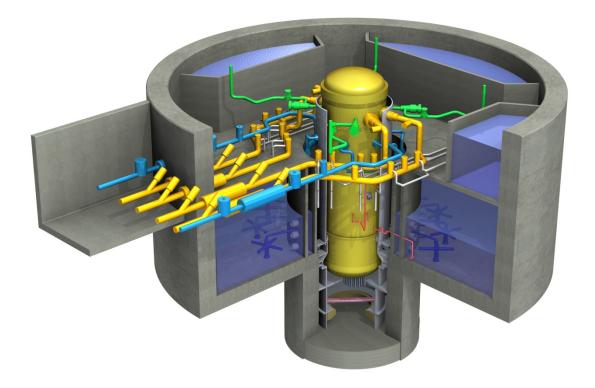


GE Hitachi Nuclear Energy

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# ESBWR Design Control Document *Tier 2*

Chapter 9 *Auxiliary Systems* Appendix 9A

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# 9A. FIRE HAZARDS ANALYSIS

#### 9A.1 INTRODUCTION

This fire hazards analysis (FHA) establishes and evaluates distinct fire areas for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, Yard, Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, Fire Pump Enclosure, Ancillary Diesel Building and Administration Building. Plan and elevation view drawings of the buildings are utilized to depict the resulting fire area boundaries, fire barriers, and fire suppression systems. Fire areas containing safe shutdown equipment are identified and evaluated to confirm that a sufficient number of safe shutdown systems remain available during and following a design basis fire to achieve hot shutdown and maintain safe shutdown.

All materials capable of supporting combustion in each of the designated fire areas are identified and quantified in Tables 9A.5-1 through 9A.5-7. In addition, the fire protection features available for each room or fire area are identified in Tables 9A.5-1 through 9A.5-7.

The primary requirement of a nuclear facility is to operate and shutdown without undue risk to the health and safety of the public. In the event of a design basis fire, this requirement means that the ESBWR plant is capable of safely shutting down and maintaining a safe shutdown condition, while not posing a hazard to the public or operating personnel, and that recovery from the fire is capable of being accomplished safely.

This FHA identifies and evaluates the hazard of fires relative to maintaining the safe shutdown capability of the plant. Since many elements of an effective program are administrative or procedural in nature, this FHA does not evaluate the overall fire protection program for an ESBWR, but rather assumes that an ESBWR owner has an effective fire protection program in place. As described in Regulatory Guide 1.189, the primary objectives of a fire protection program at a nuclear plant are to minimize both the probability of occurrence and the consequences of fire. To meet these objectives, the fire protection program is designed to provide reasonable assurance, through defense in depth, that a fire does not prevent the performance of necessary safe shutdown functions and that radioactive releases to the environment in the event of a fire is minimized.

#### 9A.2 ANALYSIS CRITERIA

#### 9A.2.1 Codes and Standards

Applicable codes and standards, as shown on Table 9A.2-1, are incorporated into the design of the ESBWR Standard Plant including the fire detection and suppression system design to the maximum extent practical. These codes and standards may differ slightly from those listed in Nuclear Regulatory Commission (NRC) Branch Technical Position SPLB 9.5-1 in order to reflect the applicable code titles specified in the 2004 National Fire Code by the National Fire Protection Association (NFPA). Tables 1.9-20, 1.9-21, 1.9-22, and 1.9-23 identify the relevant edition for each applicable regulation code and standard.

#### 9A.2.2 Fire Area Separation and Fire Equipment Drawings

Fire Zone drawings showing the fire area separation and type of fire protection suppression used for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, and Yard are identified in the List of Illustrations. A Fire area separation is provided between Yard Buildings and the Nuclear and Turbine Islands in accordance with NFPA 804 Paragraph 8.9 as expanded on in NFPA 80A Section A 3.2.2 ("Recommended Practice for Protection of Buildings from Exterior Fire Exposures").

#### 9A.2.3 Terminology

Fire Area – that portion (aggregate floor area) of a building or plant enclosed and bounded by fire walls, fire barriers, exterior walls, fire-resistance rated horizontal assemblies of a building, or other means in order to contain fire within that area.

Fire Barrier – a continuous vertical or horizontal fire-resistance rated construction assembly designed and constructed to limit the spread of heat and fire and to restrict the movement of smoke. Rated fire barriers are those fire barriers (e.g., walls, floors, ceilings, and their supports, including beams, joists, columns, penetration seals or closures, fire doors and fire dampers) that are rated, or capable of being rated, by approving laboratories in hours of resistance to fire and are used to prevent the spread of potential fire. Fire barriers that define the boundaries of a fire area should have a fire-resistance rating of at least three hours. All openings (doors, windows, penetrations, ductwork, etc) through fire barriers should be properly protected, sealed, and qualified by fire endurance testing to a fire resistance rating as required by the applicable codes, up to the same fire resistance rating of the fire barrier itself.

Fire Suppression – control and extinguishing of fires. Manual fire suppression includes the use of hoses, portable extinguishers, or fixed systems by plant personnel. Automatic fire suppression is the use of automatically actuated, fixed systems such as water sprinkler systems or low-pressure carbon dioxide systems.

Fire Wall – a fire-resistance rated wall having protected openings, which restricts the spread of fire and extends continuously from the foundation to or through the roof, with sufficient structural stability under fire conditions to allow collapse of construction on either side without collapse of the wall.

Fire Zones – subdivisions of a fire area based on the fire hazards analysis that demonstrate that the fire protection systems and features within the fire zones provide an appropriate level of protection for the associated hazards.

Noncombustible Materials – materials having any one of the following characteristics:

- Materials of which no part can ignite and burn, support combustion, or release flammable vapors when subjected to a fire or heat; this includes wet resin in tanks or other similar potentially combustible materials that are continuously immersed in water are not considered a viable combustible for exposure fires due to the significant amount of heating that would be required to dry out the material before combustion could occur;
- Materials having a structural base of non-combustible material, as defined in the above item, with a surfacing not over 3 mm (l/8 inch) thick which has a flame spread rating not higher than 50 when measured using American Society for Testing and Materials (ASTM) E84; and
- Materials, other than as described in the above two items, having a surface flame spread rating not higher than 25 without evidence of continued progressive combustion and of such composition that surfaces that would be exposed by cutting through the material in any way would not have flame spread rating higher than 25 without evidence of continued progressive combustion.

The flame-spread ratings referred to above are obtained according to NFPA 255.

Safety-Related Structures, Systems and Components - are as defined in 10 CFR 50.2.

Sprinkler System - a network of piping connected to a reliable water supply to distribute the water throughout the area protected and discharges the water through sprinklers in sufficient quantity either to extinguish the fire entirely or to prevent its spread. The system, usually activated by heat, includes a controlling valve and a device for actuating an alarm when the system is in operation. The following categories of sprinkler systems are defined in NFPA 13:

- Wet-pipe System;
- Dry-pipe System;
- Preaction System;
- Deluge System;
- Combined Dry-pipe and Preaction System; and
- On-Off System.

Standpipe and Hose Systems - fixed piping systems with hose outlets, hoses, and nozzles connected to a reliable water supply to provide effective fire hose streams to specific areas inside of the buildings.

Water Spray System - a special fixed pipe system connected to a reliable source of fire protection water supply and equipped with open-head spray nozzles for specific water discharge and distribution over surface or area to be protected. The piping system is connected to the water supply through an automatic or manually actuated valve to initiate the flow of water.

Wet Standpipe System - a standpipe system having piping containing water at all times. The ESBWR design utilizes a Class III wet standpipe system which provides a 38 mm (1.5-inch) hose station to supply water for use by building occupants and 65 mm (2.5-inch) hose connections to supply a larger volume of water for use by fire departments and those trained in handling heavy fire streams such as the fire brigade.

#### 9A.2.4 Acceptance Criteria

The following basic guidelines have been used as criteria for the fire hazard analysis, to be conducted in accordance with Regulatory Guide 1.189 and NFPA 804:

- (1) The analysis is based on the existing design and on the currently specified, but not yet purchased, equipment. The analysis provides a basis for evaluating the fire protection characteristics and features of equipment as it is purchased.
- (2) Automatic sprinkler systems are provided in the ESBWR design for areas in which either installed combustible loading is large enough to warrant the installation or a significant transient combustible loading is most likely to occur as a result of combustibles introduced by normal maintenance operations. The fire hazard analysis is based on the introduction of transient combustibles to any area of the plant, subject to administrative controls. Control of combustible transient materials is assumed to comply with Regulatory Guide 1.39 for housekeeping requirements.

As described in Appendix 9B, the combustible loading limit for electrical areas has been conservatively determined as 1400  $MJ/m^2$  (123,300 Btu/ft<sup>2</sup>) and the combustible loading limit for all other indoor areas has been conservatively determined as 700  $MJ/m^2$  (61,660 Btu/ft<sup>2</sup>) rooms that exceed these limits require automatic fire suppression. This approach conservatively assumes that all combustible material within a fire area instantaneously releases its net heat content upon ignition of the fire. Due to the considerable separation and fire barriers provided in the ESBWR plant layout, a detailed analysis or modeling of fire damage and plume temperatures resulting from any given fire was not considered necessary and has not been performed. This type of analysis could be performed later for an individual fire area if needed, but then could also include consideration of room height and volume, spatial location of combustibles and equipment, incomplete combustion, timeweighted heat release rates, thermal inertia of the structure, ventilation effects, response of installed automatic fire detection, response of installed fire suppression, and other relevant factors.

- (3) The buildings are generally of reinforced concrete construction. The walls, floors, and ceilings have 3-hour fire resistance ratings where required based on high combustible loadings (lubrication oil tank, for example) in the room or where an adjacent room contains equipment or systems from a different Safety-Related division. Corridors and stairwells that do not communicate between areas of different Safety-Related divisions may have walls and doors with a 2-hour minimum fire rating for personnel protection during egress from the areas. Non-concrete interior walls are constructed of metal studs and gypsum wallboard to the required fire resistance rating.
- (4) Doors penetrating rated fire barriers comply with NFPA ratings for that barrier. There are also doors that provide fire area separation that may not be labeled fire doors but do

provide equivalent protection. Typically these are the doors for the personnel air lock into the reactor containment and the missile/tornado doors at the equipment access entrance to the reactor building (RB). The term "doors," where used in the analysis means doors, frames, and hardware.

The use of 1.5-hour fire rated elevator doors in 3-hour fire-rated barriers does not compromise the fire barrier. Rather, section 6-1.2.2 of NFPA 804-1995 specifically allows 1.5-hour fire-rated doors in elevator shafts. No other applicable codes (International Building Code [IBC], NFPA 80, NFPA 101, NFPA 252, or American Society of Mechanical Engineers [ASME] standard A17.1) require elevator doors to have a fire rating of more than 1.5 hours. None of the applicable codes address 3-hour fire-rated elevator shafts. It is not unusual for a door in a fire-rated wall to have a lower fire rating than the applicable firewall, because the area on both sides of the door is normally kept free of combustible material to ensure use of the door. Personnel evacuating from a fire are warned by signage at each elevator to use stairs (protected by 3-hour firewalls and doors) and not elevators during a fire.

- (5) The fireproofing of structural steel members, where required by calculation based on combustible loading, is accomplished by application of an Underwriters Laboratory (UL)-listed or Factory Mutual (FM)-approved cementitious or ablative material, or by an UL-listed or FM-approved boxing design. The required fire rating determines the fireproofing material thickness. Gypsum board is utilized for protection of fireproofing in high traffic or office areas.
- (6) Surface finishes are specified to have a flame spread, fuel-contributed, and smoke-evolved index of 25 or less (Class A), determined by ASTM E84 (NFPA 255).
- (7) The use of plastic materials, including electrical cable insulation, is minimized in the ESBWR design.
- (8) Suspended ceilings are used in some areas of the plant. The ceilings, including the lighting fixtures, are of noncombustible construction.
- (9) The electrical cable fire-stops are tested to demonstrate a fire rating equal to the rating of the barrier they penetrate. As a minimum the penetrations meet the requirements of NUREG-1552, including Supplement 1. The tests are performed or witnessed by a representative of a qualified, independent testing laboratory. The documented test results for the acceptable fire-stops are made a part of the plant design records.
- (10) Electrical cable insulation in either solid metal enclosed raceways or concrete duct banks does not represent a combustible fire load and is excluded from the combustible loading analysis.
- (11) Control, power, or instrument cables and equipment of redundant systems used for bringing the reactor to hot shutdown and maintaining safe shutdown, are separated from each other by three hour rated fire barriers, except within the containment and where the equipment of more than one division is required to be located within a single fire area. Where multiple divisions of cable or equipment are located in the same fire area, the acceptability of the configuration is evaluated in Section 9A.6.

(12) Certain areas of the plant have cable trays in stacked array. Where stacking of trays occurs, power cable, which is the most susceptible to internally generated fires, is routed in the uppermost tray to the greatest extent possible to provide isolation from other trays in the stack.

The fire loading of electrical cable in trays is based on flame-retardant, cross-linked polyethylene insulation having a maximum calorific value of 29.8 MJ/kg (12,800 Btu/lbm).

The cable trays are assumed to have the maximum (40%) design fill; actual cable fills may be lower.

The analysis uses 50. kilograms of insulation per square meter  $(10 \text{ lbm/ft}^2)$  of tray. The combustible loading is based on maximum loading. As cables drop out of (exit) trays, the fire loading decreases. Cable insulation in completely enclosed (i.e., solid-bottom and solid-cover) trays or steel conduits is not considered to be a contributory, exposed combustible fire load to the area.

