shutdown Analysis	4.46
There is no equipment	in this building required for safe plant shutdown.	4.49
9A.2.17.2	Radioactive Release Analysis	4.53
There is no equipment	in this building capable of releasing radioactivity to the atmosphere.	4.55
9A.2.17.3	Fire Suppression - Detection	5.1
Automatic sprinkler systems	are provided for the two diesel engine-driven fire pump rooms. Portable extinguishers are provided so that complete building coverage is provided. Smoke detectors are provided in the electric fire pump room and makeup water system area. Actuation of detectors or the sprinkler system is alarmed locally and in both control rooms. HOSE COVERAGE IS POSSIBLE BY USE OF EQUIPMENT LOCATED AT AN OUTSIDE YARD HYDRANT AND HOSE HOUSES.	5.4 5.6 5.7 5.8 5.9

# RBS FSAR

9A.2.18	NORMAL COOLING TOWERS	5.11
Tables 9A.2-33 and 9A.2-34	provide data and information required for the fire hazards analysis and loading of the normal cooling towers.	5.13 5.14
Normal cooling towers	do not contain safety-related equipment. The area consists of multicelled cooling towers, 480-V switchgear houses, circulating water pump structure, and 4,160-V switchgear house.	5.17 5.20 5.21
9A.2.18.1	Safe Shutdown Analysis	5.24
There is no equipment in this area	required for safe plant shutdown.	5.27
9A.2.18.2	Radioactive Release Analysis	5.31
There is no equipment in this area	capable of releasing radioactivity to the atmosphere.	5.33
9A.2.18.3	Fire Suppression - Detection	5.37
Cooling towers are of essentially	noncombustible construction and have been accepted by the American Nuclear Insurers without fixed fire suppression systems. 480-V switchgear houses and 4,160-V switchgear house are provided with a zoned detection system arranged to alarm locally and in both control rooms. Portable extinguishers are provided inside the switchgear houses. Fire loading in the switchgear houses does not justify fixed protection systems.	5.40 5.42 5.43 5.44 5.45 5.46

# RBS FSAR

## 9A.2.19 MAKEUP WATER INTAKE STRUCTURE 5.48

Tables 9A.2-13 and 9A.2-14 provide data and information 5.50  
required for the fire hazards analysis and loading of the 5.51  
makeup water intake structure.

Makeup water intake structure does not contain 5.55  
safety-related equipment. The structure houses 4,160-V 5.56  
switchgear and three 1,500 hp pumps.

### 9A.2.19.1 Safe Shutdown Analysis 6.2

There is no equipment in this structure required for safe 6.5  
plant shutdown.

### 9A.2.19.2 Radioactive Release Analysis 6.9

There is no equipment in this structure capable of releasing 6.11  
radioactivity to the atmosphere.

### 9A.2.19.3 Fire Suppression - Detection 6.15

The structure is provided with a zoned detection system 6.19  
arranged to alarm locally and in both control rooms.

Portable extinguishers are provided. Fire loading in the 6.21  
structure does not justify fixed protection systems.

## RBS FSAR

TABLE 9A.2-1

## REACTOR BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		RC-1	RC-2/Z-1	RC-2/Z-2	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-2, 9A.2-5 (Sh 1)		Fig. 9A.2-4, 9A.2-5 (Sh 1)	1.15 1.16 1.17 1.19 1.20 1.21
Safety-Related Equipment					1.23
Description	1(b)	ECCS & RCIC suction strainers; SRV blowdown ppg. quenches	Guard pipes for main steam, RCIC steam feedwater, turbine plt. misc. drains, RHR suction line, RWCU ppg.	Same as Zone 1 plus isolation valves and MSIV air accumulators	1.25 1.26 1.27 1.28
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	1.30
Nonsafety-Related Equipment	1	Neutron monitoring system traversing incore probe (TIP) drive motors	None	IAS, SAS, and CNS piping and valves	1.32 1.33 1.34
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	1.36 1.37
Electrical Cable					1.39
Description	1(b)	All cable in conduit	None	Cable in conduit	1.41
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	1.43
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	1.45 1.46
Fire Barrier Description	1(a)	Reinforced concrete walls separate containment from adjacent areas and drywell	This is the steam tunnel. Separated by reinforced concrete walls from adjacent areas	This is the steam tunnel. Separated by reinforced concrete walls from adjacent areas.	1.48 1.49 1.50 1.51 1.52
Combustible Loading	1(d), 1(c)	Negligible	None	Negligible	1.54
Design Basis Fire	1(a)	-	-	-	1.56
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	Section 9A.2.2.2	1.58

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## RBS FSAR

TABLE 9A.2-1 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		RC-3/Z-3	RC-3/Z-4	RC-4/Z-5	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-3, 9A.2-5 (Sh 1)	2.14 2.15
Safety Related Equipment					2.17
Description	1(b)	Half of hydraulic control units (HCU) CRD pressure and flow control station; electrical panels, ppg. & valves for CRD, HPCS, SFC, RHR, CPM, CNS, electrical termination cabinets and CRD position multiplexer cabinet	Half of hydraulic control units Personnel air locks for containment and drywell. Electrical panels, Piping and Valves for SLC, CRD, SFC, RHR, SSW, RPCCW, LPCS, DER, electrical termination cabinets, CRD position multiplexer cabinet and SLC system drum	RWCU ppg, valves & heat exchangers (regenerative and nonregenerative SSW piping and valves)	2.19 2.20 2.21 2.22 2.23 2.24 2.25 2.26 2.27 2.28
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	2.30
Nonsafety Related Equipment	1	CRD instrument racks, CNS piping and valves	None	RWCU & RPCCW ppg. and valves	2.32 2.33
Area Suppression Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	2.35 2.36
Electrical Cable					2.38
Description	1(b)	Division II and nondivisional cable in trays	Division I and nondivisional cable in trays	All cable in conduit	2.40 2.41
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	2.43
Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	2.45
Fire Barrier Description	1(a)	Reinforced concrete walls separate RC-3 from surrounding areas and drywall and steam tunnel	Reinforced concrete walls separate RC-3 from surrounding areas and drywall and steam tunnel	Reinforced concrete wall separates zone from adjacent area (shield wall)	2.47 2.48 2.49 2.50 2.51 2.52
Combustible Loading	1(d), 1(c)	57,000 Btu/ft <sup>2</sup>	53,200 Btu/ft <sup>2</sup>	Negligible	2.54
Design Basis Fire	1(a)	43 min	40 min	-	2.56
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	Section 9A.2.2.2	2.58

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## RBS FSAR

TABLE 9A.2-1 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		RC-4/Z-6	RC-4/Z-7	RC-5/Z-9	
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 1)	Fig. 9A.2-3, 9A.2-5 (Sh 1)	Fig. 9A.2-4 9A.2-5 (Sh 1)	3.14 3.15
Safety-Related Equipment					3.17
Description	1(b)	RWCU backwash receiving tank, ppg. and valves; electric termination cabinets; radiation monitor cabinet; SSW, RHR, SFC, CCP, CPM piping and valves	SLC system tank & pumps, elect. panels, RCS piping and valves, RHR, SSW, HVN ppg. and valves; electrical termination cabinet and radiation monitor cabinet	RWCU holding pumps, valves, and piping	3.19 3.20 3.21 3.22 3.23 3.24
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	3.26
Nonsafety-Related Equipment	1	RWCU backwash receiving tank pumps, piping, and valves; recir. flow controller, containment Hd purge exh. fan, LMS, HVN, RPCCW, RCS piping and valve	Recirc. flow controller, electrical panels, SLC test tank, piping, and valves, lighting and power distribution panels, recir. flow controller, RPCCW, CNS, and SAS piping and valves.	RWCU valves and piping	3.28 3.29 3.30 3.31 3.32 3.33 3.34
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	3.36 3.37
Electrical Cable					3.39
Description	1(b)	All cable in conduit	Division 1 and nondivisional cable in trays	All cable in conduit	3.41 3.42
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	3.44
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	3.46 3.47
Fire Barrier Description	1(a)	Reinforced concrete wall separates zone from adjacent areas (shield wall)	Reinforced concrete walls separate this zone from drywell & adjacent areas	Reinforced concrete RWCU cubicle	3.49 3.50 3.51
Combustible Loading	1(d), 1(c)	43,200 Btu/ft <sup>2</sup>	39,900 Btu/ft <sup>2</sup>	Negligible	3.53
Design Basis Fire	1(a)	32 min	30 min	-	3.55
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	Section 9A.2.2.2	3.57

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## RBS FSAR

TABLE 9A.2-1 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		RC-5/Z-10	RC-5/Z-11	RC-5/Z-12	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-4 9A.2-5 (Sh 1)	4.13 4.14 4.15
Safety-Related Equipment					
Description	1(b)	RWCU filter and demineralizer and piping	RWCU filter and demineralizer and piping	Hydrogen mixing fans, RHR, SFC, and CPM piping	4.17 4.18 4.19
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	4.21
Nonsafety-Related Equipment	1	None	None	RWCU equip. reactor sample station CNS ppg. & valves; instr., control, & lighting pls; RWCU tank & pump; Resin feed tank; Resin melting pump, ppg. & valves	4.23 4.24 4.25 4.26 4.27 4.28 4.29 4.30 4.31 4.32
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	4.34 4.35
Electrical Cable					4.37
Description	1(b)	All cable in conduit	All cable in conduit	Division II and nondivisional cable tray riser	4.39 4.40 4.41
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	Section 9A.2.2.1	4.43
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.2.3	Section 9A.2.2.3	Section 9A.2.2.3	4.45 4.46
Fire Barrier Description 4.48	1(a)	Reinforced concrete RWCU cubicle	Reinforced concrete RWCU cubicle	Reinforced concrete walls separate zone from adjacent areas & drywell	4.49 4.50
4.51					
Combustible Loading	1(d),1(c)	None	None	5,300 Btu/ft <sup>2</sup>	4.53
Design Basis Fire	1(a)	-	-	4 min	4.55
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	Section 9A.2.2.2	4.57

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## RBS FSAR

TABLE 9A.2-1 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		RC-5/Z-13	RC-5/Z-14	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-4, 9A.2-5 (Sh 1)	5.13
Safety-Related Equipment				5.15
Description	1(b)	Containment unit coolers hydrogen mixing fan; SFC, SSW, RHR, HVN ppg. & valves	Hydrogen recombiners	5.17 5.18 5.19
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	5.21
Nonsafety-Related Equipment	1	Lighting panels, CNS piping and valves	Fans, electrical panels, fuel assembly, hydraulic power supply	5.23 5.24 5.25
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	5.27 5.28
Electrical Cable				5.30
Description	1(b)	Division 1 and nondivisional cable tray risers	All cables in conduit	5.32 5.33
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	5.35
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.2.3	Section 9A.2.2.3	5.37 5.38
Fire Barrier Description	1(a)	R.C. walls separate zone from adjacent areas and drywell	R.C. walls separate zone from vessel head	5.40 5.41
Combustible Loading	1(d), 1(c)	6,000 Btu/ft <sup>2</sup>	Negligible	5.43
Design Basis Fire	1(a)	5 min	-	5.45
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	5.47

## RBS FSAR

TABLE 9A.2-1 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		RDW-1 (Drywell)	RC-6 (Annulus)	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-2, 9A.2-3 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-1, 9A.2-2, 9A.2-3 9A.2-4, 9A.2-5 (Sh 1)	6.3 6.4
Safety-Related Equipment				6.6
Description	1(b)	RPV, isolation valves; main steam safety and relief valves and blowdown piping; equipment hatch and personnel air lock, MSIV accumulators, RCS, CRD, HPCS, LPCS, RHR, FWS, RWCU, SLC, SWP piping, pumps, and valves	Piping and electrical penetrations, containment personnel air lock	6.8 6.9 6.10 6.11 6.12 6.13 6.14
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	6.16
Nonsafety-Related Equipment	1	Floor drain sumps and pumps, equipment drain cooler; TIP indexing mechanisms unit coolers, refueling seal, RPCCW piping and valves	None	6.18 6.19 6.20 6.21 6.22
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.2.3	Section 9A.2.2.3	6.24 6.25
Electrical Cable				6.27
Description	1(b)	All electrical cable in conduit	Electrical cable located in penetration ppg.	6.29
Safe Shutdown Analysis	2	Section 9A.2.2.1	Section 9A.2.2.1	6.31
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.2.3	Section 9A.2.2.3	6.33 6.34
Fire Barrier Description	1(a)	Drywell is separated from the containment by a reinforced concrete wall.	Annulus separated from surrounding area by reinforced conc. shield bldg. wall and from the containment by the free standing containment steel shell.	6.36 6.37 6.38 6.39
Combustible Loading	1(d), 1(c)	Negligible	Negligible	6.41
Design Basis Fire	1(a)	-	-	6.43
Radioactive Release Analysis	1	Section 9A.2.2.2	Section 9A.2.2.2	6.45

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TABLE 9A.2-2

## REACTOR BUILDING FIRE LOADING DATA

[illegible]



TABLE 9A.2-2 (Cont)

Fire Area/Zone		Safety- Related Equipment In Area	Fire Hazard					Fire Loading	
Name	Area (sq ft)		Name	Combus- title	Quantity (lb) (gal)	Btu/lb	Total Btu x10 <sup>6</sup>	(Btu/sq ft rounded off)	
RC-3									2.21
Z-4 El 114'-0" (West Side)	3,422	Hydraulic control units for the CFD system; drywell personnel air lock; containment personnel air lock; electrical panels; piping and valves for: CRD, SFC, FHR, SSW, RPCCW, LPCS, SLC, and DER; electrical termination cabinets, CFD position multiplexer cabinet and SIC drum	6 MOVs total 25 hp Cable trays	Insul Insul	15 16,571	11,000 11,000	0.2 181.9		2.22 2.23 2.24 2.25 2.26 2.27 2.28 2.29 2.30 2.31 2.32 2.33 2.34
						Z-4	Total	182.1	53,200
EC-4									2.38
Z-5 El 141'-0" and 142'-3"	884	RWCU piping & heat exchangers; (regenerative and nonregenerative) SSW piping and valves	9 MOVs total 50 hp	Insul	18	11,000	0.2	Neg.	2.39 2.40 2.41 2.42
Z-6 El 141'-0"	2,963	RWCU backwash receiving tank, piping and valves; electrical termination cabinets; radiation monitoring cabinet; SSW, RHR, SFC, CPF, CPM piping and valves	2 Motors 5 hp each Dry ion exchange resins					Neg.	2.44 2.45 2.46 2.47 2.48 2.49
			Cable trays	Insul	11,516	11,000	126.7		2.50
						Z-6	Total	128.1	43,200
Z-7 El 141'-0"	2,963	SIC system tank and pumps; panels; piping and valves for: FCS, FHR, SSW, HVN systems; electrical termination cabinet and radiation monitoring cabinet	B-33-D003A 7 MOVs total 30 hp Cable trays	Oil Insul Insul	600 80 18 9,687	19,000 11,000 11,000	11.4 0.2 106.5		2.53 2.54 2.55 2.56 2.57 2.58
						Z-7	Total	118.1	39,900

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TABLE 9A.2-2 (Cont)

<u>Fire Area/Zone</u>		<u>Safety-Related Equipment In Area</u>	<u>Fire Hazard</u>				<u>Total Btu x10<sup>6</sup></u>	<u>Fire Loading (Btu/sq ft rounded off)</u>	
<u>Name</u>	<u>Area (sq ft)</u>		<u>Combustible</u>	<u>Quantity</u> <u>(lb) (gal)</u>		<u>Btu/lb</u>			
RC-6		Piping and electrical penetrations, containment personnel air lock					Neg.	Neg.	3.48 3.49 3.50 3.51

## RBS FSAR

TABLE 9A.2-3

## FUEL BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		FB-1/Z-1	FB-1/Z-2	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1)	Fig. 9A.2-2, 9A.2-5 (Sh 1)	1.20
Safety-Related Equipment				1.22
Description	1(b)	Fuel pool cooling pumps and heat exchangers, ppg. and valves (no MOVs). Spent fuel storage racks RPCCW ppg. and MOVs	New fuel storage racks, fuel pool cooling heat exchangers, ppg. and valves	1.24 1.25 1.26 1.27
Safe Shutdown Analysis	2	Section 9A.2.3.1	Section 9A.2.3.1	1.29
Nonsafety-Related Equipment	1	Fuel pool purif. pumps, piping, & valves, tanks pumps, RPCCW ppg. & valves, fuel transfer sys. cont. rod drives & assoc. eqpt. fl. drain sumps & pumps	Swgr., MCCs, fuel pool d'min'er filter & backwash compressor, air accumulator sample station, ppg. for CRD, SFT, eqpt. drain ppg.	1.31 1.32 1.33 1.34 1.35
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.3.2	Section 9A.2.3.2	1.37 1.38
Electrical Cable				1.40
Description	1(b)	Division I, II and nondivisional cable trays	Division I cable risers separated from Division II by 3-hr fire-rated barriers	1.42 1.43
Safe Shutdown Analysis	2	Section 9A.2.3.1	Section 9A.2.3.1	1.45
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.3.3	Section 9A.2.3.3	1.47 1.48
Fire Barrier Description	1(a)	The fuel building is essentially a single fire area provided with a measure of separation by the reinforced concrete floors and walls. Openings in the floors exist preventing allocation of separate fire areas for each floor.		1.50 1.51 1.52
Combustible Loading	1(d), 1(c)	13,300 Btu/ft <sup>2</sup>	24,100 Btu/ft <sup>2</sup>	1.54
Design Basis Fire	1(a)	10 min	18 min	1.56
Radioactive Release Analysis	1	Section 9A.2.3.2	Section 9A.2.3.2	1.58