- (13) Cables for local indication are included in the safe shutdown analysis where failure of the cable could cause failure of functionally associated circuits or where required to provide either diagnostic or process parameter information for recovery.
- (14) Total reliance on a single fire suppression method is not used. At least two fire suppression methods are available to suppress a fire in each fire area. The plant design provides the following types of suppression methods and utilizes them in suitable combination for the fire hazard considered:
  - a. Automatic wet-pipe sprinkler system;
  - b. Automatic preaction sprinkler system;
  - c. Automatic dry-pipe sprinkler system;
  - d. Automatic preaction foam water sprinkler system;
  - e. Automatic foam water deluge system;
  - f. Automatic dry-pilot deluge system;
  - g. Internal manual water spray system;
  - h. Internal low pressure carbon dioxide flooding system;
  - i. Standpipe and hose racks;
  - j. Portable Class ABC fire extinguishers;
  - k. Portable Carbon Dioxide Class BC fire extinguishers; and
  - 1. Portable Class D fire extinguishers.
- (15) The design of the water supply system ensures delivery of water to the standpipe and hose rack systems concurrent with a single active failure. The standpipe system and one diesel driven fire pump and one electric fire pump, their water supply, their suction piping, and their discharge piping throughout the Reactor, Fuel, and Control Buildings are designed to remain functional following a Safe Shutdown Earthquake (SSE). The standpipes which

supply firewater to hose stations covering safe shutdown equipment are contained within the concrete stairwells or dedicated concrete chases, and thus, are protected from other phenomena of less severity and greater frequency.

- (16) The effect of pipe breaks in fire suppression systems and protection methods for the effect of pipe breaks meet the criteria specified in Section 3.4 and Subsection 9.5.1.
- (17) The floor drains are sized to handle both leakage from a crack in the standpipes or simultaneous operation of two fire hose streams. See Subsection 9.3.3 for details of the plant drainage system.
- (18) Piping and cable tray penetrations are provided with fire-stops when penetrating fire rated barriers.
- (19) Heating, Ventilation and Air Conditioning (HVAC) penetrations through 2-hour or 3-hour rated fire barriers are provided with fire dampers compatible with the rating of the fire barrier.
- (20) Spill control is provided to contain the contents of any above grade oil-filled vessel or tank larger than 208 liters (55 gallons) and all tanks containing chemicals used in water/wastewater treatment or quality control.

In accordance with NFPA 804 and Regulatory Guide (RG) 1.189, the following design criteria are used for fire containment sizing:

Drainage and any associated drainage facilities for a given area is sized to accommodate the volume of liquid produced by all the following:

- a. The spill of the largest single container of any flammable or combustible liquids in the area.
- b. Where automatic suppression is provided throughout, the credible volume of discharge (as determined by the fire hazards analysis) for the suppression systems operating for a period of 30 minutes.
- c. Where automatic suppression is not provided throughout, the contents of piping systems and containers that are subject to failure in a fire.
- d. Where the installation is outside, credible environmental factors such as rain and snow.
- e. Where automatic suppression is not provided throughout, the volume is based on a manual fire-fighting flow rate of 1900 l/m (500 gal/m) for a duration of 30 minutes, unless the fire hazards analysis demonstrates a different flow rate and duration.
- (21) The post-fire safe-shutdown circuit analysis will assume that any spurious actuations associated with a postulated fire occur simultaneously or in rapid succession.
- (22) Circuit routing will conform to the methodology provided in Revision 1 of NEI 00-01, Guidance For Post-Fire Safe Shutdown Analysis, in accordance with RIS 05-030, NRC Regulatory Issue Summary 05-30, Clarification of Post-Fire Safe Shutdown Circuit Regulatory Requirements.

#### 9A.2.5 Systems Required to Achieve Safe Shutdown in the Event of Fire

In case of a design basis fire, certain systems may be required when the Nuclear Steam Supply System (NSSS) is isolated from the main condenser during shutdown or accident conditions.

The main steam lines and feedwater lines provide the core-cooling path to and from the main condenser during normal operation at power or during startup or shutdown transients when the reactor is not isolated.

The safe shutdown functions are accomplished through interaction of various passive Safety-Related systems. The safe shutdown systems provide one or more of the following functions:

- Maintenance of reactor vessel water level;
- Pressure control or depressurization of the reactor pressure vessel;
- Heat removal;
- Heat sink;
- Direct Current (DC) electrical power; and
- Indication and control.

Instrumentation automatically activates the safe shutdown systems or provides signals to the Main Control Room operators.

Table 9A.2-2 shows the systems that provide one or more of the safe shutdown functions in the case of fire. The table includes the operating mode or modes for each system, the functions performed, reactor conditions that require system operation, the divisional assignment, the backup system, and Tier 2 references for system description.

A sufficient number of safe shutdown systems remain available during and following a design basis fire to achieve hot shutdown and maintain safe shutdown.

#### 9A.2.6 Redundant Nonsafety-Related Systems and Equipment

In case of a design basis fire, no nonsafety-related systems are required to achieve hot shutdown and maintain safe shutdown. Nonetheless, certain nonsafety-related systems and equipment include redundancy to provide operational flexibility and robustness. In general terms, the redundant components within a nonsafety-related system are referred to as Train A and Train B (and in some cases, Train C). To maintain the redundancy and robustness for these, fire-rated separation is provided between the redundant Train A and Train B (and Train C, where applicable) components for these certain nonsafety-related systems.

The design of the ESBWR has included redundancy within the following nonsafety-related systems:

- Reactor Water Cleanup / Shutdown Cooling System;
- Reactor Component Cooling Water System;
- Plant Service Water System;
- Fuel and Auxiliary Pools Cooling System;

- Reactor Building and Control Building sumps in the Equipment and Floor Drains System;
- RB HVAC System;
- Fuel Building (FB) HVAC System;
- Control Building (CB) HVAC System;
- Nonsafety-Related Distributed Control and Information System (N-DCIS) System;
- Instrument Air System;
- Chilled Water System;
- Seismic fire pumps within the Fire Protection System;
- Offsite power supplies (transformers);
- Onsite power supplies (diesel generators and auxiliary equipment); and
- Electrical power distribution to all of the above.

#### **Fire Protection Codes and Standards**

28 CFR 36	Nondiscrimination on the Basis of Disability by Public Accommodations and in Commercial Facilities
29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1926	Safety and Health Regulations for Construction
10 CFR 50	Domestic Licensing of Production and Utilization Facilities
UL Directory	Fire Protection Equipment Directory
FM	Factory Mutual Approval Guide
ANI Manual	Basic Fire Protection for Nuclear Power Plants
NFPA 10	Standard for Portable Fire Extinguishers
NFPA 11	Standard for Low-, Medium-, and High-Expansion Foam Systems
NFPA 12	Standard for Carbon Dioxide Extinguishing Systems
NFPA 13	Standard for the Installation of Sprinkler Systems
NFPA 14	Standard for the Installation of Standpipe and Hose Systems
NFPA 15	Standard for Water Spray Fixed Systems for Fire Protection
NFPA 16	Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems
NFPA 20	Standard for the Installation of Stationary Pumps for Fire Protection
NFPA 22	Standard for Water Tanks for Private Fire Protection
NFPA 24	Standard for the Installation of Private Fire Service Mains and their Appurtenances
NFPA 30	Flammable and Combustible Liquids Code
NFPA 37	Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines
NFPA 50A	Standard for Gaseous Hydrogen Systems at Consumer Sites
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#### **Fire Protection Codes and Standards**

NFPA 51B	Standard for Fire Prevention During Welding, Cutting, and Other Hot Work	
NFPA 70	National Electrical Code	
NFPA 72	National Fire Alarm Code	
NFPA 75	Standard for the Protection of Information Technology Equipment	
NFPA 80	Standard for Fire Doors and Windows	
NFPA 80A	Recommended Practice for Protection of Buildings from Exterior Fire Exposures	
NFPA 90A	Standard for the Installation of Air-Conditioning and Ventilating Systems	
NFPA 92A	Standard for Smoke-Control Systems Utilizing Barriers and Pressure Differences	
NFPA 101	Life Safety Code	
NFPA 204	Standard for Smoke and Heat Venting	
NFPA 241	Standard for Safeguarding Construction, Alteration, and Demolition Operations	
NFPA 251	Standard Methods of Tests of Fire Endurance of Building Construction and Materials	
NFPA 252	Standard Methods of Fire Tests of Door Assemblies	
NFPA 255	Standard Method of Test of Surface Burning Characteristics of Building Materials	
NFPA 497	Recommended Practice for the Classification of Flammable Liquids, Gases, or Vapors and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas	
NFPA 600	Standard on Industrial Fire Brigades	
NFPA 701	Standard Methods of Fire Tests for Flame Propagation of Textiles and Films	
NFPA 780	Standard for the Installation of Lightning Protection Systems	
NFPA 801	Standard for Fire Protection Practices for Facilities Handling Radioactive Materials	

#### **Fire Protection Codes and Standards**

NFPA 804	Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants
NFPA 1404	Standard for Fire Service Respiratory Protection Training
NFPA 1451	Standard for a Fire Service Vehicle Operations Training Program
NFPA 1500	Standard on Fire Department Occupational Safety and Health Program
NFPA 1961	Standard for Fire Hose
NFPA 1962	Standard for the Inspection, Care, and Use of Fire Hose, Couplings, and Nozzles and the Service Testing of Fire Hose
NFPA 1963	Standard for Fire Hose Connections
NFPA 1964	Standard for Spray Nozzles
ASHRAE 15	Safety Standard for Refrigeration Systems
ASME A17.1	Safety Code for Elevators and Escalators
ASME B31.1	Power Piping
ASME NQA-1	Quality Assurance Program Requirements for Nuclear Facilities
ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials
ASTM E119	Standard Test Methods for Fire Tests of Building Construction and Materials
ASTM E814	Standard Test Method for Fire Tests for Through-Penetration Fire Stops
IBC	International Building Code
IFC	International Fire Code
ADA	American Disability Act Accessibility Guidelines – 28 CFR 36
IEEE 383	Standard for Qualifying Class 1E Electric Cables and Field Splices for Nuclear Power Generating Stations
IEEE 384	Standard Criteria for Independence of Class 1E Equipment and Circuits

#### **Fire Protection Codes and Standards**

IEEE 603	Standard Criteria for Safety Systems for Nuclear Power Generating Stations			
IEEE 1202	Standard for Flame-Propagation Testing of Wire and Cable			
IEEE C2	National Electric Safety Code			
Regulatory Guide 1.13	Spent Fuel Storage Facility Design Basis			
Regulatory Guide 1.39	Housekeeping Requirements for Water-Cooled Nuclear Power Plants			
Regulatory Guide 1.75	Criteria for Independence of Electrical Safety Systems			
Regulatory Guide 1.189	Fire Protection for Operating Nuclear Power Plants			
NUREG-0800, SRP Section 9.1.3	Spent Fuel Pool Cooling and Cleanup System			
NUREG-0800, SRP Section 9.5.1	Fire Protection Program			
NUREG-0800, BTP SPLB 9.5-1	Guidelines for Fire Protection for Nuclear Power Plants			
NUREG-0800, BTP SPLB 9.5-1	Appendix B, Supplemental Fire Protection Review Criteria for Advance Reactors			
NUREG-1552	Fire Barrier Penetration Seals in Nuclear Power Plants			
RIS 05-030	NRC Regulatory Issue Summary 05-030 Clarification of Post- Fire Safe-Shutdown Circuit Regulatory Requirements			
NEI 00-01	Guidance For Post-Fire Safe Shutdown Analysis			

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# Table 9A.2-2

# Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function (see footnote)	Reactor Condition	Division	Backup System	Tier 2 Ref.	Remarks
ICS A	1/2/3/4	Isolation	Any two of four	ICS B ICS C ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS B	1/2/3/4	Isolation	Any two of four	ICS A ICS C ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS C	1/2/3/4	Isolation	Any two of four	ICS A ICS B ICS D	5.4.6	Closed loop to and from reactor vessel.
ICS D	1/2/3/4	Isolation	Any two of four	ICS A ICS B ICS C	5.4.6	Closed loop to and from reactor vessel.
GDCS A	1	Depressurized	Any two of four	GDCS B GDCS C GDCS D	6.3.2.7	
GDCS B	1	Depressurized	Any two of four	GDCS A GDCS C GDCS D	6.3.2.7	
GDCS C	1	Depressurized	Any two of four	GDCS A GDCS B GDCS D	6.3.2.7	
GDCS D	1	Depressurized	Any two of four	GDCS A GDCS B GDCS C	6.3.2.7	

# Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function (see footnote)	<b>Reactor Condition</b>	Division	Backup System	Tier 2 Ref.	Remarks
ADS A	2	Isolated	Any two of four	ADS B, C, D ICS B, C, D	6.3.2.8	
ADS B	2	Isolated	Any two of four	ADS A, C, D ICS A, C, D	6.3.2.8	
ADS C	2	Isolated	Any two of four	ADS A, B, D ICS A, B, D	6.3.2.8	
ADS D	2	Isolated	Any two of four	ADS A, B, C ICS A, B, C	6.3.2.8	
PCCS A	3/4	Post Depressurization	_	PCCS B, C, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS B	3/4	Post Depressurization		PCCS A, C, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS C	3/4	Post Depressurization		PCCS A, B, D, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS D	3/4	Post Depressurization		PCCS A, B, C, E, F	6.2.2	Closed piping connections to GDCS and suppression pools.
PCCS E	3/4	Post Depressurization		PCCS A, B, C, D, F	6.2.2	Closed piping connections to GDCS and suppression pools.

#### Systems Required to Achieve Safe Shutdown in the Event of Fire

System	Function (see footnote)	Reactor Condition	Division	Backup System	Tier 2 Ref.	Remarks
PCCS F	3/4	Post Depressurization		PCCS A, B, C, D, E	6.2.2	Closed piping connections to GDCS and suppression pools.
Div 1 instrument power & signals	5/6/7	All	1	Division 2, 3, or 4	7.2, 7.3	
Div 2 instrument power & signals	5/6/7	All	2	Division 1, 3, or 4	7.2, 7.3	
Div 3 instrument power & signals	5/6/7	All	3	Division 1, 2, or 4	7.2, 7.3	
Div 4 instrument power & signals	5/6/7	All	4	Division 1, 2, or 3	7.2, 7.3	

Functions:

1 - maintain reactor water level

- 2 depressurize the reactor vessel
- 3 heat removal
- 4 heat sink
- 5 electrical power
- 6 control (includes logic systems power for initiation of RPS and safe shutdown systems)
- 7 monitoring/indication

Figure 9A.2-1. Nuclear Island Fire Protection Zones ESBWR DCD EL –11500

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-2. Nuclear Island Fire Protection Zones ESBWR DCD EL -6400

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-17

Figure 9A.2-3. Nuclear Island Fire Protection Zones ESBWR DCD EL -1000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-4. Nuclear Island Fire Protection Zones ESBWR DCD EL 4650

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-5. Nuclear Island Fire Protection Zones ESBWR DCD EL 9060

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-6. Nuclear Island Fire Protection Zones ESBWR DCD EL 13570

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-21

Figure 9A.2-7. Nuclear Island Fire Protection Zones ESBWR DCD EL 17500

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-8. Nuclear Island Fire Protection Zones ESBWR DCD EL 27000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-9. Nuclear Island Fire Protection Zones ESBWR DCD EL 34000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-10. Nuclear Island Fire Protection Zones ESBWR DCD SEC A-A

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-25

Figure 9A.2-11. Nuclear Island Fire Protection Zones ESBWR DCD Section "B-B"

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-12. Turbine Island Fire Protection Zones ESBWR DCD EL. –1400

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-13. Turbine Building Fire Protection Zones ESBWR DCD EL 4650

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-14. Turbine Island Fire Protection Zones ESBWR DCD EL. 12000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-15. Turbine Island Fire Protection Zones ESBWR DCD EL. 20000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-16. Turbine Island Fire Protection Zones ESBWR DCD EL. 28000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-16a. Turbine Building Fire Protection Zones ESBWR DCD EL 35000

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9A.2-32

Figure 9A.2-17. Turbine Island Fire Protection Zones ESBWR DCD EL. Various

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-33

Figure 9A.2-18. Turbine Building Fire Protection Zones ESBWR DCD Section A-A

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-34

Figure 9A.2-19. Turbine Building Fire Protection Zones ESBWR DCD Section B-B

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-20. Radwaste Building Fire Protection Zones ESBWR DCD EL -9350

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-21. Radwaste Building Fire Protection Zones ESBWR DCD EL -2350

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-22. Radwaste Building Fire Protection Zones ESBWR DCD EL 4650

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

# Figure 9A.2-23. Radwaste Building Fire Protection Zones ESBWR DCD EL 10650

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-24. Radwaste Building Fire Protection Zones ESBWR DCD Section A-A

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-25. Electrical Building Fire Protection Zones ESBWR DCD EL 4650

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-41

# Figure 9A.2-26. Electrical Building Fire Protection Zones ESBWR DCD EL 9800

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-27. DELETED

# Figure 9A.2-28. Electrical Building Fire Protection Zones ESBWR DCD EL 18000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-29. DELETED

Figure 9A.2-30. Electrical Building Fire Protection Zones ESBWR DCD EL 27000

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-46

Figure 9A.2-31. Electrical Building Fire Protection Zones ESBWR DCD EL (Various)

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

9A.2-47

Figure 9A.2-32. Electrical Building Fire Protection Zones ESBWR DCD Section A-A

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

Figure 9A.2-33. Site Fire Protection Zones ESBWR DCD Plot Plan

{{{Security-Related Information - Withheld Under 10 CFR 2.390.}}}

#### 9A.3 ANALYSIS APPROACH

#### 9A.3.1 Review Data

The fire hazards analysis is based on a review of every fire area, using the defense in depth approach from NFPA 804 and Regulatory Guide 1.189. Defense in depth is defined as a principle aimed at providing a high degree of fire protection by inclusion of these three concepts: 1) preventing potential fires from starting; 2) quickly detecting those fires that occur, and promptly controlling and extinguishing fires to limit damage; and, 3) providing structural protection (such as fire-rated barriers) for buildings, equipment, and circuits so that a fire that is not promptly extinguished does not prevent safe shutdown, cause loss of life, or result in radioactive release in excess of 10 CFR 20 limits. None of the defense in depth concepts is complete by itself.

The analysis is based on a review of every room for the Reactor Building, Fuel Building, Control Building, Turbine Building, Radwaste Building, Electrical Building, and Yard, as well as the overall design acceptance criteria for the Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building, Cold Machine Shop, Warehouse, Training Center, Service Building, Auxiliary Boiler Building, Fire Pump Enclosure, Ancillary Diesel Building and Administration Building. The following data has been gathered for each fire area or room reviewed:

- (1) Identification for the Safety-Related equipment within each fire area. Nonsafety-related equipment is not required for safe shutdown;
- (2) Identification of fire areas containing radioactive material that could be released to the exclusion area or beyond should a fire occur in that area;
- (3) Definition of the rated fire barriers surrounding a specific room or rooms that allow classifying the room or rooms as a separate fire area. Non-rated barriers for which an equivalency to a fire barrier is claimed are also identified;
- (4) A specific listing of types, quantities and characteristics of significant combustibles within a fire area that could constitute a combustible load;
- (5) Quantitative listing of fire loadings that represent the combustibles identified for each fire area;
- (6) Listing of all the fire detection and suppression capabilities provided and their accessibility for each room. Note that fire detection is also installed within HVAC ductwork as required by NFPA 90A but is not credited in the fire hazards analysis for early detection of any fire within a single fire area;
- (7) An analysis of each fire area identifying the design criteria employed in providing fire protection for the equipment within the fire area. Safety-related equipment is separated on a divisional basis by 3-hour rated fire barriers, except equipment mounted in the control room or containment, as well as for equipment covered by special cases that are discussed in Section 9A.6 (for more information on safety-related equipment, fire separation and safe shutdown, see Subsection 9.5.1). Fire detection, fire suppression, and fire stop capabilities are also discussed in the analysis;

- (8) An analysis defining the worst-case consequences of the fire for each fire area. This is stated as loss of safe shutdown function and identifies the divisional backup capability available for safety-related systems;
- (9) An analysis of each fire area addressing the consequences of fire, if the fire protection system functions as designed. The fire protection system is defined as having the capability to detect, contain, and extinguish the fire. The ability to restrict the fire to a discrete area, the result of the introduction of water to the fire area, and the capability of extinguishing the fire by various means of suppression are stated. See Section 3.4, for a discussion of pipe break consequences;
- (10) Design provisions for protecting the functional capability of safety-related systems and associated cabling from the results of inadvertent operation, careless operation, or rupture of the extinguishing systems in each fire area are stated;
- (11) The means of containing or inhibiting the progress of a fire in each fire area (defined as the use of a fire-resisting enclosure or barrier, fire-stops at wall penetrations, ventilation fire dampers, curbs, or fire doors into the area); and
- (12) Room numbers are shown on the analysis pages that conform to those shown on the fire zone drawings.

# 9A.3.2 Steam Tunnel Barrier Exception

The steam tunnel in the Reactor Building opens into the Turbine Building without a barrier wall to allow venting of steam to the Turbine Building in the event of a major steam line leak in the steam tunnel within the Reactor Building. All openings in the steam tunnel are protected by either fire dampers or doors, including the walls, floors, and ceilings. An automatic, open-head water spray system is provided to serve as a water curtain fire barrier between the Turbine Building and Reactor Building portions of the steam tunnel.

# 9A.3.3 Exceptions to Separation Criteria

A specific analysis is prepared for each fire area in the containment and Main Control Room that contains redundant systems of safety-related equipment or electrical cables. This analysis confirms that adequate protection has been provided by means of separation by distance, physical barriers, electrical isolation, electrical circuit characteristics, or adequate backup systems. The analyses are in Section 9A.6, Special Cases.

#### 9A.3.4 Exceptions to Penetration Requirements

The Drywell Inerting System supply ductwork (piping) for the wetwell and the drywell passes through a fire barrier but does not have fire dampers. These consist of two supply lines (each 350 mm (14 in.) nominal diameter) and two exhaust lines (one 350 mm (14 in.) nominal diameter and one 400 mm (16 in.) nominal diameter). There are two containment isolation valves for each supply and exhaust piping penetration. The isolation valves are normally closed except during plant outage periods, when smoke removal could be accomplished without interruption if a fire occurs.

#### 9A.3.5 Wall Deviations

The wall descriptions below represent anticipated deviations from tested and approved 3-hr, fireresistive assemblies. The designs were previously submitted and approved in the General Electric Standard Safety Analysis Report II Standard Safety Analysis Report.

The Type 1 wall design exceeds the design of the tested and approved assembly from which it was adapted. The Type 2 assembly requires a UL test.

Type 1 wall—The Type 1 wall is designed with 0.15-meter (6-in) metal studs at 0.30-meter (12-in) on center (seismic design) with three layers of 0.016-meter (5/8-in) fire code gypsum board on each side of the studs. The design is adapted from International Conference of Building Officials 1495 for a 3-hour partition. The only deviation from the standard is that the gage thickness of the structural members has been increased to meet higher seismic requirements.

Type 2 wall—The Type 2 wall is a variation of Type 1 with 0.15-meter (6-in) metal studs at 0.30-meter (12-in) on center between 0.15-meter (6-in) steel, wide-flange columns at 1.22-meter (4-ft) on center. Three layers of 0.016-meter (5/8-in) fire code gypsum board line one side while 0.013-meter (1/2-in) thick steel plate for bullet resistance and two layers of 0.016-meter (5/8-in) fire code gypsum board line the other side.

### 9A.3.6 Door Deviations

Certain doors throughout the facility have a multi-purpose function such as fire, tornado, pressure, missile, seismic, water tight, or air tight or a combination of functions. Where possible, these doors are rated or labeled doors and are identified as rated doors.

When other criteria require the manufacturer to design the door for some other purpose, the door is identified as equivalent to a fire rated door. The doors, except for the Reactor Building equipment access door, are required to have a UL or FM label. Where the door is not constructed as a fire door, such as a containment personnel airlock, it is identified by its main function.

The use of 1.5-hour fire rated elevator doors in 3-hour fire-rated barriers does not compromise the fire barrier. Rather, section 6-1.2.2 of NFPA 804-1995 specifically allows 1.5-hour fire-rated doors in elevator shafts. No other applicable codes (IBC, NFPA 80, NFPA 101, NFPA 252, or ASME A17.1) require elevator doors to have a fire rating of more than 1.5 hours. None of the applicable codes address 3-hour fire-rated elevator shafts. It is not unusual for a door in a fire-rated wall to have a lower fire rating than the applicable fire wall, because the area on both sides of the door is kept free of combustible material to ensure use of the door. Personnel evacuating from a fire are warned by signage at each elevator to use stairs (protected by 3-hour firewalls and doors) and not elevators during a fire.

# 9A.3.7 Basemats

In general, concrete basemats are not required to be fire-rated because of the lack of any fire hazard in the ground beneath the basemats. The substantial thickness of concrete basemats would provide a large fire rating, if so required.

### 9A.3.8 Smoke Removal

See Subsection 9.5.1.11 for details of smoke removal provisions in buildings containing safetyrelated equipment. In general, smoke, heat, and products of combustion can be exhausted from a fire area by operation of the HVAC system in the purge or exhaust mode, once the fire has been extinguished by the fire protection system.

#### 9A.4 FIRE HAZARD AND SAFE SHUTDOWN ANALYSIS SUMMARY

For fire hazard and safe shutdown analysis for each individual fire area (assuming that automatic and manual fire suppression equipment does not function), see Tables 9A.5-1 through 9A.5-7.

#### 9A.4.1 Reactor Building

As shown on the fire zone drawings (Figures 9A.2-1 through 9A.2-11), with the exception of the Drywell/Containment and Main Steam Tunnel, the Reactor Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one Safety division. This arrangement allows any combination of the remaining three divisions to achieve and maintain safe shutdown.

Damage from a fire in the upper drywell is limited to one train of safe shutdown components because of the separation of redundant components, low combustible loading, and primary containment inerting during power operation: and therefore exceptions are justified. Redundant valves are spatially separated and are designed to fail as-is on loss of actuation power.

During plant shutdown, reactor cooling is provided by either the Reactor Water Cleanup/Shutdown Cooling system (RWCU/SDC) or the Fuel and Auxiliary Pools Cooling System (FAPCS). A fire in the lower drywell, could affect the operation of the RWCU/SDC, but not the FAPCS system to maintain core cooling. A fire in the upper drywell does not prevent either the RWCU/SDC or the FAPCS from providing core cooling through the feedwater lines. A fire in the wetwell does not prevent either the RWCU/SDC or FAPCS from providing core cooling. The redundant RWCU/SDC, FAPCS, and Reactor Component Cooling Water System (RCCWS) pumps are powered from separate diesel generator backed electrical load groups.

A fire within the containment does not prevent the FAPCS from providing spent fuel pool cooling. The fire protection system can be used through a cross-connect to provide makeup water to the FAPCS.