## RBS FSAR

TABLE 9A.2-3 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		FB-1/Z-3	FB-1/Z-4	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1)	Fig. 9A.2-3, 9A.2-5 (Sh 1)	2.14
Safety-Related Equipment				2.16
Description	1(b)	Inst. cabinets, fuel handling platf., personnel air lock, CRD ppg. & MOV, equip. drain ppg. & MOV, SFC ppg. & MOV, electrical penetration cabinets	Ventilation system charcoal filters, electrical equipment	2.18 2.19 2.20 2.21 2.22
Safe Shutdown Analysis	2	Section 9A.2.3.1	Section 9A.2.3.1	2.24
Nonsafety-Related Equipment	1	Bridge crane, fuel cask handling trolley	Ventilation air handling equipment and unit coolers, electrical equipment	2.26 2.27
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.3.2	Section 9A.2.3.2	2.29 2.30
Electrical Cable				2.32
Description	1(b)	Division I, II, III and nondivisional cable trays	Division I, II, and nondivisional cables and trays	2.34 2.35
Safe Shutdown Analysis	2	Section 9A.2.3.1	Section 9A.2.3.1	2.37
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.3.3	Section 9A.2.3.3	2.39 2.40
Fire Barrier Description	1(a)	The fuel building is essentially a single fire area provided with a measure of separation by the reinforced concrete floors and walls. Openings in the floors exist preventing allocation of separate fire areas for each floor.		2.42 2.43 2.44
Combustible Loading	1(d), 1(c)	18,400 Btu/ft <sup>2</sup>	24,600 Btu/ft <sup>2</sup>	2.46
Design Basis Fire	1(a)	15 min	19 min	2.48
Radioactive Release Analysis	1	Section 9A.2.3.2	Section 9A.2.3.2	2.50



TABLE 9A.2-4

## PUEL BUILDING FIRE LOADING DATA

[illegible]

TABLE 9A.2-4 (Cont)

Fire Area/Zone			Fire Hazard					
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combus- tible	Quantity (lb) (gall)	Btu/lb	Total Btu (x10 <sup>6</sup> )	Fire Loading (Btu/sq ft rounded off)
2-4 E1 131'-3", 148'-0"	10,165	None	Switchgear	Plastic	100	11,000	1.1	2.17
			4 dry XPMRS	Insul	12	11,000	0.1	2.18
			Charcoal					2.19
			filters	Charcoal	8,500	14,000	119	2.20
			Cable trays	Insul	11,810	11,000	129.9	2.21
			2-4 Total				250.1	24,600 2.23

## RBS FSAR

TABLE 9A.2-5

## AUXILIARY BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-1	AB-1 Z-2	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	1.20
Safety-Related Equipment				1.22
Description	1(b)	Piping & motor-operated valves for LPCS, RHR-A, RCIC, RPCCW	Panels for RCIC, RHR (loop A), LPCS, motor, control center, unit coolers, RHR, LPCS, SSW ppg. no valves	1.24 1.25 1.26
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	1.28
Nonsafety-Related Equipment	1	Pumps, heat exchangers & valves for RPCCW; floor drain sumps & pumps	RPCCW heat exchangers	1.30 1.31
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	1.33 1.34
Electrical Cable				1.36
Description	1(b)	Division I cable trays only. No exposure to Div. II equipment.	Division I cable in trays and one non-divisional tray separation	1.38 1.39
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	1.41
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	1.43 1.44
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate areas from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	1.46 1.47 1.48
Combustible Loading	1(d), 1(c)	4,800 Btu/ft <sup>2</sup>	16,000 Btu/ft <sup>2</sup>	1.50
Design Basis Fire	1(a)	4 min	12 min	1.52
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	1.54

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-3	AB-1 Z-4	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)	2.22
Safety-Related Equipment				2.24
Description	1(b)	Misc. pnls. & MCCs; unit coolers; RHR-A; LPCS, SSW ppg. and MOVs; penetration terminal cabinets	Elec. pnls, load centers, term. penetration cabinets, MCCs, unit cooler, & MOVs	2.26 2.27 2.28
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	2.30
Nonsafety-Related Equipment	1	Switchgear, MCCs, load ctrs, RPCCW heat exch., surge tank & nitrogen bottles	Instrument racks and MCCs	2.32 2.33 2.34
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	2.36 2.37
Electrical Cable				2.39
Description	1(b)	Division I and nondiv. cable in trays; Division I cable risers separation in accordance with Reg. Guide 1.75.	Division I cable trays, Divisional-nondivisional separation in accordance with Reg. Guide 1.75.	2.41 2.42 2.43
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	2.45
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	2.47 2.48
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	2.50 2.51
Combustible Loading	1(d), 1(c)	94,700 Btu/ft <sup>2</sup>	62,800 Btu/ft <sup>2</sup>	2.53
Design Basis Fire	1(a)	1.2 hr	47 min	2.55
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	2.57

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-2/Z-1	AB-2/Z-2	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	3.13
Safety-Related Equipment				3.15
Description	1(b)	HPCS pumps, piping, and valves	HPCS piping, SSW instrument rack	3.17
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	3.19
Nonsafety-Related Equipment	1	Floor Drain Sump & Pump	None	3.21
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	3.23 3.24
Electrical Cable				3.26
Description	1(b)	Division III wiring in conduit	Division I, II, III cable in trays	3.28
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	3.30
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	3.32 3.33
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	3.35 3.36
Combustible Loading	1(d), 1(c)	5,000 Btu/ft <sup>2</sup>	88,700 Btu/ft <sup>2</sup>	3.38
Design Basis Fire	1(a)	4 min	1.1 hr	3.40
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	3.42



## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-3	AB-4	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	3.56
Safety-Related Equipment				3.58
Description	1(b)	RHR pump, heat exchanger, and MOV; SSW piping to RHR heat exchanger	RHR pump w/piping & MOVs; RCIC pump & turbine; compressor 2-RWCU system pumps; one unit cooler	4.2 4.3 4.4
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	4.6
Nonsafety-Related Equipment	1	Floor drain sump & pump	Two floor drain sumps & pumps	4.8
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	4.10 4.11
Electrical Cable				4.13
Description	1(b)	Division I and II cable in trays	Division I and II cable in trays	4.15
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	4.17
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	4.19 4.20
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	4.22 4.23
Combustible Loading	1(d), 1(c)	8,300 Btu/ft <sup>2</sup>	8,000 Btu/ft <sup>2</sup>	4.25
Design Basis Fire	1(a)	6 min	6 min	4.27
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	4.29

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-5	AB-6/Z-1	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	4.43
Safety-Related Equipment				4.45
Description	1(b)	Area AB-5 redundant to Area AB-3. RHR pump, heat exchanger, & MOV; SSW ppg. to RHR heat exchanger	LPCS pumps, piping, & valves	4.47 4.48 4.49
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	4.51
Nonsafety-Related Equipment	1	Floor drain sump & pump	Floor drain sump & pump	4.53
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	4.55 4.56
Electrical Cable				4.58
Description	1(b)	Division I and II cable in trays	Division I cable trays	5.2
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	5.4
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	5.6 5.7
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent area.	Three-foot thick reinforced concrete walls separate area from adjacent areas	5.9 5.10 5.11
Combustible Loading	1(d), 1(c)	12,200 Btu/ft <sup>2</sup>	1,30 Btu/ft <sup>2</sup>	5.13
Design Basis Fire	1(a)	9 min	1 min	5.15
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	5.17

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-6/Z-2	AB-7	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	5.31
Safety-Related Equipment				5.33
Description	1(b)	LPCS test return line MOV, SSW instrument rack	HPCS, RCIC, SSW & RHR piping & MOVs	5.35 5.36
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	5.38
Nonsafety-Related Equipment	1	Metal work benches & storage racks for CRD maintenance	Condensate makeup & transfer system; MWS, air system, RWCU, LWS, SFC ppg., sump & pump	5.40 5.41 5.42
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	5.44 5.45
Electrical Cable				5.47
Description	1(b)	Division I cables only	Division I, II & nondivisional cable in trays; separation 8' horizontal; sep. of divisional from MOVs is 6'; fire breaks 4' long, on 20' centers in trays	5.49 5.50 5.51 5.52
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	5.54
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	5.56 5.57
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	6.1 6.2
Combustible Loading	1(d), 1(c)	80,800 Btu/ft <sup>2</sup>	110,700 Btu/ft <sup>2</sup>	6.4
Design Basis Fire	1(a)	1.0 hr	1.4 hr	6.6
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	6.8

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-10	AB-13 & AB-14	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)	6.22
Safety-Related Equipment				6.24
Description	1(b)	Main steam ppg. & MOVs; feedwater ppg. & MOVs; RWCU & RHR ppg., no MOVs; turbine plant drains; RCIS ppg., no MOVs	AB-13 & AB-14 contain redundant standby gas treatment filters CHARCOAL	6.26 6.27 6.28 6.29
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	6.31
Nonsafety-Related Equipment	1	None	None	6.33
Area Suppression/Detection	1(c), 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	6.35 6.36
Electrical Cable				6.38
Description	1(b)	Division I and II cables All wiring in conduit	Division I and II cables in both AB-13 and AB-14	6.40 6.41
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	6.43
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	6.45 6.46
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	6.48 6.49
Combustible Loading	1(d), 1(c)	Negligible	AB-13 53,400 Btu/ft <sup>2</sup> AB-14 94,700 Btu/ft <sup>2</sup>	6.51 6.52 6.53
Design Basis Fire	1(a)	Negligible	AB-13 40 min AB-14 71 min	6.55 6.56
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	6.58

## RBS FSAR

TABLE 9A.2-5

## AUXILIARY BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-1	AB-15	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	7.16
Safety-Related Equipment				7.18
Description	1(b)	Piping & motor-operated valves for HPCS, RHR-B&C	Panels for RHR (loops B&C) and HPCS; unit coolers; RHR-B&C & HPCS ppg., no MOVs; SSW ppg., no MOVs	7.20 7.21 7.22
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	7.24
Nonsafety-Related Equipment	1	Pumps, floor drain sumps & pumps	None	7.26 7.27
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	7.29 7.30
Electrical Cable			AND III	7.32
Description	1(b)	Division II and III cable trays only	Division II wiring in all conduits.	7.34
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	7.36
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	7.38 7.39
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate areas from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	7.41 7.42 7.43
Combustible Loading	1(d), 1(c)	4,500 Btu/ft <sup>2</sup>	None	7.45
Design Basis Fire	1(a)	4 min	None	7.47
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	7.49



## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-3	AB-15 Z-4	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-4, 9A.2-5 (Sh 1 & 2)	8.5
Safety-Related Equipment				8.7
Description	1(b)	CRD & RPV temperature pnls, motor control cntrs., penetration term. cab., unit coolers, RHR-B&C & SSW ppg., no MOVs	Elec. pnls, load cntrs, term. penetration cab., MCCs, unit cooler ppg., & MOVs	8.9 8.10 8.11 8.12
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	8.14
Nonsafety-Related Equipment	1	Miscellaneous panels	Instrument racks and MCCs	8.16
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	8.18 8.19
Electrical Cable				8.21
Description	1(b)	Div. II and nondivis. cable in trays; Div. II cable risers separat. in accordance with Reg. Guide 1.75.	Div. II and <u>III</u> cable in trays; cable risers separat. in accordance with Reg. Guide 1.75.	8.23 8.24 8.25
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	8.27
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	8.29 8.30
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas	Three-foot thick reinforced concrete walls separate area from adjacent areas	8.32 8.33
Combustible Loading	1(d), 1(c)	67,500 Btu/ft <sup>2</sup>	62,800 Btu/ft <sup>2</sup>	8.35
Design Basis Fire	1(a)	51 min	47 min	8.37
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	8.39

## RBS FSAR

TABLE 9A.2-5 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AB-16	AB-17	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-4	8.48 8.49 8.50 8.53
Safety-Related Equipment				8.55
Description	1(b)	Personnel air lock to the containment annulus mixing fans	None	8.57 8.58
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	9.2
Nonsafety-Related Equipment	1	Jib crane, elevator machinery room	Charcoal filter, fans	9.4
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.4.3	Section 9A.2.4.3	9.6 9.7
Electrical Cable				9.9
Description	1(b)	Division I and II cables in conduit	None	9.11
Safe Shutdown Analysis	2	Section 9A.2.4.1	Section 9A.2.4.1	9.13
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.4.3	Section 9A.2.4.3	9.15 9.16
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls separate area from adjacent areas		9.18 9.19
Combustible Loading	1(d), 1(c)	Negligible	30,300 <i>btu/ft<sup>2</sup></i>	9.21
Design Basis Fire	1(a)	Negligible	23 min	9.23
Radioactive Release Analysis	1	Section 9A.2.4.2	Section 9A.2.4.2	9.25

TABLE 9A.2-6

## AUXILIARY BUILDING PIPE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety-Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)	
AB-1									1.22
Z-1 El 70'-0"	2,085	1PCS system RHR-A system RCIC system (Piping and MOVs for: RPECW system	3 Motors total 600 hp 6 MOVs Cable trays	Insul Insul Insul	54 13 850	11,000 11,000 11,000	0.6 0.1 9.4		1.23 1.24 1.25 1.26 1.27 1.28 1.29
			Z-1 Total				10.1	4,800	
Z-2 95'-9"	1,670	Piping for: RHR 1PCS SSW Unit cooler 1ENB*MCC1	MCC Cable trays	Plastic Insul	96	11,000 11,000	1.1 21.5		1.47 1.48 1.49 1.50 1.51 1.52 1.53
			Z-2 Total				26.6	16,000	
<sup>3</sup> Z-3 El 114'-0"	4,051	Piping and valves for: RPECW, RHR, 1PCS and SSW; 2 unit coolers; 5 electr. penetr. term. cabinets, 2 MCCs, 3 panels	MCCs Electr. penetr. term. cabinets 5-kV Swgr. Load center Cable trays	Plastic Insul Plastic Plastic Insul	360 100 100	11,000 11,000 11,000 11,000 11,000	4.0 15.8 1.1 1.1 361.6		1.57 1.58 2.1 2.2 2.3 2.4 2.5 2.6
			Z-3 Total				383.6	94,700	
Z-4 El 141'-0"	4,824	6 electr. penetr. term. cabinets, 2 load centers, 6 MCCs, 2 unit coolers, piping and valves for: SSW, 1PCS, 1CMS-PNL10B	3 Electr. penetr. term. cabinets 1 Load center 3 MCCs 3 Dry XFMRs Cable trays	Insul Plastic Plastic Insul Insul	864 100 200 9 26,372	11,000 11,000 11,000 11,000 11,000	9.5 1.1 2.2 0.1 290.1		2.10 2.11 2.12 2.13 2.14 2.15 2.16
			Z-4 Total				303.0	62,800	

TABLE 9A.2-6 (Cont)

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gall)		Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)
AB-2									2.21
2-1 El 70'-0"	621	HPCS pumps Related piping and valves	2,500-hp Motor 5 MOVs	Insul Insul	280		11,000	3.1 Neg	2.22 2.23
					2-1 Total			3.1 5,000	2.24
2-2 El 95'-9"	1,324	HPCS piping, SSW, Instrument rack	Cable trays	Insul				117.4 88,700	2.26 2.27
AB-3									2.31
El 70'-0", 95'-9"	1,914	RHR pump, heat exchanger MOVs, and piping; SSW piping	700-hp Motor 14 MOVs Cable trays	Insul Insul Insul	50 40		11,000 11,000 11,000	0.6 0.4 14.9	2.32 2.33 2.34
					AB-3 Total			15.9 8,300	2.35
AB-4									2.39
El 70'-0", 95'-9"	2,451	RHR pump with associated piping and valves; RCIC pump with associated piping and valves; two PWCU pumps, unit cooler	700-hp Motor 2 Motors total 120 hp 15 MOVs RCIC pump Cable trays	Insul Insul Insul Insul Oil Insul	50 16 50 53 7		11,000 11,000 11,000 19,000	0.6 0.2 0.6 1.0 17.2	2.40 2.41 2.42 2.43 2.44 2.45
					AB-4 Total			19.6 8,000	2.46
AB-5									2.50
El 70'-0", 95'-9"	1,848	RHR pump, heat exchanger, MOVs and piping; SSW piping	700-hp Motor 14 MOVs Cable trays	Insul Insul Insul	50 40		11,000 11,000 11,000	0.6 0.4 21.5	2.51 2.52 2.53
					AB-5 Total			22.5 12,200	2.54
AB-6									2.58
2-1 El 70'-0"	635	LPCS pump, fill pump, piping and valves	1,250-hp Motor	Insul	76		11,000	0.8 1,300	3.1 3.2
2-2 El 95'-9"	933	LPCS piping and valves, SSW instrument rack	Cable trays	Insul			11,000	75.4 80,800	3.4 3.5

TABLE 9A.2-6 (Cont)

Fire Area/Zone			Fire Hazard					Fire loading	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combus- tible	Quantity (lb) (gal)	Btu/lb	Total Pto (x10 <sup>3</sup> )	(Btu/sq ft rounded off)	
AB-7									3.9
E1 70'-0"	4,470	Piping and valves for: HPCS ECIS SSW RHR	Cable trays 6 MOVs	Insul		11,000	494.7 Neg		3.10 3.11 3.12 3.13 3.14 3.15
					AB-7 Total		494.7	110,700	
AB-10									3.19
E1 95'-9" 114'-0"	6,041	Piping and valves for: MSS, FWS, FWCU, RHR, DTH and RCIC	8 MOVs	Insul			Neg	Neg	3.20 3.21 3.22
AB-13									3.26
E1 141'-0"	2,112	Standby gas treatment unit	Charcoal filter Cable trays	Charcoal Insul	5,000 3,891	14,000 11,000	70.0 42.8		3.27 3.28 3.29
					AB-13 Total		112.8	53,400	
AB-14									3.33
E1 141'-0"	1,952	Standby gas treatment unit	Charcoal filter Cable trays	Charcoal Insul	5,000 10,436	14,000 11,000	70.0 114.8		3.34 3.35 3.36
					AB-14 Total		184.8	94,700	
AB-15									3.40
2-1 E1 70'-0"	2,085	RHR-B&C system HPCS system Piping and MOVs for: 1) RPCCW system 2) SSW system	3 MOVs Cable trays	Insul Insul	7 845	11,000 11,000	0.1 9.3		3.41 3.42 3.43 3.44 3.45 3.46
					2-1 Total		9.4	4,500	
2-2 E1 95'-9"	1,570	Piping for: RHR HPCS SSW Unit cooler 3 Panels	None				None	None	3.50 3.51 3.52 3.53 3.54 3.55