Damage from a fire in the lower drywell is also limited to one train of safe shutdown components because of the separation of redundant components, low combustible loading, and primary containment inerting during power operation; and therefore exceptions are justified. Redundant valves are spatially separated and are designed to fail safe on loss of actuation power. Although fire damage may result to both Control Rod Drive (CRD) system and Hydraulic Control Unit (HCU) components from a postulated fire within the lower drywell during a plant outage, there would be no effect to plant safe shutdown because all control rods would already have been inserted into the reactor vessel at the onset of the outage and prior to removing the inerting environment. Further backup of reactor scram capability and maintenance of safe shutdown can be provided by other systems (such as Standby Liquid Control) that are located in other fire areas of the plant.

No additional means of fire detection or suppression is provided for the Isolation Condenser (IC), Passive Containment Cooling System (PCCS), Buffer, Fuel Storage, Dryer/Separator Storage, Reactor Well, Suppression, and IC/PCC Expansion Pools which are normally filled with water.

Access to the Steam Tunnel is provided by an opening between the Reactor and Turbine Buildings, and is protected by an open head spray water curtain and by a Class A shielded door from the RB.

A preaction sprinkler system is provided throughout the CRD pump room to provide personnel protection, allow egress, and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Seismic design of the fire suppression system piping;
- Safe shutdown components located in the primary containment are normally designed to operate in 100% relative humidity environments;
- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant plant equipment such as CRD pumps;
- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of standpipes in the RB;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights;
- Provisions for curbs around open hatches; and
- Use of watertight doors, where required, to protect equipment.

Post-fire recovery for a design basis fire contained to a single RB fire area would involve all the components (restoration and replenishment of fire protection equipment; forensic investigation; overhaul and salvage; demolition; reconstruction to original design; and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the RB not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single RB fire area is considered better than currently operating nuclear plants.

Fire protection within the RB is not affected by naturally occurring hazards due to the following reasons:

• Fire barriers are an integral part of the RB, designed and installed to withstand a Safe Shutdown Earthquake (SSE);

- Fire suppression system piping in the RB is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the RB is seismically mounted to not collapse;
- Repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares; and
- Protection of the fire protection system in the RB from design-basis storms, tornados, and floods is provided by the RB structure itself.

# 9A.4.2 Fuel Building

As shown on the fire zone drawings (Figures 9A.2-1 through 9A.2-8 and 9A.2-10), the Fuel Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. While the Fuel Building does contain safety-related or safe shutdown components, a fire in the Fuel Building does not affect any of the four divisions used to achieve and maintain safe shutdown.

No additional means of fire detection or suppression is provided for the Spent Fuel Pool which is normally filled with water.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of standpipes in the Fuel Building;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Fuel Building fire area would involve all the components (restoration and replenishment of fire protection equipment; forensic investigation; overhaul and salvage; demolition; reconstruction to original design; and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Fuel Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Fuel Building fire area is considered better than currently operating nuclear plants.

Fire protection within the Fuel Building is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Fuel Building, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Fuel Building is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the Fuel Building is seismically mounted to not collapse;
- Repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares; and
- Protection of the fire protection system in the Fuel Building from design-basis storms, tornados, and floods is provided by the Fuel Building structure itself.

#### 9A.4.3 Control Building

As shown on the fire zone drawings (Figures 9A.2-2 through 9A.2-5 and 9A.2-11), with the exception of the Main Control Room, the Control Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one Safety division. This arrangement allows any combination of the remaining three divisions to achieve and maintain safe shutdown.

The nonsafety-related MCR HVAC has redundant air handling units, but uses common ductwork. Where the common ductwork for one air handling unit could be exposed to fire involving the other redundant air handling unit, the HVAC ductwork is wrapped or encapsulated in 3-hour fire rated material.

Operators can evacuate the Main Control Room after scramming the reactor. The Safety System and Logic Control (SSLC) automatically actuates the Safety systems. The postulated fire assumes loss of all component functions within the Main Control Room, and spurious actuations are considered in the analysis. In order to cool the plant down, the operators can control the nonsafety-related systems from either Remote Shutdown System (RSS) panel, located in separate fire areas within the Reactor Building.

There are very few cable trays in the Main Control Room Complex. Cable access is through the floor from the divisional rooms below or overhead from the N-DCIS rooms above, and consists of power cables in flexible metallic or rigid steel conduit, fiber optic cables for the multiplexed control and instrumentation cables, and hard-wired control cables. There is a raised computer floor to allow distribution of the cables via conduit (flex or rigid) or cable pathways. There is a suspended ceiling; only cables associated with nonsafety-related lighting, the fire alarm system, and communication are routed above the false ceiling. These cables are also in conduit.

Paper within the Control Room Complex is required to be stored in approved containers (cabinets, file cabinets, waste baskets) except when in use.

Manual water spray systems are provided internal to each of the charcoal filters, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing safety-related components to avoid spray water damage to electrical components;
- Seismic design of hose stations in the Control Building. The standpipes are located in external chases;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Control Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in safety-related and nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Control Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Control Building fire area is considered better than currently operating nuclear plants.

Fire protection within the Control Building is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Control Building, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Control Building is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the Control Building is seismically mounted to not collapse;
- Repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares; and
- Protection of the fire protection system in the Control Building from design-basis storms, tornados, and floods is provided by the Control Building structure itself.

#### 9A.4.4 Turbine Building

As shown on the fire zone drawings (Figures 9A.2-12 through 9A.2-19), the Turbine Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage. While the Turbine Building does contain safety-related and safe shutdown components as described in Table 9A.6-1, a fire in the Turbine Building does not affect the ability to achieve and maintain safe shutdown.

Curbs are provided at doorways and around equipment containing significant amount of oil to prevent the spread of flammable liquids.

An automatic deluge system is provided in the open steam tunnel, as a water curtain to provide the separation between Reactor and Turbine Buildings equivalent to a 3-hour fire-rated concrete barrier, and to limit the spread of the fire.

A wet-pipe sprinkler system is provided throughout the areas below the turbine that could be exposed to spreading oil, to provide personnel protection, allow egress, and limit the spread of the fire.

Preaction sprinkler systems are provided throughout the feedwater pump room and on the steam turbine bearings, to provide personnel protection, allow egress, and limit the spread of the fire.

A dry-pipe sprinkler system is provided throughout the main equipment access bay, to provide personnel protection, allow egress, and limit the spread of the fire.

Dry-pilot deluge systems are provided on the turbine hydraulic control fluid reservoir skid and seal oil units, to provide property protection and limit the spread of the fire.

A foam deluge system is provided throughout the lube oil tank room, to provide property protection and limit the spread of the fire.

Manual water spray systems are provided internal to each of the off-gas charcoal adsorbers, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as turbine bearings;
- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Turbine Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the

additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Turbine Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Turbine Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Turbine Building:

- Fire barriers are an integral part of the Turbine Building, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the Turbine Building is designed and installed to meet NFPA 13 (Table 9A.2-1) seismic requirements; and
- Protection of the fire protection system in the Turbine Building from design-basis storms, tornados, and floods is provided by the Turbine Building structure itself.

### 9A.4.5 Radwaste Building

As shown on the fire zone drawings (Figures 9A.2-20 through 9A.2-24), the Radwaste Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage. The Radwaste Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Radwaste Building does not affect any equipment required to achieve and maintain safe shutdown.

A wet-pipe sprinkler system is provided throughout the radwaste handling portion of the Radwaste Building, to provide personnel protection, allow egress, and limit the spread of the fire.

A manual water spray system is provided internal to the charcoal filter, to provide property protection and limit the spread of the fire.

Although the Radwaste Building contains radiological materials, fire within any given fire area does not create a radiological release in excess of 10 CFR 20 limits.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Radwaste Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of

restored systems to original requirements) typical of a major industrial fire, as well as the additional radiological, security access, and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Radwaste Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Radwaste Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Radwaste Building:

- Fire barriers are an integral part of the Radwaste Building, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the Radwaste Building is designed and installed to meet NFPA 13 seismic requirements (Table 9A.2-1); and
- Protection of the fire protection system in the Radwaste Building from design-basis storms, tornados, and floods is provided by the Radwaste Building structure itself.

### 9A.4.6 Electrical Building

As shown on the fire zone drawings (Figures 9A.2-25 through 9A.2-32), the Electrical Building is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. The Electrical Building does not contain safety-related or safe shutdown components as described in Table 9A6-1. Therefore, a fire in the Electrical Building does not affect the ability to achieve and maintain safe shutdown.

A fire within any of the fire areas associated with either standby diesel generator (SDG) is assumed to damage all components within the fire area resulting in loss of all function and consequential damage, including a spurious operation of any one component. Damage to the components in the fire area only affects the operation of one of the two nonsafety-related SDGs and does not affect the passive safe shutdown components or redundant nonsafety-related SDG or train of active components from performing their functions.

Curbs are provided at doorways and around equipment containing significant amount of oil, to prevent the spread of flammable liquids.

There are cable trays in the Technical Support Center. Cables consist of power cables in flexible metallic rigid steel conduit, fiber optic cables for the multiplexed information and instrumentation cables, and a few hard-wired control cables. There is a raised computer floor to allow distribution of the few cables via conduit (flex or rigid) or cable pathways. There is a suspended ceiling but only cables associated with nonsafety-related lighting, the fire alarm system, and communication. These cables are also in conduit.

Paper within the Technical Support Center is required to be stored in approved containers (cabinets, file cabinets, waste baskets) except when in use.

A wet-pipe sprinkler system is provided throughout the Technical Support Center Complex to provide personnel protection, allow egress, and limit the spread of the fire.

Wet-pipe sprinkler systems are provided throughout each of the cable spreading rooms, to provide personnel protection, allow egress, and limit the spread of the fire.

Preaction foam sprinkler systems are provided throughout each of the SDG rooms, to provide personnel protection, allow egress, and limit the spread of the fire.

Foam deluge systems are provided throughout each of the day tank rooms, to provide property protection and limit the spread of the fire.

Manual water spray systems are provided internal to each of the charcoal filters, to provide property protection and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as diesel generators;
- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Post-fire recovery for a design basis fire contained to a single Electrical Building fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The inclusion of equipment access paths and hatches for all areas of the Electrical Building not only facilitates original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Electrical Building fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Electrical Building:

- Fire barriers are an integral part of the Electrical Building, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the Electrical Building is designed and installed to meet NFPA 13 seismic requirements (Table 9A.2-1); and

• Protection of the fire protection system in the Electrical Building from design-basis storms, tornados, and floods is provided by the Electrical Building structure itself.

#### 9A.4.7 Yard

The yard loop provides fire water to all external portions of the plant, as well as various buildings in the plant. Only those portions of the Yard containing equipment associated with Turbine and Electrical Buildings are included at this time; the Combined License (COL) applicant shall include fire zone drawings for those portions of the Yard except for that associated with Turbine and Electrical Building equipment (COL 9A.7-1-A).

The Fire Pump Enclosure and Ancillary Diesel Building are supplied firewater by the primary fire protection system; however these building are only identified on the Yard drawing. Therefore, the FHA Tables and discussion are included in this Subsection.

This FHA includes an evaluation of the Pump House, Guard House, Hot Machine Shop, Service Water/Water Treatment Building (see Subsection 9A.4.9), Cold Machine Shop, Warehouse, Training Center, Service Building (see Subsection 9A.4.8), Fire Pump Enclosure (see Subsection 9A.4.11), Ancillary Diesel Building (see subsection 9A.4.10), Auxiliary Boiler Building, and Administration Building. A more detailed evaluation of the Service Water/Water Treatment Building, Service Building, and Yard will be added during the Combined Construction and Operating License (COL) application for a specific site (COL 9A.7-2-A).

As shown on Turbine Building and Electrical Building fire protection zone drawings (Figures 9A.2-13 and 9A.2-25) as well as Site fire protection zone plot plan (Figure 9A.2-33), the significant outdoor fire hazards are separated by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related equipment. The Yard does not contain any safety-related or safe shutdown components, and as such, a fire in the Yard does not affect any of the four divisions used to achieve and maintain safe shutdown.

Foam deluge systems are provided on each fuel oil storage tank and the lube oil storage area, to provide property protection and limit the spread of fire.

Automatic deluge systems are provided on each Main, Unit Auxiliary, and Reserve Auxiliary transformer, to provide property protection and limit the spread of fire.

Wet-pipe sprinkler systems are provided throughout each of the cable tunnels, and the Administration Building, to provide personnel and property protection, allow egress, and limit the spread of the fire.

A dry-pipe sprinkler system is provided throughout the Warehouse, to provide personnel and property protection, allow egress, and limit the spread of the fire.

A preaction sprinkler system is provided throughout the Training Center, to provide personnel and property protection, allow egress, and limit the spread of the fire.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as computer simulators;
- Provision of adequately sized flood containment boundaries to handle the suppression flow and prevent groundwater contamination; and
- Installation of electrical equipment above expected flood level heights.

Post-fire recovery for a design basis fire contained to a single Yard fire area would involve all the components (restoration and replenishment of fire protection equipment, forensic investigation, overhaul and salvage, demolition, reconstruction to original design, and testing of restored systems to original requirements) typical of a major industrial fire, as well as the additional security access and quality assurance controls unique to a nuclear plant. However, the resources needed to perform this restoration should be no more than that required for a major plant refueling outage. Redundancy provided in nonsafety-related systems allows quicker restoration of plant operation, even if at a reduced power level. The outdoor nature of equipment in the Yard facilitates not only original plant construction but also major equipment replacement. Due to these factors, the potential for post-fire recovery for a design basis fire contained to a single Yard fire area is considered better than currently operating nuclear plants.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection for the Yard:

- Fire barriers are an integral part of the buildings, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Outdoor fire barriers are designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the buildings and in the Yard are designed and installed to meet NFPA 13 seismic requirements;
- Protection of the fire protection system in the buildings from design-basis storms, tornados, and floods are provided by the building structure itself;
- Outdoor electrical components in the fire protection system are weatherproof or protected against moisture intrusion;
- Dry-pipe systems are used for all outdoor fire protection piping;
- Outdoor piping, conduit, and components in the fire protection system have the required corrosion protection coatings;
- All outdoor fire protection piping and conduit are electrically grounded; and
- A Fire area separation is provided between Yard Buildings and the Nuclear and Turbine Islands in accordance with NFPA 804 Paragraph 8.9 as expanded on in NFPA 80A Section A 3.2.2 ("Recommended Practice for Protection of Buildings from Exterior Fire Exposures").

#### 9A.4.8 Service Building

The Service Building does not contain any system or function that could affect the operation or shutdown of the reactor, nor does it contain any significant hazards. The Service Building does not contain any safety-related or safe shutdown components, and as such, a fire in the Service Building does not affect any of the four divisions used to achieve and maintain safe shutdown.

The basic fire protection features are presented in a method similar to that used for other buildings.

The Service Building is a Seismic Category II structure. It has controlled access tunnels to the Reactor Building, the Turbine Building, the Radwaste Building, and the Electrical Building. The exterior wall facing these buildings is a 3-hour barrier constructed of fire-resistive concrete. The controlled access doors in this wall are rated 3-hour fire resistive, Class A doors. Other exterior walls are constructed of concrete, or of gypsum board mounted on metal studs. The stairwells are required for personnel access and egress in the event of a fire and are protected with minimum 2-hour barriers in accordance with the Life Safety Code, NFPA 101.

Due to possible variations of the fire loading during operation, the facility is fully equipped with an automatic wet-pipe sprinkler system combined with standpipes, hose systems and portable extinguishers throughout its interior. The wet-pipe sprinkler system is designed for Light Hazard Occupancy,  $4.2 \text{ L/min/m}^2$  (0.10 gpm/ft<sup>2</sup>).

Fire detection is provided throughout the Service Building with the use of Class A supervised product-of-combustion detection systems. Alarms, both trouble and fire, report to the Main Control Room. Fire alarms are sounded throughout the Service Building. Manual fire alarm pull boxes are located at each fire hose and extinguisher stations.

Class ABC dry chemical portable fire extinguishers are provided on each floor of the facility, located at or near the hose stations and alarm pull boxes. Additional portable fire extinguishers are provided in various locations for convenience, or where increased human activity is anticipated.

Wall, floor, and ceiling penetrations for piping, HVAC, and cable trays are sealed where needed for HVAC control. However, fire dampers or stops are provided only where required for personnel protection, as the nature of the activities within the building, coupled with the complete sprinkler coverage, precludes the need to provide multiple fire areas within the Service Building.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the Service Building:

- Fire barriers are an integral part of the Service Building, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the Service Building is designed and installed to meet NFPA 13 seismic requirements (Table 9A.2-1); and
- Protection of the fire protection system in the Service Building from design-basis storms, tornados, and floods is provided by the Service Building structure itself.

# 9A.4.9 Service Water/Water Treatment Building

The Service Water/Water Treatment Building (SF/WT) does not contain any system or function that could affect the operation or shutdown of the reactor, nor does it contain any significant hazards. The SF/WT does not contain any safety-related or safe shutdown components, and as such, a fire in the SF/WT does not affect any of the four divisions used to achieve and maintain safe shutdown. However, the SF/WT is subdivided by 3-hour fire-rated concrete barriers to inhibit fire spread and to limit fire damage to not more than one redundant train of nonsafety-related Service Water equipment. The basic fire protection features are presented in a method similar to that used for other buildings.

The SF/WT is a non-seismic structure, and may be attached to the Cooling Towers. None of the walls or floors are required to be fire-rated, except where separating redundant components and per Life Safety Code, NFPA 101. Stairwells are required for personnel access and egress in the event of a fire and therefore are protected with minimum 2-hour barriers in accordance with the Life Safety Code, NFPA 101.

Fire detection is provided throughout the SF/WT with the use of Class A supervised product-ofcombustion detection systems. Alarms, both trouble and fire, report to the Main Control Room.

Class ABC dry chemical portable fire extinguishers are provided on each floor of the facility, located at or near the hose stations and alarm pull boxes. Additional portable fire extinguishers are provided in various locations for convenience, or where increased human activity is anticipated.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Location of the manual suppression systems within stairwells and outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow; and
- Provisions for curbs around open hatches.

# 9A.4.10 Ancillary Diesel Building

The Ancillary Diesel Building (ADB) is a Seismic Category II structure that contains redundant Ancillary Diesel Generator equipment. This building does not contain any other systems or functions that could affect the operation or shutdown of the reactor. However, fuel oil storage

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tanks for the Ancillary Diesel Generators are located within the ADB. The ADB does not contain any safety-related components, and as such, a fire in the ADB does not affect any of the four divisions used to achieve and maintain safe shutdown for 72 hours following a design bases accident.

A fire within any of the fire areas associated with either ancillary diesel generator is assumed to damage all components within the fire area resulting in loss of all function and consequential damage, including a spurious operation of any one component. Damage to the components in the fire area only affects the operation of one of the two nonsafety-related ancillary diesel generators and does not affect the passive safe shutdown components or redundant nonsafety-related ancillary diesel generator or train of active components from performing their functions.

Curbs are provided at doorways and around equipment containing significant amount of oil, to prevent the spread of flammable liquids.

Preaction foam sprinkler systems are provided throughout each of the ancillary diesel generator rooms, to provide personnel protection, allow egress, and limit the spread of the fire. Foam deluge systems are provided throughout each of the fuel oil tank rooms, to provide property protection and limit the spread of the fire. The basic fire protection features are presented in a method similar to that used for other buildings.

The ADB is a completely separate Seismic Category II structure. The exterior walls of this building are 3-hour barriers constructed of fire-resistive concrete. The controlled access doors in these walls are rated 3-hour fire-resistive, Class A doors. Other walls are constructed of concrete, or of gypsum board mounted on metal studs. The ADB is a one-story building.

Fire detection is provided throughout the ADB. Alarms, both trouble and fire, report to the Main Control Room. Manual fire alarm pull boxes are located at building exits.

Class ABC dry chemical portable fire extinguishers are provided for the facility, located at or near the hose stations and alarm pull boxes. Additional portable fire extinguishers are provided in various locations for convenience, or where increased human activity is anticipated.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use the preaction type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as diesel generators;
- Location of the manual suppression systems outside of rooms containing electrical components to avoid spray water damage to electrical components;
- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

The following features minimize or mitigate the effect of naturally occurring hazards on fire protection within the ADB:

- Fire barriers are an integral part of the ADB, designed and installed as required by the IBC for applicable seismic, wind, and hydrodynamic conditions;
- Fire suppression system piping in the ADB is designed and installed to meet NFPA 13 seismic requirements Table 9A.2-1); and
- Protection of the fire protection system in the ADB from design-basis storms, tornados, and floods is provided by the ADB structure itself.

The ADB HVAC System provides smoke removal for the Ancillary Diesel Building. The smoke removal mode of the ADB HVAC System provides smoke removal from the ADB engine rooms and ADB fuel oil storage tank rooms.

#### 9A.4.11 Fire Pump Enclosure

The Fire Pump Enclosure is a Seismic Category I structure that contains the primary fire pumps and fuel oil tank. The fire pumps have RTNSS functions. This building does not contain any other systems or functions that could affect the operation or shutdown of the reactor, nor does it contain any significant hazards. However, fuel oil tanks for the Seismic Category I diesel fire pump are located within the Fire Pump Enclosure. The Fire Pump Enclosure does not contain any safety-related components, and as such, a fire in the Fire Pump Enclosure does not affect any of the four divisions used to bring the reactor to stable shutdown. However, the fire pumps are credited for maintaining stable shutdown and extinguishing fires.

A fire within any of the fire areas associated with either fire pump is assumed to damage all components within the fire area resulting in loss of all function and consequential damage, including a spurious operation of any one component. Damage to the components in the fire area only affects the operation of one of the two nonsafety-related fire pumps and does not affect the passive safe shutdown components or redundant nonsafety-related fire pump or train of active components from performing their functions.

Curbs are provided at doorways and around equipment containing significant amount of oil, to prevent the spread of flammable liquids.

Dry pilot foam water sprinkler systems are provided throughout each of the Fire Pump Enclosure rooms, to provide personnel protection, allow egress, and limit the spread of the fire. The basic fire protection features are presented in a method similar to that used for other buildings.

The Fire Pump Enclosure is a completely separate Seismic Category I structure. The exterior walls of this building are 3-hour barrier constructed of fire-resistive concrete. The controlled access doors in this wall are rated 3-hour fire-resistive, Class A doors. The Fire Pump Enclosure is a one-story building.

To prevent damage from inadvertent or careless operation, as well as rupture of the fire suppression system, the following design features are included:

- Use of dry pilot foam type sprinkler systems, supervised with pressurized air and requiring multiple indications of fire prior to discharging water from sprinkler heads, over redundant or critical plant equipment such as fire pumps;
- Location of the manual suppression systems outside of rooms containing electrical components to avoid spray water damage to electrical components;

- Provision of adequately sized floor drains, curbs, equipment bases, and flood containment boundaries to handle the suppression flow;
- Installation of electrical equipment above expected flood level heights; and
- Provisions for curbs around open hatches.

Fire protection within the Fire Pump Enclosure is not affected by naturally occurring hazards due to the following reasons:

- Fire barriers are an integral part of the Fire Pump Enclosure, designed and installed to withstand a Safe Shutdown Earthquake (SSE);
- Fire suppression system piping in the Fire Pump Enclosure is designed and installed to withstand an SSE and remain operational;
- Fire detection and alarm in the Fire Pump Enclosure is seismically mounted to not collapse;
- Repair or restoration of fire detection and alarm would only require replacement of individual failed components from stored spares; and
- Protection of the fire protection system in the Fire Pump Enclosure from design-basis storms, tornados, and floods is provided by the Fire Pump Enclosure structure itself.

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### 9A.5 FIRE PROTECTION ANALYSES BY ROOM OR FIRE ZONE

Cumulative damage (property loss) and restoration from fire initiation and suppression activities, but excluding replacement power costs, is subjectively categorized as follows:

- Negligible: Less than \$5,000
- Minor: Less than \$50,000
- Moderate: Less than \$2,000,000 (typical insurance deductible)
- Significant: Greater than \$2,000,000

Cumulative plant operational effects from fire initiation and suppression activities are categorized as follows:

- None: No effect to any power production or plant equipment
- Power Reduction: Event could require or cause reduction in turbine output, due to reduced steam flow rate resulting from loss of some equipment
- Turbine Trip: Event could require or cause stopping turbine
- LOPP: Event could require or cause loss of all on-site power sources
- Reactor Scram: Event could require or cause operators to scram the reactor, achieve hot shutdown or stable shutdown condition, and continue to cold shutdown condition if necessary

The first four digits of a five-digit room number contain the following information: XXXX

6 6	Ŭ
Structure: $1 = \text{Reactor Bldg}$	I I I I I I I I I I I I I I I I I I I
2 = Fuel Bldg	
3 = Control Bldg	
4 = Turbine Bldg	Floor Level within Bldg
5 = Electrical Bldg	
6 = Radwaste Bldg	Assigned to:
, i i i i i i i i i i i i i i i i i i i	1 = Safety-Related Div 1
7, 8, 9, 10 etc. = Other Bldg	2 = Safety-Related Div 2
	3 = Safety-Related Div 3
Fire area numbers correspond to the	4 = Safety-Related Div 4
lowest major room within the fire area	5
5	6 = Nonsafety-Related redundant B
	7 = Areas with multiple divisions or trains
	8, 0 = other room types
	9 = Nonsafety-Related vertical chases

### P = pool

### 9A.5.1 Reactor Building

See Table 9A.5-1 for detailed fire hazards analysis of each fire area within the RB.

See Figures 9A.2-1 through 9A.2-11 for RB fire zone drawings.

9A.5-1

#### 9A.5.2 Fuel Building

See Table 9A.5-2 for detailed fire hazards analysis of each fire area within the FB.

See Figures 9A.2-1 through 9A.2-8 and Figure 9A.2-10 for FB fire zone drawings.

#### 9A.5.3 Control Building

See Table 9A.5-3 for detailed fire hazards analysis of each fire area within the Control Building. See Figures 9A.2-2 through 9A.2-5 and Figure 9A.2-11 for Control Building fire zone drawings.

#### 9A.5.4 Turbine Building

See Table 9A.5-4 for detailed fire hazards analysis of each fire area within the Turbine Building.

See Figures 9A.2-12 through 9A.2-19 for Turbine Building fire drawings

#### 9A.5.5 Radwaste Building

See Table 9A.5-5 for detailed fire hazards analysis of each fire area within the Radwaste Building.

See Figures 9A.2-20 through 9A.2-24 for Radwaste Building fire drawings.

### 9A.5.6 Electrical Building

See Table 9A.5-6 for detailed fire hazards analysis of each fire area within the Electrical Building.

See Figures 9A.2-25 through 9A.2-32 for Electrical Building fire drawings.

#### 9A.5.7 Yard

See Table 9A.5-7 for detailed fire hazards analysis of each fire area for portions of the Yard. The remainder of the Yard is site specific and is designed by the COL applicant. The applicant will provide additional information (Reference Subsection 9A.4.7).