TABLE 9A.2-6 (Cont)

Fire Area/Zone			Fire Hazard									
Name	Area (sq. ft)	Safety- Related Equipment In Area	Name	Combust- ible	Quantity (lb) (gall)		Btu/lb	Total Btu (x10 <sup>6</sup> )	Fire Loading (Btu/sq ft rounded off)			
2-3 El 114'-0"	3,951	5 electr. penetr. term. cab.; Piping and valves for RHR and SSW, 5 unit coolers, 3 Panels, 2 MCCs	4 MCCs	Plastic	324		11,000	3.6	4.1			
			5 Electr. penetr. term. cabinets	Insul				15.8	4.2			
			5 Motors						4.3			
			total 150 hp	Insul	20		11,000	0.2	4.4			
			6 Dry XPMRS	Insul	18		11,000	0.2	4.5			
			Cable trays	Insul	22,427		11,000	246.7	4.6			
			2-3 Total							266.5	67,500	4.7
2-4 El 141'-0"	4,824	6 electr. penetr. term. cab.; 2 load centers, 6 MCCs, 2 unit coolers, piping and valves for: SSW, APCs. 1CMS-PNL10B	3 Electr. penetr. term cabinets	Insul	864		11,000	18.9	7.5	4.14		
			1 load center	Plastic	100			2.2	1.1	4.15		
			3 MCCs	Plastic	200		11,000	4.4	2.2	4.16		
			3 Dry XPMRS	Insul	9		11,000	0.2	.1	4.17		
			Cable trays	Insul	26,372		11,000	290.1		4.18		
			2-4 Total							303.0	62,800	4.19
			AB-16 El 170'-0"	1,468	Containment personnel air lock	2 Motors total 300 hp	Insul	36		11,000	0.4	Neg
									4.21			
AB-17 El 170'-0"	1,200	None	Charcoal filter	Charcoal	2,600		14,000	36.4	30,300	4.22		
												4.23
												4.24
												4.25

TABLE 9A.2-7

## CONTROL BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-1A	C-1B	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-2, 9A.2-5 (Sh 2)	1.20
Safety-Related Equipment				1.22
Description	1(b)	Division II cable in trays	Division II cable in trays	1.24
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	1.26
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	1.28
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	1.30 1.31
Electrical Cable				1.33
Description	1(b)	Division II cable in trays and nondivisional cable trays separation in accordance with Reg. Guide 1.75.		1.35 1.36
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	1.38
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	1.40 1.41
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	1.43 1.44
Combustible Loading	1(d), 1(c)	453,500 Btu/ft <sup>2</sup>	280,300 Btu/ft <sup>2</sup>	1.46
Design Basis Fire	1(a)	5.7 hr	3.5 hr	1.48
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	1.50

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-1C	C-2A	
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	2.6
Safety-Related Equipment				2.8
Description	1(b)	Division II cable in trays	Division II and III cable in trays	2.10
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	2.12
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	2.14
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	2.16 2.17
Electrical Cable				2.19
Description	1(b)	Division II cable trays and nondivisional cable trays separation in accordance with Reg. Guide 1.75.		2.21 2.22
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	2.24
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	2.26 2.27
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	2.29 2.30
Combustible Loading	1(d), 1(c)	152,400 Btu/ft <sup>2</sup>	529,000 Btu/ft <sup>2</sup>	2.32
Design Basis Fire	1(a)	1.9 hr	6.5 hr	2.34
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	2.36

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-2B	C-2C	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	2.50
Safety-Related Equipment				2.52
Description	1(b)	Division II and III cable in trays	Division II and III cable in trays	2.54
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	2.56
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	2.58
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	3.2 3.3
Electrical Cable				3.5
Description	1(b)	Division II cable in trays and nondivisional cable trays separation in accordance with Reg. Guide 1.7 <sup>c</sup> .		3.7 3.8
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	3.10
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	3.12 3.13
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	3.15 3.16
Combustible Loading	1(d), 1(c)	210,400 Btu/ft <sup>2</sup>	242,800 Btu/ft <sup>2</sup>	3.18
Design Basis Fire	1(a)	2.6 hr	3.0 hr	3.20
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	3.22

TABLE 9A.2-7 (Cont)

## FIRE AREA/ZONE

	Encl. 2 Ref. Para.	C-3	C-4	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	3.36
Safety-Related Equipment				3.38
Description	1 (b)	None	Two HVAC units Two return air fans Air-operated dampers	3.40 3.41 3.42
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	3.44
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	3.46
Area Suppression/Detection	1 (b) 1 (e)	Section 9A.2.5.3	Section 9A.2.5.3	3.48 3.49
Electrical Cable				3.51
Description	1 (b)	Nondivisional cable in trays	Division I, Division II and nondivisional cable separation in accordance with Reg. Guide 1.7 <sup>e</sup> .	3.53 3.54 3.55
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	3.57
Suppression/Detection	1 (b) 1 (e) 2	Section 9A.2.5.3	Section 9A.2.5.3	4.1 4.2
Fire Barrier Description	1 (a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	4.4 4.5
Combustible Loading	1 (d), 1 (c)	238,700 Btu/ft <sup>2</sup>	Negligible	4.7
Design Basis Fire	1 (a)	3.0 hr	Negligible	4.9
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	4.11



TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-5	C-6	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	4.25
Safety-Related Equipment				4.27
Description	1 (b)	Division I, II and III cable in trays	Division I, II and III cable in trays	4.29
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	4.31
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	4.33
Area Suppression/Detection	1 (b) 1 (e)	Section 9A.2.5.3	Section 9A.2.5.3	4.35 4.36
Electrical Cable				4.38
Description	1 (b)	Division I and II cable in trays and nondivisional cable trays separation in accordance with Reg. Guide 1.75.	Division I, II and III cable in trays	4.40 4.41 4.42
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	4.44
Suppression/Detection	1 (b) 1 (e) 2	Section 9A.2.5.3	Section 9A.2.5.3	4.46 4.47
Fire Barrier Description	1 (a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	4.48 4.50
Combustible Loading	1 (d) , 1 (c)	193,600 Btu/ft <sup>2</sup>	99,400 Btu/ft <sup>2</sup>	4.52
Design Basis Fire	1 (a)	2.4 hr	1.2 hr	4.54
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	4.56

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-7	C-8	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	5.12
Safety-Related Equipment				5.14
Description	1(b)	Division I cable in trays	None	5.16
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	5.18
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	5.20
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	5.22 5.23
Electrical Cable				5.25
Description	1(b)	Division I cable trays and nondivisional cable trays separation in accordance with Reg. Guide 1.75.	Nondivisional cable in trays	5.27 5.28 5.29
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	5.31
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	5.33 5.34
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	5.36 5.37
Combustible Loading	1(d), 1(c)	26,700 Btu/ft <sup>2</sup>	242,400 Btu/ft <sup>2</sup>	5.39
Design Basis Fire	1(a)	20 min	3.0 hr	5.41
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	5.43

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-9A	C-9B	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-2, 9A.2-5 (Sh 2)	5.57
Safety-Related Equipment				6.1
Description	1(b)	Division I cable in trays	Division I cable in trays	6.3
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	6.5
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	6.7
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	6.9 6.10
Electrical Cable				6.12
Description	1(b)	Division I cable in trays and non-divisional cable trays separation in accordance with Reg. Guide 1.75.	Division I cable in trays and non-divisional cable trays separation in accordance with Reg. Guide 1.75.	6.14 6.15 6.16
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	6.18
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	6.20 6.21
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	6.23 6.24
Combustible Loading	1(d), 1(c)	472,900 Btu/ft²	288,700 Btu/ft²	6.26
Design Basis Fire	1(a)	5.9 hr	3.6 hr	6.28
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	6.30

TABLE 9A.2-7 (Cont)

## PIPE AREA/ZONE

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-9C	C-10A	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	6.44
Safety-Related Equipment				6.46
Description	1(b)	Division I cable in trays	Division I cable in trays	6.48
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	6.50
Nonsafety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	6.52
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	6.54 6.55
Electrical Cable				6.57
Description	1(b)	Division I cable trays and non-divisional cable trays separation in accordance with Reg. Guide 1.75.	Division I cable trays and nondivisional cable trays separation in accordance with Reg. Guide 1.75.	7.1 7.2 7.3
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	7.5
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	7.7 7.8
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	7.10 7.11
Combustible Loading	1(d), 1(c)	152,000 Btu/ft <sup>2</sup>	442,200 Btu/ft <sup>2</sup>	7.13
Design Basis Fire	1(a)	1.9 hr	5.5 hr	7.15
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	7.17

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-10B	C-10C	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	7.31
Safety-Related Equipment				7.33
Description	1(b)	Division I cable in trays	Division I cable in trays	7.35
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	7.37
Non-safety-Related Equipment	1	Nondivisional cable in trays	Nondivisional cable in trays	7.39
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	7.41 7.42
Electrical Cable				7.44
Description	1(b)	Division I cable trays and non-divisional cable trays separation in accordance with Regulatory Guide 1.75.	Division I cable trays and non-divisional cable trays separation in accordance with Reg Guide 1.75.	7.46 7.47 7.48 7.49
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	7.51
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	7.53 7.54
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	7.56 7.57
Combustible Loading	1(d), 1(c)	218,500 Btu/ft <sup>2</sup>	134,600 Btu/ft <sup>2</sup>	8.1
Design Basis Fire	1(a)	2.7 hr	1.7 hr	8.3
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	8.5



TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-11	C-12	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)	Fig. 9A.2-1, 9A.2-5 (Sh 2)	8.19
Safety-Related Equipment				8.21
Description	1(b)	None	Division I cable in trays	8.23
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	8.25
Non-safety-Related Equipment	1	Nondivisional cable in trays	None	8.27
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	8.29 8.30
Electrical Cable				8.32
Description	1(b)	Nondivisional cable in trays	Division I cable trays	8.34
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	8.36
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	8.38 8.39
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	8.41 8.42
Combustible Loading	1(d), 1(c)	137,600 Btu/ft <sup>2</sup>	113,300 Btu/ft <sup>2</sup>	8.44
Design Basis Fire	1(a)	1.7 hr	1.4 hr	8.46
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	8.48

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-13	C-14	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 2)	Fig. 9A.2-2, 9A.2-5 (Sh 2)	9.4
Safety-Related Equipment				9.6
Description	1(b)	4 AC water chillers 2 HVAC units 8 pumps 2 expansion tanks Division I, Division II cable trays	2 MCCs 1 480-V load center 2 switchgears AC distr. panel Dry XFMR Division II cable trays	9.8 9.9 9.10 9.11 9.12 9.13
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	9.15
Nonsafety-Related Equipment	1	Nondivisional cable	None	9.17
Area Suppression/Detection	1(l) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	9.19 9.20
Electrical Cable				9.22
Description	1(b)	Division I, Division II and non- divisional cable separation in accordance with Reg. Guide 1.75.	Division II cable trays	9.24 9.25 9.26
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	9.28
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	9.30 9.31
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	9.33 9.34
Combustible Loading	1(d), 1(c)	5,400 Btu/ft <sup>2</sup>	45,600 Btu/ft <sup>2</sup>	9.36
Design Basis Fire	1(a)	4 min	34 min	9.38
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	9.40

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-15	C-16	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 2)	Fig. 9A.2-2, 9A.2-5 (Sh 2)	9.54
Safety-Related Equipment				9.56
Description	1(b)	2 MCCs 1 480-V load center 2 switchgears AC distr. panel Dry XFMR Division I cable trays	Division I cable trays Division II cable trays	9.58 10.1 10.2 10.3 10.4 10.5
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	10.7
Nonsafety-Related Equipment	1	None	2 lgt. panels 2 dry XFMRs	10.9 10.10
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	10.12 10.13
Electrical Cable				10.15
Description	1(b)	Division I cable trays	Division I and Division II cable trays separation in accordance with Reg. Guide 1.75.	10.17 10.18 10.19
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	10.21
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	10.23 10.24
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	10.26 10.27
Combustible Loading	1(d), 1(c)	58,700 Btu/ft <sup>2</sup>	23,400 Btu/ft <sup>2</sup>	10.29
Design Basis Fire	1(a)	44 min	18 min	10.31
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	10.33

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-17	C-18	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	10.47
Safety-Related Equipment				10.49
Description	1(b)	2 HVAC units 2 charcoal filters Division I and Division II cable	Batteries	10.51 10.52 10.53
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	10.55
Non-safety-Related Equipment	1	4 dry XFMRs Nondivisional cable	None	10.57 10.58
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	11.2 11.3
Electrical Cable				11.3
Description	1(b)	Division I, Division II and non- divisional cable separation in accordance with Reg. Guide 1.75.	None	11.7 11.8 11.9
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	11.11
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	11.13 11.14
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	11.16 11.17
Combustible Loading	1(d), 1(c)	22,700 Btu/ft <sup>2</sup>	22,700 Btu/ft <sup>2</sup>	11.19
Design Basis Fire	1(a)	17 min	17 hr	11.21
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	11.23

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		C-19	C-20	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	11.37
Safety-Related Equipment				11.39
Description	1(b)	Batteries	Batteries	11.41
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	11.43
Non-safety-Related Equipment	1	None	None	11.45
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	11.47 11.48
Electrical Cable				11.50
Description	1(b)	Division II cables	Division III cables	11.52
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	11.54
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	11.56 11.57
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas	12.1 12.2
Combustible Loading	1(d), 1(c)	129,000 Btu/ft²	17,000 Btu/ft²	12.4
Design Basis Fire	1(a)	1.6 hr	13 min	12.6
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	12.8



TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		C-21	C-22	
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	12.22
Safety-Related Equipment				12.24
Description	1(b)	PNL battery charger	MCC, transformer, switchgear, transfer swg.	12.
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	12.28
Nonsafety-Related Equipment	1	None	None	12.30
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	12.32 12.33
Electrical Cable				12.35
Description	1(b)	Division III cables	Division III cables	12.37
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	12.39
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	12.41 12.42
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent area	12.44 12.45
Combustible Loading	1(d), 1(c)	None	4,500 Btu/ft²	12.47
Design Basis Fire	1(a)	None	3 min	12.49
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	12.51

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE APPRA/ZONE	
		C-23	C-24
Plan & Elevation	1	Fig. 9A.2-4, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)
Safety-Related Equipment			
Description	1(b)	Inverter, bat. charger	125-V dc swgr. 2 inverters
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1
Nonsafety-Related Equipment	1	None	2 MCCs 19 dry XPMRs AC distr. panels
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3
Electrical Cable			
Description	1(b)	Division II cables	Division I, II and III cables
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3
Fire Barrier Description	1(a)	One-foot thick reinforced concrete walls separate area from adjacent areas	One-foot thick reinforced concrete walls separate area from adjacent areas
Combustible Loading	1(d), 1(c)	1,200 Btu/ft <sup>2</sup>	1,390 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	Negligible	Negligible
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2

TABLE 9A.2-7 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		C-25	C-26	C-27	
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 2)	Fig. 9A.2-4	Fig. 9A.2-1	13.55
Safety-Related Equipment					13.57
Description	1(b)	PGCC modules and cabinets	Chargers, Inverter, Cables in conduit	Cables in conduit	14.1 14.2
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	Section 9A.2.5.1	14.4
Nonsafety-Related Equipment	1	Office, kitchen, and restroom equipment			14.6 14.7
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.5.3	Section 9A.2.5.3	Section 9A.2.5.3	14.9 14.10
Electrical Cable					14.12
Description	1(b)	<sup>Cables</sup> Division I, II and III and rindi- visional All cable enclosed in PGCC modules and cabinets	Division I cables		14.14 14.15 14.16
Safe Shutdown Analysis	2	Section 9A.2.5.1	Section 9A.2.5.1	Section 9A.2.5.1	14.18
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.5.3	Section 9A.2.5.3	Section 9A.2.5.3	14.20 14.21
Fire Barrier Description	1(a)	Exterior walls are reinforced concrete 3-foot thick. All cable enclosed in PGCC modules and cabinets	One-foot thick rein- forced concrete walls separate area from adjacent areas.	One-foot thick rein- forced concrete walls separate area from adjacent areas.	14.23 14.24 14.25 14.26
Combustible Loading	1(d), 1(c)	Exposure to main control room is negligible	3,510 Btu/ft <sup>2</sup>	None	14.28 14.29
Design Basis Fire	1(a)		3 min.	----	14.31
Radioactive Release Analysis	1	Section 9A.2.5.2	Section 9A.2.5.2	Section 9A.2.5.2	14.23

TABLE 9A.2-8

## CONTROL BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)		Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)
C-1A El 70'-0"	477	Cable trays	Cable trays	Insul				216.3	453,500
									1.22 1.23
C-1B El 98'-0"	477	Cable trays	Cable trays	Insul				133.7	280,300
									1.27 1.28
C-1C El 115'-0"	477	Cable trays	Cable trays	Insul				72.7	152,400
									1.46 1.47
C-2A El 70'-0"	540	Cable trays	Cable trays	Insul				285.7	523,000
									1.51 1.52
C-2B El 98'-0"	540	Cable trays	Cable trays	Insul				113.6	210,400
									1.56 1.57
C-2C El 115'-0"	540	Cable trays	Cable trays	Insul				131.1	292,800
									2.2 2.3
C-3 El 70'-0"	168	Cable trays	Cable trays	Insul				40.1	232,700
									2.7 2.8
C-4 El 70'-0"	1,472	2 ac units	Motors	Insul				Neg	Neg
									2.12 2.13
C-5 El 70'-0"	736	Cable trays	Cable trays	Insul				142.5	193,600
									2.17 2.18
C-6 El 70'-0"	3,070	Cable trays	Cable trays	Insul				305.3	99,400
									2.22 2.23
C-7 El 70'-0"	1,134	Cable trays	Cable trays	Insul				30.2	26,700
			2 dry XPMPS	Insul	6			0.1	26,700
							C-7 Total	30.3	26,700
									2.27 2.28 2.29 2.30
C-8 El 70'-0"	184	Cable trays	Cable trays	Insul				44.6	242,400
									2.34 2.35

1 of 4

TABLE 9A.2-8 (Cont)

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety-Related Equipment In Area	Name	Combustible	Quantity (lb) (gall)		Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)
C-9A El 70'-0"	466	Cable trays	Cable trays	Insul				221.3	472,900
C-9E El 98'-0"	423	Cable trays	Cable trays	Insul				122.1	288,700
C-9C El 115'-0"	423	Cable trays	Cable trays	Insul				64.3	152,000
C-10A El 70'-0"	621	Cable trays	Cable trays	Insul				243.1	442,200
C-10B El 98'-0"	567	Cable trays	Cable trays	Insul				123.9	212,500
C-10C El 115'-0"	630	Cable trays	Cable trays	Insul				84.8	134,600
C-11 El 70'-0"	162	Cable trays	Cable trays	Insul				22.3	137,600
C-12 El 70'-0"	558	Cable trays	Cable trays	Insul				63.2	113,300
C-13 El 98'-0"	2,773	4 ac chillers	4 motors						
		Cable trays	total 1,000 hp	Insul	88		11,000	1.0	
			Cable trays	Insul			11,000	14.1	
							C-13 Total	15.1	5,400
C-14 El 98'-0"	1,575	2 MCCs	2 MCC	Plastic	192		11,000	2.1	
		480-V load center	Load center	Plastic	10		11,000	0.1	
		4,160-V switchgear	2 switchgears	Plastic	200		11,000	2.2	
		125-V dc switchgear	2 dry XFMRs	Insul	6		11,000	0.1	
		AC distr. panel,	Cable trays	Insul			11,000	67.4	
		Dry XFMR, cable trays,					C-14 Total	71.9	45,600
		remote shutdown panel							



TABLE 9A.2-8 (Cont)

Fire Area/Zone			Fire Hazard						Fire Loading	
Name	Area (sq. ft)	Safety-Related Equipment In Area	Name	Combustible	Quantity (lb) (gall)	Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq. ft. rounded off)		
C-15										3.39
El 98'-0"	1,218	2 MCCs	2 MCCs	Plastic	192	11,000	2.1			3.40
		480-V load center	Load center	Plastic	10	11,000	0.1			3.41
		4,160-V switchgear	2 switchgears	Plastic	200	11,000	2.2			3.42
		125-V dc switchgear	2 dry XFM <sup>®</sup> S	Insul	6	11,000	0.1			3.43
		AC distr. panel	Cable trays	Insul		11,000	67.0			3.44
		Cable trays								
						C-15 Total	71.5	58,700		3.45
C-16										3.49
El 98'-0"	2,517	Cable trays, remote shutdown panel	2 dry XFM <sup>®</sup> S	Insul	6	11,000	0.1			3.50
			Cable trays	Insul		11,000	58.8			3.51
						C-16 Total	58.9	23,400		3.52
C-17										3.56
El 115'-0"	2,846	2 ac units	4 dry XFM <sup>®</sup> S	Insul	12	11,000	0.1			3.57
		2 charcoal filters	Motors	Insul			Neg			3.58
			Charcoal filters	Charcoal	4600	14,000	64.4			4.1
						C-17 Total	64.5	2,2700		4.2
										4.3
C-18										4.7
El 115'-0"	168	Batteries	Batteries				21.6	129,000		4.9
C-19										4.12
El 115'-0"	168	Batteries	Batteries				21.6	129,000		4.13
C-20										4.17
El 115'-0"	108	Batteries	Batteries				1.8	17,000		4.18
C-21										4.22
El 115'-0"	108	1E22*S001PNL	None				None	None		4.23
C-22										4.27
El 115'-0"	735	MCC	MCC	Plastic	96	11,000	1.1			4.28
		4,160-V/480-V transformer	Dry transformer	Insul	3	11,000	Neg			4.29
		4,160-V switchgear	2 switchgears	Plastic	200	11,000	2.2			4.30
		125-V dc transfer swgr.				C-2 Total	3.3	4,500		4.31
C-23										4.35
El 115'-0"	169	Inverter	Inverter	Insul	20	11,000	0.2	1,200		4.36

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TABLE 9A.2-8 (Cont)

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combus- tible	Quantity		Btu/lb	Total Ptu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)
					(lb)	(gal)			
C-24									4.40
El 115'-0"	3,098	125-V dc swgr. 2 inverters	Switchgear	Plastic	100		11,000	1.1	4.41
			2 Inverters	Insul	40		11,000	0.4	4.42
			19 dry VMRS	Insul	60		11,000	0.7	4.43
			2 MCCs	Insul	192		11,000	2.1	4.44
			C-24 Total					4.3	1,390 4.45
C-25									4.49
El 136'-0"	10,291	PGCC floor modules, cabinets, and panels	All wiring located within PGCC (see Table 9A.2-7 and Section 9A.2.05)					-	4.50
								-	4.51
C-26									4.55
El 115'-0"	114	1ENB*CHGR 1A 1ENE*INV01A Cables in conduit	Charger	Insul	18		11,000	0.2	4.56
			Inverter	Insul	18		11,000	0.2	4.57
			C-25 Total					0.4	3,410 4.58
C-27									5.4
El 70'-0"	475	Cables in conduit	None						5.5
El 98'-0"									5.6
El 115'-0"									5.7
El 130'-0"									5.8

TABLE 9A.2-9

## DIESEL GENERATOR BUILDING FIRE HAZARDS ANALYSIS

## FIRE AREA/ZONE

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		DG-1, 2, & 3	DG-4, 5, & 6	
Plan & Elevation	1	Fig. 9A.2-1	Fig. 9A.2-2	1.20
Safety-Related Equipment				1.22
Description	1(b)	Fuel oil storage tanks and transfer pumps	Diesel generators and associated equipment, ventilation equipment	1.24 1.25
Safe Shutdown Analysis	2	Section 9A.2.6.1	Section 9A.2.6.1	1.27
Nonsafety-Related Equipment	1			1.29
Area Suppression/Detection	1(b) 1(e)	Tanks are located in sand-filled vaults no suppression/detection required	Section 9A.2.6.3	1.31 1.32 1.33
Electrical Cable				1.35
Description	1(b)	None Power to transfer pumps in conduit	None All power, controls, and instrumentation in conduit	1.37 1.38 1.39
Safe Shutdown Analysis	2	Section 9A.2.6.1	Section 9A.2.6.1	1.41
Suppression/Detection	1(b) 1(e) 2	N/A	Section 9A.2.6.3	1.43 1.44
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete walls are provided to contain the sand and tanks. Void spaces provided between vaults	Three-foot thick reinforced concrete walls separate each diesel generator area.	1.46 1.47 1.48 1.49
Combustible Loading	1(d), 1(c)	Each tank contains 30,000 gal. diesel fuel which provides $3.4 \times 10^6$ Btu/ft <sup>2</sup> . Since tanks are buried in sand-filled vaults, this loading becomes academic.	DG-4 43,400 Btu/ft <sup>2</sup> DG-5 42,500 Btu/ft <sup>2</sup> DG-6 43,400 Btu/ft <sup>2</sup>	1.51 1.52 1.53 1.54 1.55
Design Basis Fire	1(a)		30 min    30 min    30 min	1.57
Radioactive Release Analysis	1	N/A	Section 9A.2.6.2	2.1

TABLE 9A.2-10

## DIESEL GENERATOR BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity		Btu/lb	Total Btu (Btu/sq ft (x10 <sup>6</sup> ) rounded off)	Loading
					(lb)	(gall)			
DG-1									
EL 70'-0"	1,241	F.O. storage tank, F.O. xfr. pump	F.O. storage tank	Oil	225,000	30,000	19,000	4,275 3,445,000	1.22 1.23 1.24
DG-2									
EL 70'-0"	1,241	F.O. storage tank, F.O. xfr. pump	F.O. storage tank	Oil	225,000	30,000	19,000	4,275 3,445,000	1.26 1.29 1.30
DG-3									
EL 70'-0"	1,241	F.O. storage tank F.O. xfr. pump	F.O. storage tank	Oil	225,000	30,000	19,000	4,275 3,445,000	1.47 1.48 1.49
DG-4									
EL 98'-0"	2,010	Diesel eng. gen., dsl. gen. exc. cab., EHS*MCC15B,D, starting air comp., F.O. day tank	Generator F.O. day tank EHS*MCC15B,D	Insul Oil Plastic	610 4,125 192	550	11,000 19,000 11,000	6.7 78.4 2.1 DG-4 Total 87.2	43,400 1.53 1.54 1.55 1.56 1.57 1.58
DG-5									
EL 98'-0"	2,010	Diesel eng. gen. eng. cont. cab., HFCS DGC relay cab., starting air comp., F.O. day tank	Generator F.O. day tank 1B22*PNL02B	Insul Oil Plastic	450 4,125 192	550	11,000 19,000 11,000	5.0 78.4 2.1 DG-5 Total 85.5	42,500 2.4 2.5 2.6 2.7 2.8 2.9
DG-6									
EL 98'-0"	2,010	Diesel eng. gen. DSH gen. exc. cab., EHS* MCC15AC starting air comp., F.O. day tank	Generator F.O. day tank ESH*MCC15A, C	Insul Oil Plastic	610 4,125 192	550	11,000 19,000 11,000	6.7 78.4 2.1 DG-6 Total 87.2	43,400 2.13 2.14 2.15 2.16 2.17 2.18

TABLE 9A.2-11

TURBINE BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	PIPE AREA/ZONE		
		T-1	T-2 2-1	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	1.20
Safety-Related Equipment				1.22
Description	1(b)	None	None	1.24
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	1.26
Nonsafety-Related Equipment	1	Oil storage tanks	3 air compressors, NBS-MCC 1N, P, G, H 3 dry transformers, reactor feed pump, condenser, cable trays	1.28 1.29 1.30
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3	1.32 1.33
Electrical Cable				1.35
Description	1(b)	None	Nondivisional cables in trays	1.37
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	1.39
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3	1.41 1.42
Fire Barrier Description	1(a)	One-foot, two and a half-foot, and four-foot thick reinforced concrete walls separate area from adjacent areas	None	1.44 1.45 1.46
Combustible Loading	1(d), 1(c)	2,750,000 Btu/ft <sup>2</sup>	46,500 Btu/ft <sup>2</sup>	1.48
Design Basis Fire	1(a)	34.4 hr	35 min	1.50
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2	1.52



TABLE 9A.2-11 (Cont)

	Encl. 2' Ref. Para.	PIPE AREA/ZONE	
		Z-2	Z-3
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1 (b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	NHS-MCC 1C, D, E, F; H <sub>2</sub> seal oil unit, reactor feed pumps, ventilation chillers, condensate pumps, chilled water pumps, TPCCW pumps	Miscellaneous sinks and cabinets
Area Suppression/Detection	1 (b) 1 (e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1 (b)	Nondivisional cable in trays	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1 (b) 1 (e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1 (a)	None	None
Combustible Loading	1 (d), 1 (c)	66,300 Btu/ft <sup>2</sup>	Negligible
Design Basis Fire	1 (a)	50 min	Negligible
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-4	T-2	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	2.53
Safety-Related Equipment				2.55
Description	1(b)	None	None	2.57
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	3.1
Nonsafety-Related Equipment	1	Miscellaneous tanks, pumps, sumps, cable trays	Heaters, heaters drain pumps, heater drain coolers, cable trays	3.3 3.4
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3	3.6 3.7
Electrical Cable				3.9
Description	1(b)	Nondivisional cables in trays	Nondivisional cables in trays	3.11
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	3.13
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3	3.15 3.16
Fire Barrier Description	1(a)	None	None	3.18
Combustible Loading	1(d), 1(c)	71,600 Btu/ft <sup>2</sup>	9,600 Btu/ft <sup>2</sup>	3.20
Design Basis Fire	1(a)	54 min	7 min	3.22
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2	3.24

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		T-2 2-6	T-3 2-7	
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	3.38
Safety-Related Equipment				3.40
Description	1(b)	None	None	3.42
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	3.44
Non-safety-Related Equipment	1	Heaters, heaters drain pumps, heaters drain coolers, cable trays	Miscellaneous MCC, panels, dry type XFMEs, air removal pumps, 480-V load center, cable trays	3.46 3.47 3.48
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3	3.50 3.51
Electrical Cable				3.53
Description	1(b)	Nondivisional cables in trays	Nondivisional cables in trays	3.55
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	3.57
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3	4.1 4.2
Fire Barrier Description	1(a)	None	None	4.4
Combustible Loading	1(d), 1(c)	18,900 Btu/ft <sup>2</sup>	116,200 Btu/ft <sup>2</sup>	4.6
Design Basis Fire	1(a)	14 min	1.5 hr	4.8
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2	4.10

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-8	T-3	
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	4.24
Safety-Related Equipment				4.26
Description	1(b)	Pressure transmitters for nuclear boiler system	None	4.28 4.29
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	4.31
Nonsafety-Related Equipment	1	Main steam control valves, miscellaneous tanks, cable trays	Heaters	4.33 4.34
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3	4.36 4.37
Electrical Cable				4.39
Description	1(b)	Nondivisional cables in trays	None	4.41
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1	4.43
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3	4.45 4.46
Fire Barrier Description	1(a)	None	None	4.48
Combustible Loading	1(d), 1(c)	98,900 Btu/ft <sup>2</sup>	None	4.50
Design Basis Fire	1(a)	1.2 hr	None	4.52
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2	4.54

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		Z-10	Z-11
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (S. 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Heaters	Condensate demineralizer, cable trays
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	None	Nondivisional cable in trays
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	None	None
Combustible Loading	1(d), 1(c)	None	74,700 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	None	56 min
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2



TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		T-3	Z-13
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Control panel, cable trays	Two MCCs, 480-V switchgear, miscellaneous panels, dry-type XPRMs, cable trays
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	Nondivisional cable in trays	Nondivisional cable in trays
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	None	None
Combustible Loading	1(d), 1(c)	188,700 Btu/ft <sup>2</sup>	115,900 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	2.4 min	1.45 hr
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		T-4	T-5 2-14
Plan & Elevation	1	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Lube oil conditioning equipment, cable trays	Charcoal absorbers, cable trays, off-gas conditioning equipment
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	Nondivisional cable in trays	Nondivisional cable in trays
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	One-foot and four-foot thick rein- forced concrete walls separate area from adjacent areas	None
Combustible Loading	1(d), 1(c)	1,659,400 Btu/ft <sup>2</sup>	10,500 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	20.7 hr	8 min
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	PIPE AREA/ZONE	
		Z-15	Z-16
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Main generator	Turbine
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	None	None
Combustible Loading	1(d), 1(c)	6,950 Btu/ft <sup>2</sup>	None
Design Basis Fire	1(a)	5 min	None
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		Z-17 T-5	Z-18
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Steam seal evaporator	Radwaste reboiler
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	None	None
Combustible Loading	1(d), 1(c)	None	None
Design Basis Fire	1(a)	None	None
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-19	T-5	Z-20
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)		Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment				
Description	1(b)	None		None
Safe Shutdown Analysis	2	Section 9A.2.7.1		Section 9A.2.7.1
Nonsafety-Related Equipment	1	Charcoal filter, cable trays		None
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3		Section 9A.2.7.3
Electrical Cable				
Description	1(b)	Nondivisional cables in trays		None
Safe Shutdown Analysis	2	Section 9A.2.7.1		Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3		Section 9A.2.7.3
Fire Barrier Description	1(a)	None		One-foot thick reinforced concrete walls separate area from adjacent areas
Combustible Loading	1(d), 1(c)	20,400 Btu/ft <sup>2</sup>		None
Design Basis Fire	1(a)	15 <sup>m</sup> <sub>in</sub>		None
Radioactive Release Analysis	1	Section 9A.2.7.2		Section 9A.2.7.2



TABLE 9A.2-11 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		T-5 Z-21	T-6
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 1 & 2)	Fig. 9A.2-2, 9A.2-5 (Sh 1 & 2)
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Nonsafety-Related Equipment	1	Cable trays, two MCCs	Fire protection piping and valves
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.7.3	Section 9A.2.7.3
Electrical Cable			
Description	1(b)	Nondivisional cable in trays	None
Safe Shutdown Analysis	2	Section 9A.2.7.1	Section 9A.2.7.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.7.3	Section 9A.2.7.3
Fire Barrier Description	1(a)	None	None
Combustible Loading	1(d), 1(c)	35,500 Btu/ft <sup>2</sup>	None
Design Basis Fire	1(a)	27 min	None
Radioactive Release Analysis	1	Section 9A.2.7.2	Section 9A.2.7.2