#### 9A.5.8 Service Building

The Service Building is protected in accordance with applicable NFPA codes. The Service Building is site specific and is designed by the COL applicant. The applicant will provide additional information (Reference Subsection 9A.4.7).

#### 9A.5.9 Service Water/Water Treatment Building

The SF/WT building is protected in accordance with applicable NFPA codes. This building contains redundant Service Water equipment. The SF/WT is site specific and is designed by the COL applicant. The applicant will provide additional information (Reference Subsection 9A.4.7).

#### 9A.5.10 Ancillary Diesel Building

See Table 9A.5-7 for detailed fire hazards analysis of each fire area within the ADB.

See Figures 9A.2-33 for ADB location.

### 9A.5.11 Fire Pump Enclosure

See Table 9A.5-7 for detailed fire hazards analysis of each fire area within the Fire Pump Enclosure.

See Figures 9A.2-33 for Fire Pump Enclosure location

### **Reactor Building**

	Fire Area:	F1104	Description:	Elevator A				
		Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-1	1		Electrical classification:			
		9A.2-2		Safety-r	elated divisional equipment or cables:			
		9A.2-3	Nonsafety-related redundant trains or equipment or cables: none					
		9A.2-4	Surround	ed by fire barriers rated a				
		9A.2-5			t: basemat (non-rated); elevator do	ors (1.5 hr rated)		
				x				
			-					
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500 -6400	1104	Cable insulation	Area-wide ionization	Manual pulls (outside Elev at each landing)	CO2 fire extinguisher (outside room)	Hose racks (in nearby stairwell)		
-1000 4650		Electrical equipment Class IIIB lubricants						
9060	1291				ABC fire extinguishers			
					(outside Elev			
					at each landing)			
P Radiol	lant operation: ogical release: Life safety:	None None, no radiological ma Travel distance limits to Access via stairwells and	EXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP e function, impact of design basis fire Complete burnout of all equipmen Fire Area affects no safety-related divisions and both redundant trai operable.	on safe shutdown: nt and cables within this d equipment; all safety		

		a: F1105 Reactor DCD Fig: 9A.2-1 9A.2-2 9A.2-3 9A.2-4 9A.2-5		IBC; Reg Guide 1.189; B Safety-r Nonsafety-related red ed by fire barriers rated a	NFPA 10, 14, 72, 101, 804; ASME uilding code occupancy classification Electrical classification elated divisional equipment or cables dundant trains or equipment or cables tt: <b>3 hours</b> tt: <b>basemat (non-rated); elevator d</b>	1:       F-1         1:       none         5:       none         5:       none
Consisting of	of the followi		Fire De	tection	Fire Suppre	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-11500 -6400 -1000 4650 9060	1105 1292	Class IIIB lubricants Cable insulation Electrical equipment	Area-wide ionization	Manual pulls (outside Elev at each landing)	CO2 fire extinguisher (outside room) ABC fire extinguishers (outside Elev at each landing)	Hose racks (in nearby stairwell)
< 700				load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm Fire Area affects no safety-relat divisions and both redundant tra operable.	re on safe shutdown: ent and cables within the ed equipment; all safety

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Table 9A.5-1
<b>Reactor Building (Cont.)</b>

-				Dunuing (Cont	,		
	Fire Area:	F1110	Description:	HCU A			
	Building:	Reactor			189; NFPA 10, 14, 72, 101, 804		
	e	DCD Fig:			Building code occupancy classification:	F-1	
		9A.2-1	1		Electrical classification:		
		9A.2-2			Safety-related divisional equipment or cables:		
		9A.2-3	Nonsafety-related redundant trains or equipment or cables: A				
		9A.2-10	Surrounded by fire barriers rated at: 3 hours				
		9A.2-11			basemat (non-rated)		
~		_					
0	of the followin		Fire Detec		Fire Suppression	<b>D</b> 1	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500	1110	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire	
-9100				(outside stairwell	(in nearby stairwell)	extinguishers	
-6400		-		at each landing)			
-1000	1312						
		< 700	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual FP equipment of	does not	
		700	Unsprinklered combustible		function, impact of design basis fire on safe sh		
			1 I	,	Complete burnout of all equipment and cab		
Assuming of	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upor	n:	results in loss of only redundant train A and		
		Reactor scram			shutdown equipment and circuits, as well as		
Radio	logical release:	Contained within buildin	g		Division I and II HCU solenoid circuits; if H		
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		for reactor scram, either FMCRD portion o	f CRD system or SLC	
Manu	Manual firefighting: Access via stairwells				system can be used to scram reactor (compo	•	
	Property loss:	Moderate			either are located outside this Fire Area); fo		
					remaining three divisions of safe shutdown a	and redundant train B	
					are unaffected by fire and are operable. Au		
					scheme (any two out of four redundant signs	8	
						· •	

	Fire Area:	F1120	Description:	HCU C				
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1	1.189; NFPA 10, 14, 72, 101, 804			
		DCD Fig:	-		Building code occupancy classification:	F-1		
		9A.2-1			Electrical classification: none			
		9A.2-2			Safety-related divisional equipment or cables:	2		
		9A.2-3		Non	safety-related redundant trains or equipment or cables:	В		
			Surrounded by fi	re barriers rated at:	3 hours			
				Except:	basemat (non-rated)			
	C (1 C 11 )	D	<b>D</b> ' <b>D</b> (					
EL	of the followin Room #	g Rooms: Potential Combustibles	Fire Detect Primary	Backup	Fire Suppression Primary	Backup		
EL	KOOIII #	Potential Combustibles	Phillary	Баскир	Plinaly	Баскир		
11500	1107	Class A combustibles	Area-wide ionization	Manual nulla	Hose racks	ABC fire		
-11500	1107		Area-wide ionization	Manual pulls				
11500	1120	Class IIIB lubricants Cable insulation		(outside stairwell	(in nearby stairwell)	extinguishers		
<u>-11500</u> -9100	1120	Cable insulation		at each landing)				
-9100								
-0400	1322	•						
-1000	1322							
						<u> </u>		
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP equipment does no	t		
		700			function, impact of design basis fire on safe shutdown			
			-		Complete burnout of all equipment and cables with	in this Fire		
		talled fire extinguishing equ	uipment, impact of fire upor	n:	Area results in loss of only redundant train B and l	<b>Division II safe</b>		
Р	lant operation:	Reactor scram			shutdown equipment and circuits, as well as loss of	redundant		
Radiol	logical release:	Contained within buildin	g		Division I and II HCU solenoid circuits; if HCUs a	re unavailable		
	Life safety:	Travel distance limits to l	EXITs meet NFPA 101		for reactor scram, either FMCRD portion of CRD	system or SLC		
Manual firefighting: Access via stairwells					system can be used to scram reactor (components a	nd circuits for		
	Property loss: Moderate				either are located outside this Fire Area); for other			
					remaining three divisions of safe shutdown and red	undant train A		
					are unaffected by fire and are operable. Automatic			
					· · ·	•		
					scheme (any two out of four redundant signals) ren			

	Fire Area:	F1130	Description:	HCU B				
	Building:			s: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:				Building code occupancy classification	on: F-1		
		9A.2-1			Electrical classification	on: none		
		9A.2-2			Safety-related divisional equipment or cabl			
		9A.2-3	Nonsafety-related redundant trains or equipment or cables: A					
		9A.2-10	Surrounded by fire bar					
				Except:	basemat (non-rated)			
			J					
Consisting	of the followin		Fire Detection	1	Fire Suppressio	n		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1130	Cable insulation	Area-wide ionization	Manual	Hose racks	ABC fire		
-9100				pulls	(in nearby stairwell)	extinguishers		
-6400				(outside				
-1000	1332			stairwell				
		< 700	Anticipated combustible lo		Assuming automatic & manual FP equipme			
		700	Unsprinklered combustible	e load limit, N	function, impact of design basis fire on safe			
					Complete burnout of all equipment and			
			uipment, impact of fire upor	1:	Area results in loss of only redundant tra			
		Reactor scram			shutdown equipment and circuits, as well			
Kadiol		Contained within buildin Travel distance limits to			Division I and II HCU solenoid circuits;			
Manu	2	Access via stairwells	EALLS MEET NFFA IVI	for reactor scram, either FMCRD portion of CRD system or				
Iviallu	Property loss:				system can be used to scram reactor (con	-		
	1 10perty 1055.	inouri att		l	either are located outside this Fire Area) remaining three divisions of safe shutdow	•		
					are unaffected by fire and are operable.			
					scheme (any two out of four redundant s	e		
					ischeme (any two out of four redundant s	lignais, remains operable.		

	Fire Area:	F1140	Description:	HCU D				
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:			Building code occupancy classificatio	n: <b>F-1</b>		
		9A.2-1			Electrical classificatio			
		9A.2-2			Safety-related divisional equipment or cable			
		9A.2-3		•	related redundant trains or equipment or cable	es: <b>B</b>		
		9A.2-11	Surrounded by f	fire barriers rated at:				
				Except:	basemat (non-rated)			
Consisting	of the followin		Fire Detec	tion	Fire Suppression			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1140	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire		
-9100				(outside stairwell	(in nearby stairwell)	extinguishers		
-6400				at each landing)				
-1000	1342							
		< 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP equipment	does not		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire on safe sh	utdown:		
			_		Complete burnout of all equipment and cab			
			uipment, impact of fire upor	n:	results in loss of only redundant train B and	l Division IV safe		
		Reactor scram			shutdown equipment and circuits, as well as loss of redundant			
Radiol		Contained within buildin		Division I and II HCU solenoid circuits; if HCUs are unava				
		Travel distance limits to	EXITs meet NFPA 101		reactor scram, either FMCRD portion of CRD system or SLC			
Manual firefighting: Access via stairwells				can be used to scram reactor (components and circuits f				
	Property loss:	Moderate		located outside this Fire Area); for other systems, remaining th				
					divisions of safe shutdown and redundant t	•		
					fire and are operable. Automatic logic cont	ral schama (any two out a		
					four redundant signals) remains operable.	for scheme (any two out of		

	Fire Area:	F1150	Description.	NE quadrant				
	Building:		-	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
	DCD Fig:	Reactor	rippliedole codes.	Building code occupancy classification: F-1				
	9A.2-1	9A.2-6	1		Electrical classification			
	9A.2-2	9A.2-7		Safe	ety-related divisional equipment or cable			
	9A.2-3	9A.2-8			d redundant trains or equipment or cable			
	9A.2-4	9A.2-10	Surrounded by fire barriers rated at: <b>3 hours</b>					
	9A.2-5	9A.2-11	Surrounded o		basemat (non-rated); elevator doors	(1.5 hr rated)		
				-		· · · · ·		
	of the followin			Detection	Fire Suppressi			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1100	Electrical equipment	Area-wide	Manual pulls	Hose racks	CO2 fire extinguishers,		
		Class IIIB lubricants	ionization	(outside stairwell	(in nearby stairwells)	ABC fire extinguishers		
		Cable insulation		at each landing)				
	1150, 1151	Class IIIB lubricants				ABC fire extinguishers		
-6400	1250, 1293	Cable insulation						
-1000	1300, 1304,							
	1293							
4650	1400	Cable insulation						
	below floor							
	1293							
5050	1400	Cable insulation			CO2 fire extinguishers	Hose racks		
9060 13570	1500, 1293	Electrical equipment				(in nearby stairwells)		
17500 27000	1293							

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Table 9A.5-1				
<b>Reactor Building (Cont.)</b>				

		8 ( )	
Fire Area: F1150	) (continued)	Description: <b>NE quadrant</b>	
< 700 EL 4650 & below; < 1400 EL 50 700 EL 4650 & below; 1400 EL 505	-	ustible load, MJ/m2 ubustible load limit, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:
Assuming operation of installed fire exting Plant operation: React Radiological release: Conta Life safety: Trave Manual firefighting: Acces Property loss: Mode	tor scram ained within building el distance limits to EXITs meet N ss via stairwells		Complete burnout of all equipment and cables within this Fire Area results in loss of only Division I shutdown equipment and circuits, as well as loss of redundant train A; remaining three divisions of safe shutdown and redundant train B are unaffected by fire and are operable. Automatic logic control scheme (any two out of four redundant signals) remains operable. Both A and B nonsafety-related on-site power sources are unaffected by fire and are operable.

					·)				
	Fire Area:	F1152		Description: SE quadrant					
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804						
	DCD Fig:			Building code occupancy classification: F-1					
	9A.2-1	9A.2-6			Electrical classification:	none			
	9A.2-2	9A.2-7		3					
	9A.2-3	9A.2-8		Nonsafety-	related redundant trains or equipment or cables:	Α			
	9A.2-4	9A.2-10	Surrounded by fire ba	arriers rated at:	3 hours				
	9A.2-5		]		basemat (non-rated); elevator doors (1.5 hr	rated)			
Consisting	of the followin	g Rooms:	Fire Detectio	n	Fire Suppression				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-11500	1101, 1106	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire			
	1152	Cable insulation		(outside	(in nearby stairwells)	extinguishers			
	1153		Area-wide photoelectric			8			
-6400	1204, 1294		Area-wide ionization	at each					
	,			landing)					
-1000	1301, 1306,			8/					
	1294								
4650	1401	Cable insulation							
	below floor								
	1294								
5050	1401	Cable insulation	1		CO2 fire extinguishers	Hose racks			
9060	1501, 1294	Electrical equipment			6	(in nearby			
13570		1 .		T I		Ī			
	1294								
17500	1294								
27000									

Table 9A.5-1Reactor Building (Cont.)

			e (	,
Fire Area: F1152 (cor	tinued)	Description:	SE quadrant	
< 700 EL 4650 & below; < 1400 EL	5050 & above	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP equipment does not
700 EL 4650 & below; 1400 EL 5	050 & above	Unsprinklered combustible	load limit, MJ	function, impact of design basis fire on safe shutdown:
				Complete burnout of all equipment and cables within this Fire
Assuming operation of installed fire ex		1:	Area results in loss of only Division III shutdown equipment	
Plant operation: Reactor sc				and circuits, as well as loss of redundant train A; remaining
Radiological release: Contained	within building	g		three divisions of safe shutdown and redundant train B are
Life safety: Travel dist	ance limits to l	EXITs meet NFPA 101		unaffected by fire and are operable. Automatic logic control
Manual firefighting: Access via	stairwells			scheme (any two out of four redundant signals) remains
Property loss: Moderate				operable. Both A and B nonsafety-related on-site power
				sources are unaffected by fire and are operable.