TABLE 9A.2-12

## TURBINE BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard						
Name	Area (sq ft)	Safety Shutdown Equipment In Area	Name	Combustible	Quantity		Btu/lb	Total Btu (x10 <sup>6</sup> )	Fire Loading (Btu/sq ft rounded off)
					(lb)	(gal)			
T-1									
El 67'-6"	1,056	None	Oil storage tanks	Oil	153,000	20,400	19,000	2,907	2,750,000
									1.22
									1.23
									1.24
T-2									
2-1 El 67'-6" North	23,900	None	3 Motors						1.28
			total 750 hp	Insul	66		11,000	0.7	1.29
			Cable trays	Insul	56,167		11,000	617.8	1.30
			NHS-MCC 1N,P,G,H	Plastic	384		11,000	4.2	1.31
			3 Dry XFMRs	Insul	9		11,000	0.1	1.32
			1 800-hp Motor	Insul	400		11,000	4.4	1.33
			Lube oil ppg	Oil	25,500	3,400	19,000	484.5	1.34
									1.35
			Z-1 Total					1,111.7	66,500
									1.36
2-2 El 67'-6" South	25,600	None	3 - 1,250-hp Motors	Insul	234		11,000	2.6	1.40
			2 - 350-hp Motors	Insul	80		11,000	0.9	1.41
			2 - 8,000-hp Motors	Insul	800		11,000	8.8	1.42
			3 - 4,000-hp Motors	Insul	1,020		11,000	11.2	1.43
			3 - 400-hp Motors	Insul	120		11,000	1.3	1.44
			NHS-MCC 1C,D,E,F	Plastic	384		11,000	4.2	1.45
			H <sub>2</sub> seal oil unit	Oil	4,500	600	19,000	85.5	1.46
			Lube oil piping	Oil	51,000	6,800	19,000	969.0	1.47
			Cable trays	Insul	55,745		11,000	613.2	1.48
			Z-2 Total					1,696.7	66,300
									1.49
2-3 El 67'-6"	1,140	None						Neg	Neg
									1.52
2-4 El 67'-6"	2,072	None	Cable trays	Insul	13,494		11,000	148.4	71,600
									1.55
2-5 El 67'-6"	4,160	None	2 - 1,250-hp Motors	Insul	155		11,000	1.7	
			Cable trays	Insul	3,465		11,000	38.1	
			Z-5 Total					39.8	9,600
									2.1
									2.2
									2.3
									2.4
2-6 El 67'-6"	4,160	None	2 - 1,250-hp Motors	Insul	155		11,000	1.7	
			Cable trays	Insul	6,985		11,000	76.8	
			Z-6 Total					78.5	18,900
									2.8
									2.9
									2.10
									2.11

1 of 3

TABLE 9A.2-12

## TURBINE BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard							Fire Loading	
Name	Area (sq ft)	Safety Shutdown Equipment in Area	Name	Combustible	Quantity (lb) (gall)		Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)		
T-3	Z-7 El 95'-0" South	None	2 200-hp Motors	Insul	30		11,000	0.3	2.15		
			NHS-MCC 1A,E	Plastic	192		11,000	2.1	2.16		
			Switchgear	Plastic	387		11,000	4.3	2.17		
			Transformer	Insul	193		11,000	2.1	2.18		
			Lub oil piping	Oil	76,500	10,200	19,000	1,453.5	2.19		
			Cable trays	Insul	59,600		11,000	655.6	2.20		
			Z-7 Total						2,117.9	116,200	2.21
	Z-8 95'-0" North	Nuclear boiler system pressure transmitters	Transmitters	Insul	Negligible					2.22	
			Lube oil piping	Oil	76,500	10,200	19,000	1,453.5	2.23		
			Cable trays	Insul	24,961		11,000	274.6	2.24		
			Z-8 Total						1,728.1	98,900	2.25
	Z-9 El 95'-0"	2,240	None	None				None	None	2.26	
	Z-10 El 95'-0"	2,240	None	None				None	None	2.27	
	Z-11 El 95'-0"	3,770	None	NHS-MCC 4A,E	Plastic	192		11,000	2.1	2.28	
				Cable trays	Insul	25,410		11,000	279.5	2.29	
				Z-12 Total						281.6	74,700
	Z-12 El 95'-0"	874	None	Cable trays	Insul	14,987		11,000	164.9	188,700	2.31
	Z-13 El 95'-0"	14,878	None	NHS-MCC 1J,K	Plastic	192		11,000	2.1	2.32	
				Switchgear	Plastic	374		11,000	4.1	2.33	
				Transformer	Insul	186		11,000	2.0	2.34	
				Lube oil piping	Oil	76,500	10,200	19,000	1,435.5	2.35	
				Cable trays	Insul	25,483		11,000	280.3	2.36	
	Z-13 Total						1,724	115,900	2.37		
	T-4	El 95'-0"	None	Lube oil system	Oil	82,500	11,000	19,000	1,567.5	2.38	
Cable trays				Insul	1,111		11,000	12.2	2.39		
T-4 Total						1,579.7	1,659,400	2.40			
								2.41			

TABLE 9A.2-12

## TURBINE BUILDING FIRE LOCATING DATA

Fire Area/Zone			Safety <i>Related</i>		Fire Hazard				Fire Loading	
Name	Area (sq ft)	Equipment In Area	Shutdown	Name	Combus- tible	Quantity		Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)
						(lb)	(gal)			
T-5										2.55
Z-14 El 123'-6"	12,700	None		Cable trays	Insul	12,100		11,000	133.1	10,500 2.56
Z-15 El 123'-6"	18,762	None		Generator	Insul	11,850		11,000	130.4	6,950 2.58
Z-16 El 123'-6"	17,066	None		None					None	None 3.2
Z-17 El 123'-6"	1,085	None		None					None	None 3.4
Z-18 El 123'-6"	1,085	None		None					None	None 3.6
Z-19 El 123'-6"	2,651	None		Cable trays	Insul	2,369		11,000	26.1	3.8
				Charcoal filter	Charcoal	2,000		14,000	28.0	3.9
						Z-19 Total			54.1	20,400 3.10
Z-20 El 123'-6"	3,854	None		None					None	None 3.12
Z-21 El 123'-6"	6,678	None		Cable trays	Insul	21,524		11,000	236.8	35,500 3.14
T-6 El 95'-0"		None		None					None	None 3.17

RES FSAR

TABLE 9A.2-13

MAKEUP WATER INTAKE STRUCTURE FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		IS-1	IS-2
Plan & Elevation	1	Fig. 9A.2-8	Fig. 9A.2-8
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.19.1	Section 9A.2.19.1
Nonsafety-Related Equipment	1	3 - 1,500-hp makeup water pumps	2 - 4,160-V switchgear 2 motor control centers
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.19.3	Section 9A.2.19.3
Electrical Cable			
Description	1(b)	All wiring in conduit	All wiring in conduit
Safe Shutdown Analysis	2	Section 9A.2.19.1	Section 9A.2.19.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.19.3	Section 9A.2.19.3
Fire Barrier Description	1(a)	None	One-foot thick reinforced concrete ceiling separate area from oil filled transformers above outdoor
Combustible Loading	1(d), 1(c)	1,180 Btu/ft <sup>2</sup>	4,590 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	Negligible	3 min
Radioactive Release Analysis	1	Section 9A.2.19.2	Section 9A.2.19.2



TABLE 9A.2-14

## MAKEUP WATER INTAKE STRUCTURE FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety- Related Equipment IL Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)	
IS-1									1.21
El 15'-0" & 10'-2"	2,100	None	3 - 1,500-hp Pumps & 10 MOVs	Insul	96	11,000	1.1	1,180	1.22 1.23
IS-2									1.25
Fl 35'-0" & 51'-6"	2,100	None	2 - 4,160-V Switchgears	Plastic	200	11,000	2.2		1.26 1.27
			2 - MCCs	Plastic	192	11,000	2.1		1.28
			IS-2 Total					4.3	4,590 1.30

TABLE 9A.2-15

RADWASTE BUILDING FIRE HAZARD ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		Z-1	FE-1	Z-2
Plan & Elevation	1	Fig. 9A.2-1, 9A.2-5 (Sh 2)		Fig. 9A.2-2, 9A.2-5 (Sh 2)
Safety-Related Equipment				
Description	1 (k)	None		None
Safe Shutdown Analysis	2	Section 9A.2.9.1		Section 9A.2.9.1
Nonsafety-Related Equipment	1	Miscellaneous pumps and motors, tanks, & electrical panels, cable trays, MCC, dry XPMs		Miscellaneous pumps, tanks, panels; demineralizers, filters, cable trays, dry XPMs
Area Suppression/Detection	1 (k) 1 (e)	Section 9A.2.9.3		Section 9A.2.9.3
Electrical Cable				
Description	1 (k)	Nondivisional cables in trays		Nondivisional cables in trays
Safe Shutdown Analysis	2	Section 9A.2.9.1		Section 9A.2.9.1
Suppression/Detection	1 (b) 1 (e) 2	Section 9A.2.9.3		Section 9A.2.9.3
Fire Barrier Description	1 (a)	The radwaste building is essentially a single fire area. A measure of separation is provided between floors (zones) by the reinforced concrete floors although unenclosed openings exist in these floors. These openings prevent allocation of separate fire areas for each floor. The building is separated from adjacent buildings by reinforced concrete walls.		
Combustible Loading	1 (d), 1 (c)	16,300 Btu/ft <sup>2</sup>		12,600 Btu/ft <sup>2</sup>
Design Basis Fire	1 (a)	12 min		9 min
Radioactive Release Analysis	1	Section 9A.2.9.2		Section 9A.2.9.2

TABLE 9A.2-15 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		2-3 RP-1	2-4	
Plan & Elevation	1	Fig. 9A.2-3, 9A.2-5 (Sh 2)	Fig. 9A.2-4, 9A.2-5 (Sh 2)	2.10
Safety-Related Equipment				2.12
Description	1(b)	None	None	2.14
Safe Shutdown Analysis	2	Section 9A.2.9.1	Section 9A.2.9.1	2.16
Nonsafety-Related Equipment	1	Miscellaneous pumps, tanks, panels; laundry dry cleaning machines; overhead bridge crane, cable trays; dry XFRs	MCCs switchgear, load center, 3 water chillers, miscellaneous panels; dry XFRs	2.18 2.19 2.20 2.21
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.9.3	Section 9A.2.9.3	2.23 2.24
Electrical Cable				2.26
Description	1(b)	Nondivisional cables in trays	Nondivisional cables in trays	2.28
Safe Shutdown Analysis	2	Section 9A.2.9.1	Section 9A.2.9.1	2.30
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.9.3	Section 9A.2.9.3	2.32 2.33
Fire Barrier Description	1(a)	The radwaste building is essentially a single fire area. A measure of separation is provided between floors (zones) by the reinforced concrete floors although unenclosed openings exist in these floors. These openings prevent allocation of separate areas for each floor. The building is separated from adjacent buildings by reinforced concrete walls.		2.35 2.36 2.37 2.38 2.39
Combustible Loading	1(d), 1(c)	45,200 Btu/ft <sup>2</sup>	22,900 Btu/ft <sup>2</sup>	2.41
Design Basis Fire	1(a)	30 min	17 min	2.43
Radioactive Release Analysis	1	Section 9A.2.9.2	Section 9A.2.9.2	2.45

TABLE 9A.2-16

## RADWASTE BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety-Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)	
FE-1									
Z-1 E1 65'-0"	23,116	None	34 Motors Total						1.22
			511 hp	Insul	80	11,000	0.9		1.23
			MCC	Plastic	276	11,000	3.0		1.24
			Cable trays	Insul	26,811	11,000	373.7		1.25
			8 Dry XFMRs	Insul	24	11,000	0.3		1.26
									1.27
						Z-1 Total	377.9	16,300	1.28
Z-2 E1 106'-0"	14,414	None	8 Motors Total						1.32
	1,512		114 hp	Insul	4	11,000	Neg.		1.33
			Cable trays	Insul	7,161	11,000	213.5		1.34
	1,057		2 Dry XFMRs	Insul	6	11,000	0.1		1.35
						Z-2 Total	213.6	12,600	1.36
Z-3 E1 136'-0"	14,389	None	Clothing	Textile	100	8,000	0.8		1.40
			Cable trays	Insul	19,405	11,000	160.6		1.41
			2 Dry XFMRs	Insul	6	11,000	0.1		1.42
			Dri-ion						1.43
			exchange resins	Resins	15,880	29,000	460.5		1.44
						Z-3 Total	622.0	43,200	1.45
Z-4 E1 166'-0"	14,590	None	MCC	Plastic	96	11,000	1.1		1.47
			3 - 500-hp						1.49
			Motors	Insul	120	11,000	1.3		1.50
			5-kV Switchgear	Plastic	100	11,000	1.1		1.52
			Cable trays	Insul	14,596	11,000	284.0		1.53
			4 - Dry XFMRs	Insul			0.1		1.54
			Charcoal						1.55
			filters	Charcoal	3,400	14,000	47.6		1.56
						Z-4 Total	334.1	22,900	1.57

## RES FSAR

TABLE 9A.2-17

## NORMAL SWITCHGEAR BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		NS-1	NS-2	NS-3
Plan & Elevation	1	Fig. 9A.2-1	Fig. 9A.2-2	Fig. 9A.2-2
Safety-Related Equipment				
Description	1(b)	None	None	None
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Nonsafety-Related Equipment	1	Cable trays	Switchgear, inverter load ctr, cable trays	Switchgear, inverter
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Electrical Cable				
Description	1(b)	Nondivisional cables in trays	Nondivisional cables in trays	Cable
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Fire Barrier Description	1(a)	Reinforced concrete walls separate area from adjacent areas.		
Combustible Loading	1(d), 1(c)	153,800 Btu/ft <sup>2</sup>	46,600 Btu/ft <sup>2</sup>	19,700 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	1.9 hr	35 min	15 min
Radioactive Release Analysis	1	Section 9A.2.10.2	Section 9A.2.10.2	Section 9A.2.10.2



## RBS FSAR

TABLE 9A.2-17 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		NS-4	NS-5	NS-6
Plan & Elevation	1	Fig. 9A.2-2	Fig. 9A.2-3	Fig. 9A.2-3
Safety-Related Equipment				
Description	1(b)	None	None	None
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Nonsafety-Related Equipment	1	Switchgear	Batteries	Batteries
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Electrical Cable				
Description	1(b)	None (cable in conduit)	None (cable in conduit)	None (cable in conduit)
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Fire Barrier Description	1(a)	Reinforced concrete walls separate area from adjacent areas.		
Combustible Loading	1(d), 1(c)	1,640 Btu/ft <sup>2</sup>	72,700 Btu/ft <sup>2</sup>	65,400 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	1 min	55 min	49 min
Radioactive Release Analysis	1	Section 9A.2.10.2	Section 9A.2.10.2	Section 9A.2.10.2

## RBS PSAR

TABLE 9A.2-17 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		NS-7	NS-8	NS-9
Plan & Elevation	1	Fig. 9A.2-3	Fig. 9A.2-3	Fig. 9A.2-3
Safety-Related Equipment				
Description	1(t)	None	None	None
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Nonsafety-Related Equipment	1	Inverter, swgr., cable trays	Batteries	MCC, cable trays
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Electrical Cable				
Description	1(b)	None	None	Nondivisional
Safe Shutdown Analysis	2	Section 9A.2.10.1	Section 9A.2.10.1	Section 9A.2.10.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.10.3	Section 9A.2.10.3	Section 9A.2.10.3
Fire Barrier Description	1(a)	Reinforced concrete walls separate area from adjacent areas.		
Combustible Loading	1(d), 1(c)	2,900 Btu/ft <sup>2</sup>	40,800 Btu/ft <sup>2</sup>	63,400 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	2 min	31 min	48 min
Radioactive Release Analysis	1	Section 9A.2.10.2	Section 9A.2.10.2	Section 9A.2.10.2

## RBS PSAR

TABLE 9A.2-18

## NORMAL SWITCHGEAR BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>6</sup> )	
NS-1 E1 67'-6"	5,220	None	Cable trays	Insul	73,033	11,000	803.0	153,800
NS-2 E1 98'-0"	1,625	None	25-kVA Inverter	Insul	50	11,000	0.6	
			DC Switchgear	Plastic	100	11,000	1.1	
			Load center	Plastic	10	11,000	0.1	
			4,160-V Swgr.	Plastic	100	11,000	1.1	
			Cable trays	Insul	6,592	11,000	72.5	
			NS-2 Total					46,400
NS-3 E1 98'-0"	1,950	None	Cable trays	Insul	3,138	11,000	34.5	
			25-kVA Inverter	Insul	50	11,000	0.6	
			DC Switchgear	Plastic	100	11,000	1.1	
			4,160-V Swgr.	Plastic	100	11,000	1.1	
			13.8-kV Swgr.	Plastic	100	11,000	1.1	
			NS-3 Total					19,700
NS-4 E1 98'-0"	2,015	None	2 13.8-kV Swgr.	Plastic	200	11,000	2.2	
			4,160-V Swgr.	Plastic	100	11,000	1.1	
			NS-4 Total					1,640
NS-5 E1 123'-6"	684	None	Batteries				49.7	72,700
NS-6 E1 123'-6"	760	None	Batteries				49.7	65,400
NS-7 E1 123'-6"	760	None	50-kVS Inverter	Insul	100	11,000	1.1	
			Dc Swgr.	Plastic	100	11,000	1.1	
			NS-7 Total					2.2
NS-8 E1 123'-6"	608	None	Batteries				24.8	40,800

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TABLE 9A.2-18 (Cont)

Fire Area/Zone			Fire Hazard					Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>6</sup> )	
NS-9 E1 123'-6"	2,989	None	2 MCCs Cable trays	Plastic Insul	192 47,024	11,000 11,000	2.1 187.3	
						NS-9 Total	189.4	63,400

TABLE 9A.2-19

## AUXILIARY CONTROL BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		AX-1	AX-2	
Plan & Elevation	1	Fig. 9A.2-2	Fig. 9A.2-2	1.20
Safety-Related Equipment				1.22
Description	1(b)	None	None	1.24
Safe Shutdown Analysis	2	Section 9A.2.11.1	Section 9A.2.11.1	1.26
Nonsafety-Related Equipment	1	Cable in trays	Cable in trays	1.28
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.11.3	Section 9A.2.11.3	1.30 1.31
Electrical Cable				1.33
Description	1(b)	Nondivisional cable in trays	Nondivisional cable in trays	1.35
Safe Shutdown Analysis	2	Section 9A.2.11.1	Section 9A.2.11.1	1.37
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.11.3	Section 9A.2.11.3	1.39 1.40
Fire barrier Description	1(a)	3-hr fire rated ceiling	3-hr fire rated floor	1.42
Combustible Loading	1(d), 1(c)	14,105 Btu/ft <sup>2</sup>	31,325 Btu/ft <sup>2</sup>	1.44
Design Basis Fire	1(a)	10 min	23 min	1.46
Radioactive Release Analysis	Section 9A.2.11.2		Section 9A.2.11.2	1.48

TABLE 9A.2-20

## AUXILIARY CONTROL BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading	
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combus- tible	Quantity (lb) (gall)	Btu/lb	Total Btu (x10 <sup>6</sup> )	(Btu/sq ft rounded off)	
AX-1									1.22
El 95'-0"	8,168	None	Cables	Insul	10,500	11,000	115.5	14,105	1.23
AX-2									1.27
El 123'-6"	8,168	None	Cables	Insul	23,318	11,000	256.5	31,325	1.28



RES PSAR

TABLE 9A.2-21

AUXILIARY BOILER AND WATER TREATMENT BUILDING FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE		
		A-1	A-2	A-3
Plan & Elevation	1	Fig. 9A.2-2	Fig. 9A.2-2	Fig. 9A.2-2
Safety-Related Equipment				
Description	1(b)	None	None	None
Safe Shutdown Analysis	2	Section 9A.2.12.1	Section 9A.2.12.1	Section 9A.2.12.1
Nonsafety-Related Equipment	1	Miscellaneous tanks, pumps, elect. panels; two MCCs, cable trays	Auxiliary boiler with accessories, cable trays	480-V load center, 2 MCCs, cable trays
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.12.3	Section 9A.2.12.3	Section 9A.2.12.3
Electrical Cable				
Description	1(b)	Nondivisional cables in trays	Nondivisional cables in trays	Nondivisional cables in trays
Safe Shutdown Analysis	2	Section 9A.2.12.1	Section 9A.2.12.1	Section 9A.2.12.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.12.3	Section 9A.2.12.3	Section 9A.2.12.3
Fire Barrier Description	1(a)	Three-foot thick reinforced concrete wall separate area from condensate demineralizer regeneration and off gas building	None	One-foot thick reinforced concrete wall separate area from turbine building
Combustible Loading	1(d), 1(c)	94,700 Btu/ft <sup>2</sup>	26,300 Btu/ft <sup>2</sup>	78,000 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	1.2 hr	20 min	59 min
Radioactive Release Analysis	1	Section 9A.2.12.2	Section 9A.2.12.2	Section 9A.2.12.2

## RBS PSAP

TABLE 9A.2-22

## AUXILIARY BOILER &amp; WATER TREATMENT BUILDING FIRE LOADING DATA

Fire Area/Zone			Fire Hazard					Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)	Btu/lb	Total Btu (x10 <sup>3</sup> )	
A-1 El 95'-0"	4,600	None	17 Motors total					
			304 hp	Insul	45	11,000	0.5	
			NHS-MCC 5A,B	Plastic	192	11,000	2.1	
			Cable trays	Insul	13,447	11,000	147.9	
			Dri ion					
			exchange resins	Resins	9,840	29,000	285.3	
						A-1 Total	435.8	94,700
A-2 El 95'-0"	1,344	None	7 Motors total					
			100 hp	Insul	17	11,000	0.2	
			Cable trays	Insul	3,198	11,000	35.2	
						A-2 Total	35.4	26,200
A-3 El 95'-0"	960	None	Switchgear	Plastic	374	11,000	4.1	
			Transformer	Insul	186	11,000	2.0	
			NHS-MCC 6A,B	Plastic	192	11,000	2.1	
			Cable trays	Insul	6,067	11,000	66.7	
						A-3 Total	74.9	78,000

## RBS PSAR

TABLE 9A.2-23

## STANDBY SERVICE WATER PUMP HOUSE FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/LONE	
		PH-1	PH-2
Plan & Elevation	1	Fig. 9A.2-7	Fig. 9A.2-7
Safety-Related Equipment			
Description	1(b)	Two standby service water pumps, MCC 16A, Division I cable	Two standby service water pumps, MCC 16B, Division II cable
Safe Shutdown Analysis	2	Section 9A.2.13.1	Section 9A.2.13.1
Nonsafety-Related Equipment	1	None	None
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.13.3	Section 9A.2.13.3
Electrical Cable			
Description	1(b)	Division I Cable in conduit	Division II cable in conduit
Safe Shutdown Analysis	2	Section 9A.2.13.1	Section 9A.2.13.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.13.3	Section 9A.2.13.3
Fire Barrier Description	1(a)	Two and half-foot thick reinforced concrete wall separate area from PH-2 area	Two and half-foot thick reinforced concrete wall separate area from PH-1 area
Combustible Loading	1(d), 1(c)	1,200 Btu/ft <sup>2</sup>	1,200 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	Negligible	Negligible
Radioactive Release Analysis	1	Section 9A.2.13.2	Section 9A.2.13.2

RES PSAR

TABLE 9A.2-2a  
STANDBY SERVICE WATER PUMP HOUSE FIRE LOADING DATA

Fire Area/Zone		Safety- Related Equipment In Area	Fire Hazard				Fire Loading (Stu/sq ft rounded off)
Name	Area (sq ft)		Name	Combustible	Quantity (lb) (gal)	Btu/lb (x 10 <sup>6</sup> )	
PH-1 E1 103'-6"	754	2 standby service water pumps, 1SWP-P2A, P2C	2 Motors	450 hp Insul	78	11,000	0.9
PH-2 E1 103'-6"	754	2 standby service water pumps, 1SWP-P2B, P2D	2 Motors	450 hp Insul	78	11,000	0.9

TABLE 9A.2-25

## MOTOR-GENERATOR BUILDING PIPE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	MG-1	PIPE AREA/ZONE
Plan & Elevation	1	Fig. 9A.2-2	1.20
Safety-Related Equipment			1.22
Description	1(b)	None	1.24
Safe Shutdown Analysis	2	Section 9A.2.14.1	1.26
Nonsafety-Related Equipment	1	Two MG sets	1.28
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.14.3	1.30 1.31
Electrical Cable			1.33
Description	1(b)	Nondivisional cables in trays	1.35
Safe Shutdown Analysis	2	Section 9A.2.14.1	1.37
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.14.3	1.39 1.40
Fire Barrier Description	1(a)	None	1.42
Combustible Loading	1(d), 1(c)	6,200 Btu/ft <sup>2</sup>	1.44
Design Basis Fire	1(a)	5 min	1.46
Radioactive Release Analysis	1	Section 9A.2.14.2	1.48

PBS FSAR

TABLE 9A.2-26  
MOTOR-GENERATOR BUILDING FIRE LOADING DATA

Fire Area/Zone		Fire Hazard			Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Combustible	Quantity (lb) (gal)	
				Btu/lb	Total Btu (x10 <sup>6</sup> )
MG-1 El 101'-3"	850	None	Insul	480	11,000 5.3 6,200



TABLE 9A.2-27

## PIPE TUNNELS FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		PT-1	
Plan & Elevation	1	Fig. 9A.2-1	1.20
Safety-Related Equipment			1.22
Description	1(b)	Division I and II cable in trays, level transmitters, MOVs	1.24 1.25
Safe Shutdown Analysis	2	Section 9A.2.15.1	1.27
Nonsafety-Related Equipment	1	Section 9A.2.15	1.29
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.15.3	1.31 1.32
Electrical Cable			1.34
Description	1(b)	Section 9A.2.15	1.36
Safe Shutdown Analysis	2	Section 9A.2.15.1	1.38
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.15.3	1.40 1.41
Fire Barrier Description	1(a)	Reinforced concrete fire barriers separate tunnels from adjacent areas	1.43 1.44
Combustible Loading	1(d), 1(c)	36,600 Btu/ft <sup>2</sup>	1.46
Design Basis Fire	1(a)	27 min	1.48
Radioactive Release Analysis	1	Section 9A.2.15.2	1.50

TABLE 9A.2-28

## PIPE TUNNELS FIRE LOADING DATA

<u>Fire Area/Zone</u>			<u>Fire Hazard</u>						Fire Loading (Btu/sq ft rounded off)
<u>Name</u>	<u>Area (sq ft)</u>	<u>Safety- Related Equipment In Area</u>	<u>Name</u>	<u>Combustible</u>	<u>Quantity</u>		<u>Btu/lb</u>	<u>Total Btu (x10<sup>6</sup>)</u>	
					<u>(lb)</u>	<u>(gal)</u>			
PT-1									
E1 70'-0"	17,480	Cable trays, Level transmitters, MCVs	Cable trays	Insul	58,200		11,000	640.2	36,600
									1.21
									1.22
									1.23
									1.24

TABLE 9A.2-29

## ELECTRICAL TUNNELS FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE			
		ET-1	ET-2	ET-3	
Plan & Elevation	1	Fig. 9A.2-1	Fig. 9A.2-1	Fig. 9A.2-1	1.20
Safety-Related Equipment					1.22
Description	1(b)	Cable trays	Cable trays	Cable trays	1.24
Safe Shutdown Analysis	2	Section 9A.2.16.1	Section 9A.2.16.1	Section 9A.2.16.1	1.26
Nonsafety-Related Equipment	1	Cable trays	Cable trays	Cable trays	1.28
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.16.3	Section 9A.2.16.3	Section 9A.2.16.3	1.30 1.31
Electrical Cable					1.33
Description	1(b)	Division I, II and nondivisional cable in trays	Division I, II and nondivisional cable in trays	Division I, II and nondivisional cable in trays	1.35 1.36 1.37
Safe Shutdown Analysis	2	Section 9A.2.16.1	Section 9A.2.16.1	Section 9A.2.16.1	1.39
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.16.3	Section 9A.2.16.3	Section 9A.2.16.3	1.41 1.42
Fire Barrier Description	1(a)	Reinforced concrete fire barriers separate Division I from Division II trays and the tunnels from adjacent areas			1.44 1.45
Combustible Loading	1(d), 1(c)	204,100 Btu/ft <sup>2</sup>	151,300	344,700	1.47
Design Basis Fire	1(a)	2.55 hr	1.9 hr	4.3 hr	1.49
Radioactive Release Analysis	1	Section 9A.2.16.2	Section 9A.2.16.2	Section 9A.2.16.2	1.51

TABLE 9A.2-29 (Cont)

	Encl. 2 Ref. <u>Para.</u>	<u>FIRE ALFA/ZONE</u>		
		ET-4	ET-5	
Plan & Elevation	1	Fig. 9A.2-2	Fig. 9A.2-1	2.7
Safety-Related Equipment				2.9
Description	1(b)	Cable trays	<del>NOND</del> <sup>slat</sup>	2.11
Safe Shutdown Analysis	2	Section 9A.2.16.1	Section 9A.2.16	2.13
Non-safety-Related Equipment	1	Cable trays	Cable trays	2.15
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.16.3	Section 9A.2.16.3	2.17 2.18
Electrical Cable				2.20
Description	1(b)	Division I, II and nondivisional cable in trays	Nondivisional cable in trays	2.22 2.23
Safe Shutdown Analysis	2	Section 9A.2.16.1	Section 9A.2.16	2.25
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.16.3	Section 9A.2.16.3	2.27 2.28
Fire Barrier Description	1(a)	Reinforced concrete fire barriers separate Division I from Division II trays and the tunnels from adjacent areas	Fire rated wall separate this area from other areas	2.30 2.31 2.32 2.33
Combustible Loading	1(d), 1(c)	162,600 Btu/ft²	460,500	2.35
Design Basis Fire	1(a)	2.0 hr	5.8 hr	2.37
Radioactive Release Analysis	1	Section 9A.2.16.2	Section 9A.2.16.2	2.39

TABLE 9A.2-30

## ELECTRICAL TUNNELS FIRE LOADING DATA

<u>Fire Area/Zone</u>			<u>Fire Hazard</u>					<u>Fire Loading</u>	
<u>Name</u>	<u>Area (sq ft)</u>	<u>Safety- Related Equipment In Area</u>	<u>Name</u>	<u>Combustible</u>	<u>Quantity (lb) (gal)</u>	<u>Btu/lb</u>	<u>Total Btu (x10<sup>6</sup>)</u>	<u>(Btu/sq ft rounded off)</u>	
ET-1									1.22
El 70'-0"	13,002	Cable trays	Cable trays	Insul	241,256	11,000	2,653.8	204,100	1.23
ET-2									1.27
El 70'-0"	2,649	Cable trays	Cable trays	Insul	36,448	11,000	400.9	151,300	1.28
ET-3									1.32
El 67'-6"	850	Cable trays	Cable trays	Insul	26,637	11,000	293	344,700	1.33
ET-4									1.37
El 95'-0"	850	Cable trays	Cable trays	Insul	12,561	11,000	138.2	162,600	1.38
ET-5									1.42
El 67'-6"	200	None	Cable trays	Insul	8,369	11,000	92.1	460,500	1.43

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TABLE 9A.2-31

## FIRE PUMP HOUSE FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		FP-1	FP-2
Plan & Elevation	1	Fig. 9A.2-8	Fig. 9A.2-8
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.17.1	Section 9A.2.17.1
Nonsafety-Related Equipment	1	500-gal diesel fuel oil tank, diesel-driven fire pump, jockey pump, air compressor, hydropneumatic tank, control panel	Motor-driven fire pump, control panel
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.17.3	Section 9A.2.17.3
Electrical Cable			
Description	1(b)	All wiring in conduit	All wiring in conduit
Safe Shutdown Analysis	2	Section 9A.2.17.1	Section 9A.2.17.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.17.3	Section 9A.2.17.3
Fire Barrier Description	1(a)	One-foot thick block wall separates area from FP-2 area	One-foot thick block walls separate area from FP-1 and FP-3 areas
Combustible Loading	1(d), 1(c)	120,580 Btu/ft <sup>2</sup>	2,840 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	1.5 hr	2 min
Radioactive Release Analysis	1	Section 9A.2.17.2	Section 9A.2.17.2



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TABLE 9A.2-31 (Cont)

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		FP-3	FP-4
Plan & Elevation	1	Fig. 9A.2-8	Fig. 9A.2-8
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.17.1	Section 9A.2.17.1
Nonsafety-Related Equipment	1	500-gal diesel fuel oil tank, diesel-driven fire pump, air compressor, control panel	Domestic water hydropneumatic tank, 3 domestic water pumps, hydrochlorite tank and pump, 3 makeup water pumps, motor control center
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.17.3	Section 9A.2.17.3
Electrical Cable			
Description	1(b)	All wiring in conduit	All wiring in conduit
Safe Shutdown Analysis	2	Section 9A.2.17.1	Section 9A.2.17.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.17.3	Section 9A.2.17.3
Fire Barrier Description	1(a)	One-foot thick block wall separates area from FP-2 area	None
Combustible Loading	1(d), 1(c)	123,460 Btu/ft <sup>2</sup>	1,120 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	1.5 hr	Negligible
Radioactive Release Analysis	1	Section 9A.2.17.2	Section 9A.2.17.2

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TABLE 9A.2-32

## FIRE PUMP HOUSE FIRE LOADING DATA

Fire Area/Zone			Fire Hazard						Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combustible	Quantity (lb) (gal)		Btu/lb	Total Btu (x10 <sup>6</sup> )	
FP-1 El 95°-0"	600	None	500-gal diesel fuel oil tank 2 Motors 20 hp MCC	Oil Insul Plastic	3,750 96	500	19,000 11,000	71.25 Neg 1.1	120,580
							FP-1 Total	72.35	
FP-2 El 95°-0"	440	None	1 Motor 200 hp MCC	Insul Plastic	15 96		11,000 11,000	0.15 1.1	2,840
							FP-2 Total	1.25	
FP-3 El 95°-0"	586	None	500-gal diesel fuel oil tank 1 Motor 15 hp MCC	Oil Insul Plastic	3,750 96	500	19,000 11,000	71.25 Neg. 1.1	123,460
							FP-3 Total	72.35	
FP-4 El 95°-0"	1,157	None	6 25-hp Motors MCC	Insul Plastic	20 96		11,000 11,000	0.2 1.1	1,120
							FP-4 Total	1.3	

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TABLE 9A.2-33

## NORMAL COOLING TOWERS (SWITCHGEAR HOUSES) FIRE HAZARDS ANALYSIS

	Encl. 2 Ref. Para.	FIRE AREA/ZONE	
		CT-1	CT-2
Plan & Elevation	1	Fig. 9A.2-8	Fig. 9A.2-8
Safety-Related Equipment			
Description	1(b)	None	None
Safe Shutdown Analysis	2	Section 9A.2.18.1	Section 9A.2.18.1
Nonsafety-Related Equipment	1	Load center, motor control center	2 switchgears, 2 motor control centers
Area Suppression/Detection	1(b) 1(e)	Section 9A.2.18.3	Section 9A.2.18.3
Electrical Cable			
Description	1(b)	All wiring in conduit	all wiring in conduit
Safe Shutdown Analysis	2	Section 9A.2.18.1	Section 9A.2.18.1
Suppression/Detection	1(b) 1(e) 2	Section 9A.2.18.3	Section 9A.2.18.3
Fire Barrier Description	1(a)	One-foot thick block walls separate area from oil-filled transformers outdoor	One-foot thick block wall separate area from oil-filled transformers outdoor
Combustible Loading	1(d), 1(c)	4,550 Btu/ft <sup>2</sup>	5,510 Btu/ft <sup>2</sup>
Design Basis Fire	1(a)	3 min	4 min
Radioactive Release Analysis	1	Section 9A.2.18.2	Section 9A.2.18.2

## RBS PSAR

TABLE 9A.2-3a

## NORMAL COOLING TOWERS (SWITCHGEAR HOUSES) FIRE LOADING DATA

Fire Area/Zone			Fire Hazard						Fire Loading (Btu/sq ft rounded off)
Name	Area (sq ft)	Safety- Related Equipment In Area	Name	Combus- tible	Quantity		Btu/lb	Total Btu (x10 <sup>4</sup> )	
					(lb)	(gal)			
CT-1									
El 105'-6"	483	None	Load center	Plastic	100		11,000	1.1	
			MCC	Plastic	96		11,000	1.1	
							CT-1 Total	2.2	4,560
CT-2									
El 105'-6"	780	None	2 4,160-V						
			Switchgears	Plastic	200		11,000	2.2	
			2 MCCs	Plastic	192		11,000	2.2	
							CT-2 Total	4.4	5,500