	E. V	E11(0						
	Fire Area:			NW quadrant	100 NEDA 10 14 80 004 404	00.4		
Building: Reactor		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804						
DCD Fig:		1	Bui	lding code occupancy classification				
9A.2-1 9A.2-6					Electrical classification			
	9A.2-2	9A.2-7	Safety-related divisional equipment or cables: 4					
	9A.2-3	9A.2-8	No	nsafety-related redu	indant trains or equipment or cables	s: <b>B</b>		
	9A.2-4	9A.2-10	Surrounded by fi	re barriers rated at:	3 hours			
	9A.2-5	9A.2-11		Except:	basemat (non-rated)			
Consisting	of the followin	g Rooms:	Fire Detect	tion	Fire Suppres	ssion		
EL		Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1103	Electrical equipment	Area-wide ionization	Manual pulls	Hose racks	CO2 fire extinguishers,		
		Class IIIB lubricants		(outside	(in nearby stairwells)	ABC fire extinguishers		
		Cable insulation		stairwell		5		
	1160, 1161	Class IIIB lubricants		at each landing)		ABC fire extinguishers		
-6400	1260	Cable insulation		······································		8		
	1296							
-1000	1303, 1305,	1						
1000	1296							
4650	1403	Cable insulation						
1000	below floor	Custo moundion						
	1296							
5050	1403	Cable insulation	1		CO2 fire extinguishers	Hose racks		
9060		Electrical equipment			CO2 me extinguishers	(in nearby stairwells)		
13570	1303, 1290	Electrical equipment				(in near by stan wens)		
17500	1207							
27000	1296							
27000								

Fire Area	F1160 (continued)	Description:	NW quadrant	
		*	· · ·	
		Anticipated combustible lo		Assuming automatic & manual FP equipment does not
700 EL 4650 & below;	1400 EL 5050 & above	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire on safe shutdown:
		_		Complete burnout of all equipment and cables within this
Assuming operation of ins	talled fire extinguishing eq	uipment, impact of fire upon	1:	Fire Area results in loss of only Division 4 shutdown
Plant operation:	Reactor scram			equipment and circuits, as well as loss of redundant train
Radiological release:	Contained within buildin	g		B; remaining three divisions of safe shutdown and
Life safety:	Travel distance limits to	EXITs meet NFPA 101		redundant train A are unaffected by fire and are
Manual firefighting:	Access via stairwells			operable. Automatic logic control scheme (any two out of
Property loss:	Moderate			four redundant signals) remains operable. Both A and B
			-	nonsafety-related on-site power sources are unaffected by
				fire and are operable.

	<b>=</b> · ·	7144		~~~					
	Fire Area:			Description: SW quadrant					
Building: Reactor			Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804					
	DCD Fig:			Bui	lding code occupancy classification	n: <b>F-1</b>			
	9A.2-1	9A.2-6	Electrical classification: none						
	9A.2-2	9A.2-7		Safety-rel	ated divisional equipment or cable	s: 2			
	9A.2-3	9A.2-8		Nonsafety-related redu	indant trains or equipment or cable	s: <b>B</b>			
	9A.2-4	9A.2-9	Surround	ed by fire barriers rated at:		•			
	9A.2-5			•	basemat (non-rated); elevator d	loors (1.5 hr rated)			
Consisting	of the followin	g Rooms:	Fire De	tection	Fire Suppre	ssion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
	1102	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers			
-11500	1162	Cable insulation		(outside stairwell	(in nearby stairwells)				
	1163		Area-wide photoelectric	at each landing)					
-6400	1295		Area-wide ionization						
-1000	]								
	1402	Cable insulation	7						
4650	below floor								
	1295								
5050	1402	Cable insulation	1		CO2 fire extinguishers	Hose racks			
9060	1502, 1295	Electrical equipment				(in nearby stairwells)			
13570		1 .							
17500	1295								
27000									

Fire Area:	F1162 (continued)	Description:	SW quadrant	
		Anticipated combustible lo Unsprinklered combustible		
				Complete burnout of all equipment and cables within this
Assuming operation of inst	talled fire extinguishing equ	ipment, impact of fire upor	1:	Fire Area results in loss of only Division 2 shutdown
Plant operation:	Reactor scram			equipment and circuits, as well as loss of redundant train
Radiological release:	Contained within building	g		B; remaining three divisions of safe shutdown and
Life safety:	Travel distance limits to I	EXITs meet NFPA 101		redundant train A are unaffected by fire and are
Manual firefighting:	Access via stairwells			operable. Automatic logic control scheme (any two out of
Property loss:	Moderate			four redundant signals) remains operable. Both A and B
				nonsafety-related on-site power sources are unaffected by
				fire and are operable.

<b>Table 9A.5-1</b>
<b>Reactor Building (Cont.)</b>

	Fire Area:			Drywell and Co			
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:			Bui	lding code occupancy classification:		
	9A.2-1	9A.2-6			Electrical classification:	none	
	9A.2-2	9A.2-7		Safety-rel	ated divisional equipment or cables:	1, 2, 3, 4	
	9A.2-3	9A.2-8	Nons	afety-related redu	ndant trains or equipment or cables:	A, B	
	9A.2-4	9A.2-10	Surrounded by fire	barriers rated at:	3 hours		
	9A.2-5	9A.2-11		Except:	basemat (non-rated), including ba	asaltic concrete	
Consisting	of the following Roon	ns:	Fire Detection	1	Fire Suppressi	on	
EL	Room #	Potential Combustibl	Primary	Backup	Primary	Backup	
-8800	1170	Class IIIB	None	Portable fire	Inerted environment during	Hose racks and	
-6400	1170, 1206	lubricants		detection used	power operation	ABC fire	
-1000	1170	Cable insulation		as needed		extinguishers	
4650	14P0, 1170	Filter media		during outage		(via hatches at EL	
9060	14 P0, 1570, 1170			activities		-6400, EL 13570	
13570	1170, 1570, 14P0					and EL 17500)	
17500	17P0, 17P1, 17P2,	None				(extra fire hose and	
	1570					fire extinguishers	
27000	18P3A, 18P3B,					staged at hatches as	
	18P4A, 18P4B,					required)	
	18P4C, 18P5A,					1 /	
	18P5B, 18P5C						
	18P3C, 18P3D, 18P4D, 18P4E,						
	18P4D, 18P4E, 18P4F, 18P6A,						
	18P6B, 18P6C, 1871,						
	1872						
	10/2						
L	1			1			

Table 9A.5-1 Reactor Building (Cont.)

Fire Area:	F1170 (continued)	Description:	Drywell and C	ontainment
	< 700	Anticipated combustible load, N		Assuming automatic & manual FP equipment does not
	700	Unsprinklered combustible load	l limit, MJ/m2	function, impact of design basis fire on safe shutdown:
				During plant operation, this entire Fire Area is inerted by nitrogen
Assuming operation of installed f	ire extinguishing equi	pment, impact of fire upon:		and will not support combustion. When not inerted (during
		age required to restore		shutdowns and outages), complete burnout of all equipment and cables within this Fire Area is prevented by limited amount of
Radiological release:	Contained within co	ontainment structure		combustibles and spatial separation between redundant divisional
Life safety:	Travel distance limi	ts to EXITs meet NFPA 101		circuits to ensure that no more that two divisions of safe shutdown
Manual firefighting:				equipment will be affected by a single fire. See also section 9A.6.
Property loss:	Significant			

	Eine Anee	E1100	Description	G4 - • 11 - A				
	Fire Area: F1190 Building: Reactor			Description: Stairwell A Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:	Reactor	Building code occupancy classification: F-1					
	9 <b>A.2-1</b>	9A.2-6	1	Dui	Electrical classification			
	9A.2-1 9A.2-2	9A.2-7		Safety_rel	ated divisional equipment or cable			
	9A.2-2 9A.2-3	9A.2-8	No		indant trains or equipment or cable			
	9A.2-4	9A.2-9		re barriers rated at:				
	9A.2-5		Surrounded by II		basemat (non-rated)			
	, , , , , , , , , , , , , , , , , , ,		4	Linepu	Subtrinut (Holi Tuttu)			
Consisting	of the followin	g Rooms:	Fire Detec	tion	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1190	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-6400				(outside				
-1000				stairwell				
4650				at each landing)				
9060		-						
13570	1690							
17500								
27000								
34000								
		negligible	Anticipated combustible lo	oad. MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	1	· ·	function, impact of design basis fi	1 1		
			1	,	Complete burnout of all equipm			
Assuming o	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upo	n:	Fire Area affects no safety-relat			
P	Plant operation: None				divisions and both redundant trains A and B are			
	Radiological release: None, no radiological ma		aterials present	]	operable.			
	Life safety: Travel distance limits to I			]				
Manu		Access via exterior and i		]				
	Property loss:			]				
				_				

<b></b>	Fire Area:	E1101	Description	Stainmall D				
			Description: Stairwell B					
	DCD Fig:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	9 <b>A.2-1</b>	9A.2-6		Building code occupancy classification: F-1 Electrical classification: none				
				Cofoto no		-		
	9A.2-2	9A.2-7	N		lated divisional equipment or cable			
	9A.2-3	9A.2-8			indant trains or equipment or cable	s: none		
	9A.2-4	9A.2-9	Surrounded by fi	re barriers rated at:				
	9A.2-5			Except:	basemat (non-rated)			
Consisting	of the followin	g Rooms:	Fire Detect	tion	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	1191	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-6400				(outside		_		
-1000				stairwell				
4650				at each landing)				
9060								
13570								
17500								
27000								
34000								
37000								
		negligible	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fit	re on safe shutdown:		
			-		Complete burnout of all equipm	ent and cables within this		
Assuming o	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upo	n:	Fire Area affects no safety-relate	ed equipment; all safety		
	Plant operation: None			J	divisions and both redundant tra	ains A and B are		
Radiol	Radiological release: Contained within building		ng	]	operable.			
	Life safety: Travel distance limits to EX		EXITs meet NFPA 101	]				
Manu		Access via exterior and i		]				
	Property loss:			]				
				_				

	Fire Area:	E1103	Description	Stationall C			
				Description: Stairwell C Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804			
	Building:	Keactor	Building code occupancy classification: <b>F-1</b>				
	DCD Fig:	9A.2-6	1	Bui	Electrical classification:		
	9A.2-1						
	9A.2-2	9A.2-7	N	•	ated divisional equipment or cables:		
	9A.2-3	9A.2-8		•	indant trains or equipment or cables:	none	
	9A.2-4	9A.2-9	Surrounded by fire b				
	9A.2-5		]	Except:	basemat (non-rated)		
a · ·							
	of the followin		Fire Detection	•	Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500	1192	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
-6400				(outside			
-1000				stairwell			
4650				at each			
9060				landing)			
13570	1691						
17500							
27000							
34000							
		negligible	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP e	equipment does not	
		700	-		function, impact of design basis fire		
		/00	Unsprinklered combustion		Complete burnout of all equipme		
Assuming	peration of ins	talled fire extinguishing equ	uipment, impact of fire upor	n.			
			urpment, impact of the upo	1	Fire Area affects no safety-related divisions and both redundant training the second s		
	Plant operation: None Radiological release: None no rediological rele		torials prosont	†		ins A and d are	
Radioi	Radiological release: None, no radiological ma Life safety: Travel distance limits to		FVITs most NFDA 101	†	operable.		
Monu	Manual firefighting: Access via exterior and in			4			
Ivianu	Property loss:			4			
	Froperty loss:	regugible		<u> </u>			

Fire Area: F1193			Description: Stairwell D				
	Building:	Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	DCD Fig:		_	Bu	ilding code occupancy classification		
	9A.2-1	9A.2-6			Electrical classification		
	9A.2-2	9A.2-7			lated divisional equipment or cables		
	9A.2-3	9A.2-8			undant trains or equipment or cables	s: none	
	9A.2-4	9A.2-9	Surrounded b	y fire barriers rated at:	3 hours		
	9A.2-5			Except	basemat (non-rated)		
Consisting	of the followin	g Rooms:	Fire Dete	ection	Fire Suppres	ssion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500	1193	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguisher	
-6400				(outside stairwell			
-1000				at each landing)			
4650				0,			
9060							
13570							
17500							
27000							
34000							
		negligible	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	aquinment does not	
		700	Unsprinklered combustible		function, impact of design basis fir		
		/00		10au IIIIII, MJ/III2	Complete burnout of all equipme		
Accumina	paration of inc	tallad fire extinguishing e	uipment, impact of fire upor				
	Plant operation:		juipinent, impact of the upor	1.	Fire Area affects no safety-relate divisions and both redundant tra		
		Contained within building	nα			ans a and d are	
Radio		Travel distance limits to			operable.		
Mon	•	Access via exterior and i					
widht	Property loss:						
	riopenty loss:	regingible					