TABLE 9A.2-35

## FIRE HAZARDS ANALYSIS RESULTS

<u>Fire Area</u>	<u>Design Provisions</u>	1.14
RC-1	Separation	1.16
RC-2	Separation	1.17
RC-3	Barriers	1.18
RC-4	Barriers	1.19
RC-5	Acceptable methods	1.20
RDW-1 (Drywell)	Separation	1.21
RC-6 (Annulus)	Separation	1.32
AB-1	Barriers and acceptable methods	1.3
AB-2	Barriers and acceptable methods	1.34
AB-3	Barriers	1.35
AB-4	Barriers and Division III HPCS	1.36
AB-5	Barriers and Division III HPCS	1.37
AB-6	Barriers	1.38
AB-7	Acceptable methods	1.39
AB-10	Barriers	1.40
AB-13	Barriers	1.41
AB-14	Barriers	1.42
AB-15	Barriers and acceptable methods	1.43
AB-16	Not required	1.44
C-1A	Barriers	1.45
C-1B	Barriers	1.46
C-1C	Barriers	1.47
C-2A	Barriers	1.48
C-2B	Barriers	1.49
C-2C	Barriers	1.50
C-3	Not required	1.51
C-4	Barriers and partitions	1.52
C-5	Barriers	1.53
C-6	Barriers	1.54
C-7	Barriers	1.55
C-8	Not required	1.56
C-9A	Barriers	1.57
C-9B	Barriers	1.58
C-9C	Barriers	2.1
C-10A	Barriers	2.2
C-10B	Barriers	2.3
C-10C	Barriers	2.4
C-11	Not required	2.5
C-12	Barriers	2.6
C-13	Barriers and partitions	2.7
C-14	Barriers	2.8
C-15	Barriers	2.9
C-16	Barriers and acceptable methods	2.10

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TABLE 9A.2-35 (Cont)

<u>Fire Area</u>	<u>Design Provisions</u>	
C-17	Acceptable methods	2.11
C-18	Barriers	2.12
C-19	Barriers	2.13
C-20	Barriers	2.14
C-21	Barriers	2.15
C-22	Barriers	2.16
C-23	Barriers	2.17
C-24	Barriers and acceptable methods	2.42
C-25	Barriers and NEDO-10466A	2.43
C-26	Barriers	2.44
C-27	Barriers	2.45
FB-1	Barriers and acceptable methods	2.46
DG-1	Barriers	2.47
DG-2	Not required	2.48
DG-3	Barriers	2.49
DG-4	Barriers	2.50
DG-5	Not required	2.51
DG-6	Barriers	2.52
T-1	Not required	2.53
T-2	Not required	2.54
T-3	Not required	2.55
T-4	Not required	2.56
T-5	Not required	2.57
T-6	Not required	2.58
IS-1	Not required	3.1
IS-2	Not required	3.2
RB-1	Not required	3.3
NS-1	Not required	3.4
NS-2	Not required	3.5
NS-3	Not required	3.6
NS-4	Not required	3.7
NS-5	Not required	3.8
NS-6	Not required	3.9
NS-7	Not required	3.10
NS-8	Not required	3.11
NS-9	Not required	3.12
AX-1	Not required	3.13
AX-2	Not required	3.14
A-1	Not required	3.15
A-2	Not required	3.16
A-3	Not required	3.17
PH-1	Barrier	3.18
PH-2	Barrier	3.19
MG-1	Not required	3.20
PT-1	Acceptable methods	3.21
ET-1	Barriers and acceptable methods	3.22



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TABLE 9A.2-35 (Cont)

<u>Fire Area</u>	<u>Design Provisions</u>	
ET-2	Barriers	3.23
ET-3	Not required	3.24
ET-4	Not required	3.25
ET-5	Not required	3.26
FP-1	Not required	3.27
FP-2	Not required	3.28
FP-3	Not required	3.29
FP-4	Not required	3.30
CT-1	Not required	3.31
CT-2	Not required	3.32
AB-17	Barriers	3.33

## Legend

- Not required: The area does not contain safe shutdown equipment, instruments or cables.
- Barriers: Fire rated barriers separate this area from equipment instruments or cables required for at least one method of safe shutdown (e.g., walls).
- Separation: Area contains both methods of shutdown but adequate separation is provided.
- Acceptable methods: As defined in APCSB BTP 9.5-1, such as wrapping.

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## RIVER BEND STATION POSITION

~~See~~ SECTION 9A.2Later

## 9B.4.8 Fire Brigade (Item III.H of Appendix R)

A site fire brigade trained and equipped for fire fighting shall be established to ensure adequate manual fire fighting capability for all areas of the plant containing structures, systems, or components important to safety. The fire brigade shall be at least five members on each shift. The brigade leader and at least two brigade members shall have sufficient training in or knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The qualification of fire brigade members shall include an annual physical examination to determine their ability to perform strenuous fire fighting activities. The shift supervisor shall not be a member of the fire brigade. The brigade leader shall be competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant safety-related systems.

The minimum equipment provided for the brigade shall consist of personal protective equipment such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health - approval formerly given by the U.S. Bureau of Mines) shall be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self-contained units.

At least two extra air bottles shall be located onsite for each self-contained breathing unit. In addition, an onsite 6-hour supply of reserve air shall be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used; compressors shall be operable assuming a loss of offsite power. Special care must be

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Operation of each Halon system is signaled locally and in both control rooms. Additional data are included in Appendix 9A and GE Licensing Topical Report NEDO-10466-A.	1.10 1.12 1.13
9.5.1.2.11 Portable Extinguishers	1.15
Portable extinguishers conform to the requirements of NFPA 10. Type, size, and placement of extinguishers are determined after evaluation of the combustible present in each area.	1.16 1.19 1.20
9.5.1.2.12 Breathing Apparatus	1.22
Self-contained breathing apparatus is provided for the use of fire-fighting and main control room personnel. Control room personnel use the same apparatus in the event of main control room evacuation.	1.25 1.26 1.27
9.5.1.2.13 Fire Detection Systems	1.29
Fire detection systems conform to the requirements of NFPA Code 72D. There are two types of fire detection systems.	1.31 1.33
One system is dedicated to be used in conjunction with fixed fire suppression systems. These systems function to detect a fire emergency, alarming locally and in both control rooms. Where suppression is automatic, the detection system also functions to actuate the suppression system control (e.g., water spray system in tunnels, transformers, etc). Where suppression is manually actuated, the detection system includes appropriate components for actuation of the suppression system locally and from both control rooms with the exception of the locally controlled charcoal filter system.	1.35 1.36 1.37 1.38 1.39 1.40 1.41 1.42 1.44
The second system is dedicated for detection only, alarming locally and within both control rooms. This system is provided in general areas where the fire hazard analysis does not justify the need for a fixed suppression system.	1.45 1.47 1.48
Detailed schedules of detectors are shown in Appendix 9A.	1.49
9.5.1.2.14 Fire Barriers	1.51
Fire barriers are provided to contain the fire within the fire area. Exposed structural steel which is part of the barriers is fireproofed. Fire-rated doors are provided in the fire-rated openings, except for doors required for pressure-tight, watertight, and missile protection. <u>THESE</u> doors are speciality items <u>FROM 5/8 IN. TO 3 1/2 IN. thick steel</u> not having a UL-listed fire rating. Fire seals are provided at every	1.52 1.54 1.55 1.56 1.57 1.58 2.1 2.3

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penetration in the fire-rated barriers. Fire-rated walls and doors are shown in details in Appendix 9A. 1.11

## Qualification of Doors in Fire Rated Assemblies 1.13

With the exception of special doors such as pressure-tight, watertight, and missile protected doors, the doors installed in the fire rated assemblies are UL-labeled fire doors. The manufacturers of pressure-tight and watertight doors have evaluated the fire testing requirements of NFPA-252 and have provided certificates of equivalency for these doors; equipment removal plugs are not tested or rated since there is negligible external fire loading and an internal fire would not affect more than one plug as follows: 1.14 1.15 1.16

WHILE MISSILE  
PROTECTED  
DOORS BY  
THEIR NATURE  
TAKE PRECEDENCE  
TO FIRE-RATINGS.

1.17  
1.18  
1.19

1. Control Building Equipment Removal Plug, E1 116 (Section 9.A.2.5, Area C-24) 1.21
2. Diesel Building Equipment Removal Plug, E1 98 (Section 9A.2.6, Areas DG-4, DG-5, and DG-6) 1.22
3. Reactor Building Equipment Removal ~~HATCH~~ PLUG, E1 98 (Section 9A.2.6, Area RC-6) 1.23

## 9.5.1.2.15 Egress 1.31

Egress is provided from each fire area. Two-hour-rated fire barriers with Class B doors are provided to enclose the stairways and elevator shafts (except in the reactor building) to minimize fire spread potential. Mark III containment does not have egress enclosures. Two personnel access doors are provided in the reactor building. 1.34 1.35 1.36 1.37 1.38

## 9.5.1.2.16 Building Construction 1.40

Building construction is rated noncombustible and fire resistive. Noncombustible and fire-resistive materials are used wherever practical throughout the plant, particularly in safety-related areas containing safety-related structures, systems, and components. The flame spread, and smoke and fuel contribution rating for permanent construction materials of major plant structures, are below a rating of 25, except for resilient floor coverings, as defined in ASTM Standard E.84. All metal deck roof construction is FM Class 1 construction or listed by Underwriters Laboratories as classified for fire resistance. 1.41 1.43 1.44 1.45 1.46 1.47 1.48 1.50 1.51



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9.5.1.2.8	Water Spray Deluge Systems	1.11
	Water spray deluge systems conform to the requirements of NFPA Code 15. Deluge water spray systems are hydraulically designed, utilizing open head directional solid cone spray nozzles or open sprinkler heads. These systems are provided to protect the:	1.12 1.15 1.16 1.18
1.	Hydrogen seal oil unit, oil storage, lube oil system, and turbine generator bearings and oil piping in the turbine building	1.25 1.26
2.	Cable vaults in the control building	1.27
3.	Cable trays in cable and pipe tunnels	1.28
4.	Yard transformers.	1.29
5.	Charcoal filters	1.30   "
	Operation of each deluge water spray system is signaled locally and in both control rooms. System schedule and additional details are included in Appendix 9A.	1.32 1.34   " 1.35
9.5.1.2.9	Carbon Dioxide Systems	1.37
	Carbon dioxide systems conform to the requirements of NFPA Code 12. The high-pressure carbon dioxide (850 psig) systems are provided to protect turbine generator bearings and exciters. 75-lb capacity containers are installed in the storage area in the basement floor of the turbine building. Fixed-temperature detectors automatically actuate the discharge of carbon dioxide. Predischage warning is provided. Operation of each carbon dioxide system is signaled locally and in both control rooms. Additional details are included in Appendix 9A.	1.39 1.41 1.42 1.44   " 1.45 1.46 1.48 1.49 1.51   "
9.5.1.2.10	Halon 1301 Systems	1.53
	Halon 1301 systems conform to the requirement of NFPA Code 12A. These systems are provided to protect against cable fires in:	1.55 1.57
1.	Twenty-seven floor sections in the PGCC system in the main control room	2.1
2.	Under floor of auxiliary control room in auxiliary control building and central alarm station (CAS) room in the normal switchgear building.	2.2 2.3   "

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- 3. Contract document vault, file room, and computer room of the office building. 2.4
- 4. PBX room, computer room and record storage, computer equipment room, safety parameter display area and record room of services building. 2.5 2.6

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	9.5.1.2.17 Drainage	1.53
u	Floor drains are available in those areas where fixed water fire suppression systems are installed. The drainage system is designed to prevent the spread of fire through drainage piping. Potentially radioactive area drainage is diverted to the radwaste building prior to discharging to the environment. Fire area flooding, resulting from an inadvertent actuation of a sprinkler system and an assumed loss of the floor drainage system, in one fire area, does not cause loss of redundant trains of safety-related equipment.	1.54 1.56 1.57 1.58 2.1 2.2 2.3 2.4
	9.5.1.2.18 Yard Transformers	2.6
	Yard transformers are separated by 1-hr-rated fire walls.	2.7
	Transformers are protected by the automatic water spray deluge system. The necessary drainage facilities are provided.	2.9 2.11
	9.5.1.2.19 Electrical Cable Protection	2.13
	Electrical cables meet the requirements of IEEE 383-1974.	2.14
	Electrical cable concentration exists throughout the plant.	2.16
	For the most part, cables are installed in noncombustible trays. Those not installed in trays are in noncombustible	2.17 2.18

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RIVER BEND STATION POSITION	1.12
Responsibility for the overall fire protection program is assigned to the Vice President, River Bend Nuclear Group, Gulf State Utilities Company, who retains the ultimate responsibility, even though formulation and assurance of program implementation is delegated. Personnel to whom authority for implementation and formulation is delegated are trained commensurate with the level within the program with which they deal. The RBS Plant Manager is responsible for the FORMULATION AND IMPLEMENTATION OF THE fire protection PROGRAM. The PLANT TECHNICAL SUPERVISOR is responsible for development of the fire protection program, including assisting in the development of the fire protection-related training program, Resumes for personnel in the above referenced positions are provided in Appendix 13A. The DIRECTOR-LOSS PREVENTION WILL BE AVAILABLE TO RBS AS A CONSULTANT IN MATTERS REGARDING FIRE PROTECTION, HIS RESUME IS INCLUDED IN APPENDIX 13A.	1.14 1.15 1.16 1.17 1.18 1.19
AND MAINTAINING INSPECTING, AND TESTING OF ALL FIRE PROTECTION EQUIPMENT.	1.21
Section 13.2.1.1.13 provides complete details regarding staffing, training, and maintaining the competence of the Station's firefighting and operating crews.	1.22 1.23
9A.3.2.2 Design Bases	1.25 1.26
The overall fire protection program should be based upon evaluation of potential fire hazards throughout the plant and the effect of postulated design basis fires relative to maintaining ability to perform safety shutdown functions and minimize radioactive releases to the environment.	1.30 1.32 1.33 1.34 1.35
RIVER BEND STATION POSITION	1.45
The fire hazards analysis of all plant areas is provided in Section 9A.2. The analysis includes the evaluation of postulated design basis fires involving both permanent and/or transient combustibles on systems and equipment required for safe plant shutdown and to minimize potential radioactive releases to the environment.	1.47 1.48 1.49 1.50
9A.3.2.3 Backup	1.55
Total reliance should not be placed on a single automatic fire suppression system. Appropriate backup fire suppression capability should be provided.	1.57 2.1
RIVER BEND STATION POSITION	2.5
Backup fire protection capability by means of manual fire hose stations and portable extinguishers is provided throughout the plant. Where automatic suppression is not	2.7 2.8 2.10

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enclosures and piping to the machine is generally in guarded pipe, the interface at the turbine bearings is exposed and cannot be isolated. Hydraulic fluids are high flash point materials. Manual water spray systems are provided to protect bearings. Automatic sprinkler systems are installed under the operating and mezzanine levels and water hose stations are located throughout. Automatic carbon dioxide protection is also provided at machine bearings. | M

The safety-related (passive) reactor recirculation pumps are electric motor-driven with oil-cooled and lubricated bearings. These pumps are located about 180 deg apart inside the drywell, and therefore both pumps would not be exposed to a single fire event. These pumps are not required to operate to mitigate the consequences of an accident. Therefore, the loss of either or both pumps' operability due to a fire does not diminish overall plant capability to mitigate the consequences of an accident.

Each of the two reactor recirculation loops contains a hydraulically operated flow control valve. Each valve has its own hydraulic system. The hydraulic system contains about 60 gal of hydraulic fluid. The hydraulic fluid used in this system has a high flash point. These valves are located adjacent to the recirculation pumps and thus have the same 180 deg physical separation. Additionally, they are passive components, and loss of their operability does not diminish overall plant capability to mitigate the consequences of an accident.

## 9A.3.5.2.2 Bulk Gas Storage 1.39

Bulk gas storage (either compressed or cryogenic) should not be permitted inside structures housing safety-related equipment. Storage of flammable gas such as hydrogen should be located outdoors or in separate detached buildings so that a fire or explosion will not adversely affect any safety-related systems or equipment. (Refer to NFPA 50A, "Gaseous Hydrogen Systems.")

Care should be taken to locate high pressure gas storage containers with the long axis parallel to building walls. This will minimize the possibility of wall penetration in the event of a container failure. Use of compressed gases (especially flammable and fuel gases) inside buildings should be controlled (refer to NFPA 6, "Industrial Fire Loss Prevention").



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RIVER BEND STATION POSITION	1.58
Bulk hydrogen and carbon dioxide storage is located outdoors south of the turbine building and in the yard storage area and is not exposed to safety-related equipment. Also bulk storage of carbon dioxide cylinders is located in the turbine building, which does not house any safety-related equipment. Air tanks associated with the emergency diesel-generator air start systems are located integral with the diesel-generator rooms and would not cause redundant systems in adjacent rooms to be affected by a single fire hazard or other failure event.	2.2 2.6 2.7 2.9 2.10 2.11
Halon 1301 containers are provided in the main control room. This does not affect safety-related equipment because individual containers are small and are located within the metal cabinets which are seismically qualified; effect of leakage from individual containers is negligible.	2.13 2.14 2.15
Halon 1301 storage containers are also provided in the auxiliary control building, normal switchgear building, service building, and office building, which does not house any safety-related equipment.	2.17 2.18 2.19 2.20
9A.3.5.2.3 Plastic Materials	2.23
The use of plastic materials should be minimized. In particular, halogenated plastics such as polyvinyl chloride (PVC) and neoprene should be used only when substitute noncombustible materials are not available. All plastic materials, including flame and fire-retardant materials, will burn with an intensity and Btu production in a range similar to that of ordinary hydrocarbons. When burning, they produce heavy smoke that obscures visibility and can plug air filters, especially charcoal and HEPA. The halogenated plastics also release free chlorine and hydrogen chloride when burning which are toxic to humans and corrosive to equipment.	2.26 2.27 2.30 2.31 2.33 2.35 2.36
RIVER BEND STATION POSITION	2.39
Plastic materials in limited amounts are used in some exposed roof drainage piping in nonsafety-related buildings, buried sanitary system piping, and buried electrical ductlines. The materials do not offer a compromise to safe plant shutdown.	2.41 2.42 2.43

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Fig. 9A.2-1. Protection of these areas is described in 1.11  
Section 9A.3.7.3.

### 9A.3.5.3.3 Water Spray Outside Cable Spreading Room 1.14

Automatic water sprinkler systems should be provided for 1.16  
cable trays outside the cable spreading room. Cables should 1.18  
be designed to allow wetting down with deluge water without  
electrical faulting. Manual hose stations and portable hand 1.21  
extinguishers should be provided as backup. Safety-related 1.23  
equipment in the vicinity of such cable trays, that does not 1.24  
itself require water fire protection but is subject to  
unacceptable damage from sprinkler water discharge, should 1.25  
be protected from sprinkler system operation or malfunction. 1.26

### RIVER BEND STATION POSITION 1.35

Cable trays in tunnels and in the basement of the normal 1.37  
switchgear building are protected by fixed, automatic, zoned 1.38  
water spray systems designed the same as described in 1.40  
Section 9A.3.7.3 for the cable areas in the control building 1.41  
basement. Cable trays in the turbine building are in areas 1.42  
protected by ceiling-level automatic sprinkler systems. 1.43  
Cable trays in other safety-related areas are protected by 1.44  
ceiling level sprinklers if the tray stacks exceed 6 trays 1.45  
deep and the highest tray is 15 ft or more above the floor. 1.46  
If the highest tray is less than 15 ft above the floor these 1.47  
trays are considered accessible for manual fire fighting 1.48  
using water hose stations. Tray stacks of 6 trays or less 1.49  
are protected using water hose stations. The analysis of 1.50  
fire loading of these trays, the exposure to other trays and  
equipment, and the effects on safe plant shutdown do not 1.51  
justify fixed, automatic, fire suppression systems. Smoke 1.52  
detectors are provided for warning of potential fires at 1.53  
these locations, which allows personnel to respond and take  
appropriate action.

### 9A.3.5.3.4 Cable and Cable Tray Penetration 1.56

Cable and cable tray penetration of fire barriers (vertical 1.58  
and horizontal) should be sealed to give protection at least 2.1  
equivalent to that fire barrier. The design of fire 2.4  
barriers for horizontal and vertical cable trays should, as 2.5  
a minimum, meet the requirements of ASTM E119, Fire Test of  
Building Construction and Materials, including the hose 2.6  
stream test.

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RIVER BEND STATION POSITION	2.10
All penetrations of fire barriers are provided with	2.12
fire-rated seals commensurate with the required barrier	2.13
rating. Tests are conducted to verify the adequacy of the	2.14
seals to meet the requirements of ASTM E119.	2.15

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9A.3.5.3.5 Fire Breaks	1.14
Fire breaks should be provided as deemed necessary by the fire hazards analysis. Flame or flame-retardant coatings may be used as a fire break for grouped electrical cables to limit spread of fire in cable ventings. (Possible cable derating owing to use of such coating materials must be considered during design.)	1.16 1.18 1.20 1.21 1.22
RIVER BEND STATION POSITION	1.24
Fire breaks within cable trays are provided where deemed necessary by the fire hazards analysis.	1.26 1.27
9A.3.5.3.6 Electric Cable Construction	1.31
Electric cable constructions should as a minimum pass the current IEEE No. 383 flame test. (This does not imply that cables passing this test will not require additional fire protection.)	1.33 1.35 1.36
RIVER BEND STATION POSITION	1.39
Cables installed in the cable trays are subjected to the vertical cable tray flame test for Class 1E electrical cable for nuclear power generating stations as required by IEEE 383-1974. The River Bend Station cable specifications require that testing be done on production runs of the actual cable supplied.	1.41   " 1.44 1.45 1.46
9A.3.5.3.7 Corrosive Gases	1.50
To the extent practical, cable construction that does not give off corrosive gases while burning should be used.	1.52 1.53
RIVER BEND STATION POSITION	1.56
No alternative materials superior to those used at the River Bend Station exist with respect to overall flame spread and gas generation.	1.58 2.1
9A.3.5.3.8 Cable Trays	2.5
Cable trays, raceways, conduit, trenches, or culverts should be used only for cables. Miscellaneous storage should not be permitted, nor should piping for flammable or combustible liquids or gases be installed in these areas.	2.7 2.9 2.10



9A.3.6.2.6 Lakes or Fresh Water Ponds	1.14
Lakes or fresh water ponds of sufficient size may qualify as sole source of water for fire protection, but require at least two intakes to the pump supply. When a common water supply is permitted for fire protection and the ultimate heat sink, the following conditions should also be satisfied:	1.16 1.17 1.19 1.20
1. The additional fire protection water requirements are designed into the total storage capacity; and	1.23 1.24
2. Failure of the fire protection system should not degrade the function of the ultimate heat sink.	1.27
RIVER BEND STATION POSITION	1.31
Lakes or fresh water ponds are not used at River Bend Station (Section 9A.3.6.2.5).	1.33 1.34
9A.3.6.2.7 Hose Installation	1.39
Outside manual hose installation should be sufficient to reach any location with an effective hose stream. To accomplish this hydrants should be installed approximately every 250 ft on the yard main system. The lateral to each hydrant from the yard main should be controlled by a visually indicating or key operated (curb) valve. A hose house, equipped with hose and combination nozzle, and other auxiliary equipment recommended in NFPA 24, "Outside Protection," should be provided as needed but at least every 1,000 ft.	1.41 1.44 1.46 1.47 1.48 1.49 1.50
Threads compatible with those used by local fire departments should be provided on all hydrants, hose couplings, and standpipe risers.	1.52 1.53
RIVER BEND STATION POSITION	1.56
Hydrants and hydrant hose houses are provided on the loop sufficient to provide coverage for any plant area with at least one stream. All laterals are controlled by key-operated curb box valves or visually indicating valves. Hose houses are located at about every other hydrant. Threads are compatible with local fire department equipment.	1.58 2.3 2.4 2.5 2.7

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9A.3.6.3.6 Foam Suppression	1.11
Certain fires such as those involving flammable liquids	1.13
respond well to foam suppression. Consideration should be	1.15
given to use of any of the available foams for such	1.16
specialized protection application. These include the more	1.17
common chemical and mechanical low expansion foams, high	1.18
expansion foam, and the relatively new aqueous film forming	
foam (AFFF).	
RIVER BEND STATION POSITION	1.28
No foam fire suppression is provided at River Bend Station.	1.30
9A.3.6.4 Halon Suppression Systems	1.35
The use of Halon fire extinguishing agents should as a	1.37
minimum comply with the requirements of NFPA 12A and 12B,	1.38
"Halogenated Fire Extinguishing Agent Systems - Halon 1301	1.40
and Halon 1211." Only UL or FM approved agents should be	1.41
used.	
In addition to the guidelines of NFPA 12A and 12B,	1.43
preventative maintenance and testing of the systems,	1.44
including check weighing of the Halon cylinders, should be	1.45
done at least quarterly.	
Particular consideration should also be given to:	1.48
1. Minimum required Halon concentration and soak time	1.50
2. Toxicity of Halon	1.52
3. Toxicity and corrosive characteristics of thermal	1.56
decomposition products of Halon.	1.57
RIVER BEND STATION POSITION	2.2
Halon 1301 fire suppression systems designed to comply with	2.4
NFPA 12A are provided in the following areas:	
1. PGCC in the main control room	2.7
2. Underfloor cable space in the auxiliary control	2.10
room	
3. Underfloor cable space in the CAS room - normal	2.12
switchgear building	2.13



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4.	PBX room, computer and record storage room,	2.15
	computer equipment room, safety parameter display room, and records room - services building.	2.16
5.	Contract document vault, file room, and computer	2.18
	room - office building.	2.19
Procedures are developed for maintenance and testing of these systems as described in Section 9.5.1.5.		2.21

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## 9A.3.6.5 Carbon Dioxide Suppression Systems 1.11

The use of carbon dioxide extinguishing systems should as a minimum comply with the requirements of NFPA 12, "Carbon Dioxide Extinguishing Systems." 1.13 1.14

Particular consideration should also be given to: 1.18

1. Minimum required CO<sub>2</sub> concentration and soak time 1.20
2. Toxicity of CO<sub>2</sub> 1.23
3. Possibility of secondary thermal shock (cooling) damage 1.26
4. Offsetting requirements for venting during CO<sub>2</sub> injection to prevent overpressurization versus sealing to prevent loss of agent 1.29 1.30 1.31
5. Design requirements from overpressurization 1.33
6. Possibility and probability of CO<sub>2</sub> systems being out-of-service because of personnel safety consideration. CO<sub>2</sub> systems are disarmed whenever people are present in an area so protected. Areas entered frequently (even though duration time for any visit is short) have often been found with CO<sub>2</sub> systems shut off. 1.36 1.37 1.38 1.40 1.41 1.42

## RIVER BEND STATION POSITION 1.46

" | A high pressure CO<sub>2</sub> system is provided for fire protection of the turbine and exciter bearings. The system is designed to comply with the requirements of NFPA 12. 1.48 1.50

## 9A.3.6.6 Portable Extinguishers 1.54

Fire extinguishers should be provided in accordance with guidelines of NFPA 10 and 10A, "Portable Fire Extinguishers, Maintenance and Use." Dry chemical extinguishers should be installed with due consideration given to cleanup problems after use and possible adverse effects on equipment installed in the area. 1.57 1.58 2.2 2.3 2.4

## RIVER BEND STATION POSITION 2.7

Fire extinguishers are provided in accordance with NFPA 10. Pressurized water type extinguishers are used for potential Class A fire hazards in the main control room, computer paper storage, and all general heated areas. Supplemental 2.9 2.11 2.12 2.13

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RIVER BEND STATION POSITION	1.11
The cable spreading areas within the control building include the basement cable areas, the four cable chases, and the General Electric PGCC described in Section 9A.3.5.3.2.	1.13
The cable areas are protected with fixed, automatic, zoned water spray systems with provisions for remote manual operation of the deluge valves. The cable chases are protected with automatic wet-pipe sprinkler system. To assure adequate coverage, cable tray sizing and arrangements were considered for sprinklers/nozzles design. Nozzles are placed in such a manner to obtain impingement of water spray into all trays. Locations and spacing of sprinklers/nozzles are arranged to obtain a density of 0.15 gpm per sq ft over the combined areas of the horizontal trays and the external vertical surfaces of the cable tray risers. Ionization-type detection systems are provided and arranged to alarm and annunciate in both control rooms. The General Electric PGCC is protected as described in the Licensing Topical Report, NEDO-10466-A, dated February 1979. Manual hose stations are available as a backup to the fixed systems. Access to the spreading areas is from two remote locations. Aisle separation is in excess of 3 ft in width and 8 ft in height. Electrical cable construction passes the IEEE 383 flame test. Redundant safety-related cable is separated to comply with Regulatory Guide 1.75.	1.15
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Each reactor unit of the plant has its own cable spreading areas, which are separated from adjacent plant areas by minimum 3-hr rated fire barriers.	1.39
	1.40
Smoke removal within the cable spreading areas is by means of the normal ventilation system used in the purge mode of operation. Smoke is exhausted outside by diverting the air stream through dampers located in the purge ductwork.	1.42
	1.43
	1.44
9A.3.7.4 Plant Computer Room	1.48
Safety-related computers should be separated from other areas of the plant by barriers having a minimum 3-hr fire resistant rating. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Manual hose stations and portable water and halon fire extinguishers should be provided.	1.50
	1.51
	1.52
	1.54
RIVER BEND STATION POSITION	1.58
The plant computer located within the main control room is not safety related. However, the main control room is isolated from the rest of the plant by 3-hr fire barriers.	2.3
	2.5

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Manual hose stations, portable extinguishers, smoke 2.6  
detectors, alarms, and annunciators are provided in the main  
control room. The fire detection system computers are 2.9  
located in the auxiliary control room and are also not  
safety related.



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9A.3.7.9 Diesel Generator Areas	1.11
Diesel generators should be separated from each other and other areas of the plant by fire barriers having a minimum fire resistance rating of 3 hr.	1.13 1.15 1.16
Automatic fire suppression such as AFFF foam or sprinklers should be installed to combat any diesel generator or lubricating oil fires. Automatic fire detection should be provided to alarm and annunciate in the control room and alarm locally. Drainage for firefighting water and means for local manual venting of smoke should be provided.	1.18 1.19 1.20 1.21 1.22
Day tanks with total capacity up to 1,100 gal are permitted in the diesel generator area under the following conditions:	1.31 1.32
1. The day tank is located in a separate enclosure, with a minimum fire resistance rating of 3 hr, including doors or penetrations. These enclosures should be capable of containing the entire contents of the day tanks. The enclosure should be ventilated to avoid accumulation of oil fumes.	1.34 1.35 1.38 1.40
2. The enclosure should be protected by automatic fire suppression systems such as AFFF or sprinklers.	1.43 1.44
RIVER BEND STATION POSITION	1.47
Diesel generator areas are separated from each other and the remainder of the plant by 3-hr rated fire barriers. Each diesel generator area and fuel oil day tank is protected by an automatic preaction water sprinkler suppression system. The steel supports for the day tanks are fireproofed. Concrete curbs are provided at the doors between the diesel generator bays and the diesel generator control rooms. Detection systems associated with these areas are heat sensitive and alarm locally and in both control rooms. Venting of smoke is provided by a constantly operating normal exhaust system.	1.49 1.52 1.54 1.55 1.56 1.57 1.58 2.1
The 550-gal day tank for each diesel is unenclosed, complying with NFPA Standard No. 37, Stationary Combustion Engines and Gas Turbines. Separation of diesel-generators from one another by these 3-hr rated fire barriers precludes affecting redundant diesels by a single fire event. Further isolation of hazards is not justified.	2.3 2.4 2.5 2.6 2.7

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9A.3.7.10 Diesel Fuel Oil Storage Areas 2.10

Diesel fuel oil tanks with a capacity greater than 1,100 gal 2.12  
should not be located inside the buildings containing 2.14  
safety-related equipment. They should be located at least 2.15  
50 ft from any building containing safety-related equipment, 2.16  
or if located within 50 ft, they should be housed in a 2.17



TABLE 9A.3-1  
 COMPARISON OF  
 A TYPICAL FLOOR SYSTEM WITH UL-RATED SECTION

<u>UL-Rated Section D904</u>	<u>River Bend</u>	
Restrained assembly	Restrained assembly	1.15
Steel Beam-W 10 x 29 min. size	Steel beam - W 8 x 24 typ.	1.17 1.19 1.20
Nom. conc. thk. - 6 3/4" 3 hr rating	Nom. conc. thk. - 8" min.	1.22 1.23
Concrete density - 147 pcf	Concrete density - 150 pcf	1.34 1.35
Min. reinforcement - 6 x 6 - 6 x 6 WWF	Min. reinforcement - No. 6 @ 12" c/c	1.37 1.38
Conc. comp. strength - 3500 psi	Conc. comp. strength - 3000 psi	1.40 1.41
Steel floor forms composite	Steel floor forms - noncomposite	1.43 1.44
Steel floor forms type Laystone CR by H. H. Robertson (1 1/2" or 2" deep)	Steel floor forms type - Type 20 VOR 3"V, 3"N or 4 1/2"C by INRYCO	1.46 1.47 1.48 1.49
Aggregate - Carbonate or silicious	Aggregate - silicious	1.52 1.53
Sprayed fiber or cementitious mixture in accordance with manufacturer's instruc- tions on the steel beam(s)	Cementitious mixture in accordance with manufacturer's instructions on the steel beam(s)	1.57 1.58 2.1 2.2 2.3

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TABLE 9A.3-2

COMPARISON OF TYPICAL STEEL BEAM  
WITH UL-RATED SECTION

<u>UL-Rated Sections N714</u>	<u>River Bend</u>	1.16
Restrained or unrestrained	Restrained	1.18 1.19
Minimum size beam W 8 x 24 or W 10 x 21	Minimum size beam W 8 x 24 typ.	1.21 1.22
$\frac{1}{2}$ " to 3" <sup>steel</sup> <del>st'l</del> floor form units	2" to 3" (some 4 1/2") steel floor form units	1.24 1.25
2 1/2" minimum, 3000 psi, 148 pcf concrete	8" minimum, 3000 psi, 150 pcf concrete	1.27 1.28
Cementitious mixture, minimum density 34 pcf, minimum thickness 1 1/2"	Cementitious mixture, min. density 34 pcf, minimum thickness 1 1/2"	1.30 1.31 1.32

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TABLE 9A.3-3

COMPARISON OF TYPICAL WALL SECTION  
WITH UL-RATED SECTION

<u>UL-Rated Section U904</u>	<u>River Bend</u>	1.16
8-in nominal thickness hollow concrete block, 3-hr fire-resistance rating	8-in minimum thickness solid poured-in-place reinforced concrete	1.18 1.19 1.20
Portland cement stucco <del>1</del> <sup>3/4</sup> or gypsum plaster ( <del>1</del> <sup>3/4</sup> -in thickness) adds 1/2 hr to fire-resistance rating	Not applicable	1.22 1.23 1.24 1.25
If hollow, then core spaces are filled with some approved masonry fill. Add 1 hr to fire-resistance rating.	Solid, homogeneously poured concrete wall is at least equivalent to filled hollow masonry wall.	1.27 1.28 1.29 1.30 1.31