	Fire Area	: F1194	Description: Elevator B				
	Building	: Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1				
	DCD Fig:			Bui	lding code occupancy classification	: <b>F-1</b>	
	9A.2-1	9A.2-6	Electrical classification: none				
	9A.2-2	9A.2-7	Safety-related divisional equipment or cables: none				
	9A.2-3	9A.2-8	Nonsafety-related redundant trains or equipment or cables: none				
	9A.2-4	9A.2-9	Surrounded by fire barriers rated at: 3 hours				
	9A.2-5		Except: basemat (non-rated); elevator doors (1.5 hr rated			ors (1.5 hr rated)	
	Consisting of the following Rooms:		Fire Detecti		Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500	1194	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks	
-6400		Cable insulation		(outside Elev		(in nearby stairwell)	
-1000				at each			
4650				landing)			
9060							
13570							
17500							
27000							
34000							
37000	1980	Electrical equipment			CO2 fire extinguisher (outside room)	]	
					· · · · · · ·		

Fire Area:	F1194 (continued)	Description: H	Elevator B	
	< 700	Anticipated combustible loa	d, MJ/m2	Assuming automatic & manual FP equipment does not
	700	Unsprinklered combustible l	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:
				Complete burnout of all equipment and cables within this
Assuming operation of ins	Assuming operation of installed fire extinguishing equipment, impact of fire upon:			Fire Area affects no safety-related equipment; all safety
1	Plant operation: None			divisions and both redundant trains A and B are
	None, no radiological ma			operable.
	Travel distance limits to			-
Manual firefighting:	Manual firefighting: Access via stairwells and hoistway doors			
Property loss:	Negligible			

	Fire Area:	F1195	Description:	Interior Stairwell A			
		Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	e	DCD Fig:	Building code occupancy classification: F-1				
		9A.2-1	]		Electrical classificat		
		9A.2-2		Safety-r	elated divisional equipment or cab	oles: none	
		9A.2-3			dundant trains or equipment or cab		
		9A.2-10	Surround	led by fire barriers rated a	t: 3 hours	-	
				Excep	t: basemat (non-rated)		
Consisting	of the followin	a Rooms.	Fire De	atection	Fire Supr	raccion	
EL	EL         Room #         Potential Combustibles		Primary	Backup	Primary	Backup	
LL	K00111#	i otentiai Comoustioles	1 Tilliai y	Баскир	1 Timar y	Васкир	
-11200 -9100 -6400	1195	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
-1000							
		negligible	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual	FP equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:		
Accuming	noration of inc	talled fire extinguishing as	uipment, impact of fire upor		Complete burnout of all equip	ment and cables within this	
			uipinent, inipact of fife upor	1.	Fire Area affects no safety-related equipment; all safety divisions and both redundant trains A and B are		
	Plant operation: None Radiological release: Contained within building		20			trains A and B are	
Rauloi		Travel distance limits to			operable.		
Manu		Access via interior doors					
Ivianu	Property loss:		,				
	rioperty 1055.	1 1051151010					

	Fire Area	F1196	Description:	Interior Stairwell B				
		g: Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
DCD Fig:			FF the transfer	Building code occupancy classification: F-1				
		9A.2-1	7		Electrical classification	n: none		
		9A.2-2			elated divisional equipment or cables			
					lundant trains or equipment or cables	s: none		
			Surround	led by fire barriers rated at				
				Except	t: basemat (non-rated)			
		L						
Consisting of	Consisting of the following Rooms:		Fire Detection		Fire Suppression			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11200	1196	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-9100				(outside stairwell at each landing)				
		negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fin			
					Complete burnout of all equipm	ent and cables within thi		
			quipment, impact of fire upor	n:	Fire Area affects no safety-relate	ed equipment; all safety		
	lant operation				divisions and both redundant trains A and B are			
Radiol	Radiological release: Contained within building				operable.			
		Travel distance limits to						
Manu		g: Access via interior doors	8					
	Property loss	s: Negligible		l				

	Fire Area	F1197	Description:	Interior Stairwell C				
		g: Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
DCD Fig:			Building code occupancy classification: <b>F-1</b>					
		9A.2-1			Electrical classification			
		9A.2-2		Safety-r	elated divisional equipment or cables	: none		
				Nonsafety-related rec	lundant trains or equipment or cables	: none		
			Surround	led by fire barriers rated at	t: 3 hours			
				Except	t: basemat (non-rated)			
	Consisting of the following Rooms:		Fire Detection		Fire Suppression			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11200	1197	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-6400				(outside stairwell at each landing)				
		negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir <b>Complete burnout of all equipme</b>	e on safe shutdown:		
Р	lant operation	n: None	quipment, impact of fire upor	1:	Fire Area affects no safety-relate divisions and both redundant tra	d equipment; all safety		
Radiol	Radiological release: Contained within building				operable.			
		Travel distance limits to						
Manu		g: Access via interior doors	8					
	Property loss	s: Negligible						

Fire Area: F1198			Description: Interior Stairwell D				
	Building	: Reactor	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
DCD Fig:			Building code occupancy classification: F-1				
		9A.2-1			Electrical classificati		
		9A.2-2			elated divisional equipment or cab		
					lundant trains or equipment or cab	les: none	
			Surround	ed by fire barriers rated a			
				Excep	t: basemat (non-rated)		
		L	]				
Consisting of	Consisting of the following Rooms:		Fire De	tection	Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11200	1198	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
-9100				(outside stairwell			
-6400				at each landing)			
			1				
		negligible	Anticipated combustible loa		Assuming automatic & manual I		
		700	Unsprinklered combustible	bustible load limit, MJ/m2 function, impact of design basis fire on safe shutdow			
<b>A</b> aggregation of a	nonation of in	stallad fina antinaviahing ag			Complete burnout of all equip		
			uipment, impact of fire upon	l.	Fire Area affects no safety-rela		
	Plant operation: None		a		divisions and both redundant	trains A and B are	
Kauloi	Radiological release: Contained within building Life safety: Travel distance limits to EXITs mee				operable.		
Manus		: Access via interior doors					
	Property loss						
	1 toperty 1055				L		

	Fire Area:	F1203	Description:	<b>CRD</b> and Containment A	Access		
Building: Reactor			Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
DCD Fig:			Building code occupancy classification: F-1				
		9A.2-2			Electrical classification:	none	
		9A.2-3		Safety-rel	ated divisional equipment or cables:	2	
		9A.2-10			indant trains or equipment or cables	A, B	
			Surround	led by fire barriers rated at:	3 hours		
				Except:	none		
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-6400	1203	Class IIIB lubricants	Cross-zoned ionization	Suppression flowswitch	Preaction sprinkler	Hose racks	
		Cable insulation	and spot heat		12.2 L/min per m2	(in nearby stairwells)	
1000	1202 1200				over entire area		
-1000	1302, 1308	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
	1307	Cable insulation		(outside stairwells	(in nearby stairwells)		
	1307	Electical equipment Class IIIB lubricants		at each landing)		CO2 fire extinguishers, ABC fire extinguishers	
		Cable insulation				ABC fire extinguishers	
		> 700 (room 1203)	Anticipated combustible lo				
		< 700 (other rooms)	Anticipated combustible lo		Assuming automatic & manual FP		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire		
					Complete burnout of all equipme		
	Assuming operation of installed fire extinguishing eq			n: 1	Fire Area affects redundant nonsafety-related CRD		
P	lant operation:	Reactor scram; outage re	equired to restore		pumps A and B, but does not affect any safety-related		
Radio		Contained within buildin			equipment; all safety divisions and both A and B		
м		Travel distance limits to	EXIIS meet NFPA 101		nonsafety-related on-site power sources are unaffected		
Manu		Access via stairwells			by fire and are operable.		
	Property loss:	Moderate		J			

### ESBWR

	Fire Area:	F1210	Description:	Division I Battery			
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	e	DCD Fig:	11		ilding code occupancy classification	F-1 per IBC 307.9.11	
		9A.2-2			Electrical classification	none	
		9A.2-10		Safety-re	elated divisional equipment or cables	: 1	
		9A.2-11			undant trains or equipment or cables	none	
			Surrounded	by fire barriers rated at			
				Except	elevator doors (1.5 hr rated)		
\	- 6 41 6- 11	- D	Eire Det		Eine German	-:	
onsisting	onsisting of the following Rooms: Potential Combustibles		Fire Det	ection	Fire Suppres	sion	
EL	Room #	and Hazards	Primary	Backup	Primary	Backup	
EL	KOOIII #		r i lindi y	Баскир	F Tilliar y	Баскир	
-6400	1210	29,810 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		Battery cell cases		(outside stairwell)		(in nearby stairwell	
		Cable insulation					
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP		
		<1400 1400	Anticipated combustible lo Unsprinklered combustible		function, impact of design basis fire	e on safe shutdown:	
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme	e on safe shutdown: ent and cables within the	
		1400 stalled fire extinguishing equ	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme Fire Area results in loss of only S	e on safe shutdown: ent and cables within the afety Division I	
I	Plant operation:	1400 stalled fire extinguishing equ None	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme Fire Area results in loss of only S equipment; remaining three safe	e on safe shutdown: ent and cables within the afety Division I ety divisions and both	
I	Plant operation: logical release:	1400 stalled fire extinguishing equ None None, no radiological ma	Unsprinklered combustible upment, impact of fire upor terials present	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme Fire Area results in loss of only S equipment; remaining three safe redundant A and B equipment and	e on safe shutdown: nt and cables within the afety Division I ty divisions and both re unaffected by fire an	
I Radio	Plant operation: logical release: Life safety:	1400 stalled fire extinguishing equ None None, no radiological ma Travel distance limits to	Unsprinklered combustible upment, impact of fire upor terials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme Fire Area results in loss of only S equipment; remaining three safe redundant A and B equipment an are operable. Automatic logic co	e on safe shutdown: nt and cables within t afety Division I ty divisions and both re unaffected by fire an ntrol scheme (any two	
I Radio	Plant operation: logical release: Life safety:	1400 stalled fire extinguishing equ None None, no radiological ma Travel distance limits to J Access via stairwell and i	Unsprinklered combustible upment, impact of fire upor terials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fire Complete burnout of all equipme Fire Area results in loss of only S equipment; remaining three safe redundant A and B equipment and	e on safe shutdown: nt and cables within the afety Division I ity divisions and both re unaffected by fire an ntrol scheme (any two	

<b></b>	Fire Area:	F1220	Description:	<b>Division 2 Battery</b>				
	Building:			Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	Dunung.	DCD Fig:	Building code occupancy classification: F-1 per IBC 307.9.11					
		9A.2-2	Electrical classification: none					
				Safety-rel	lated divisional equipment or cables:	2		
			Ň	-	indant trains or equipment or cables:			
				fire barriers rated at:		•		
				Except:	elevator doors (1.5 hr rated)			
Consisting	onsisting of the following Rooms:		Fire Detec	ction	Fire Suppress	sion		
		Potential Combustibles						
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
-6400	1220	29,810 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Battery cell cases		(outside stairwell)		(in nearby stairwell)		
		Cable insulation						
		< 1400	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FP	aquinment does not		
		1400	Unsprinklered combustible	· ·	e	1 1		
		1400	Onsprinklered combustion	10au 111111, 1v13/1112	function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this			
Assuming	pperation of ins	talled fire extinguishing eq	uipment, impact of fire upor	n.	Fire Area results in loss of only Sa			
-	lant operation:		applient, impact of the upor		equipment; remaining three safety divisions and both			
		None, no radiological ma	aterials present		redundant A and B equipment are unaffected by fire and			
		Travel distance limits to			are operable. Automatic logic control scheme (any two			
Manu		Access via stairwell and i			out of four redundant signals) rer	· ·		
	Property loss:				exhaust fans are alarmed to MCR	1 0		
	1 2							

	Fire Area:	F1230	Description: Division 3 Battery					
	Building:	Reactor			NFPA 10, 14, 72, 101, 804			
		DCD Fig:	- -	Bi	uilding code occupancy classification:	F-1 per IBC 307.9.11		
		9A.2-2			Electrical classification:	none		
		9A.2-10	Safety-related divisional equipment or cables: 3					
			Nonsafety-related redundant trains or equipment or cables: none					
			Surrounded by fire barriers rated at: <b>3 hours</b>					
				Except	t: none			
Consisting	Consisting of the following Rooms:		Fire De	etection	Fire Suppress	ion		
	D //	Potential Combustibles	<b>D</b> .		D.:			
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
	ļ							
-6400	1230	29,810 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Battery cell cases		(outside stairwell)		(in nearby stairwell)		
		Cable insulation						
	╂─────	<u> </u>						
	<u> </u>							
		< 1400	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FP e	auinment does not		
			Unsprinklered combustible		function, impact of design basis fire on safe shutdown:			
		1100	Onsprinkieren combustisie	10au 111111, 1913/1112	Complete burnout of all equipment and cables within thi			
Assuming (	operation of in	stalled fire extinguishing equ	uinment impact of fire upor	n.	Fire Area results in loss of only Sa			
	Plant operation:		inplicate, impuet of the upon	1.	equipment; remaining three safety divisions and both			
		None, no radiological mat	terials present		redundant A and B equipment are			
1000102		Travel distance limits to l				ť		
				are operable. Automatic logic control scheme (any two out of four redundant signals) remains operable. Batter				
Manual firefighting: Access via stairwell and i		interior doors		out of four redundant signals) remains operable. Battery				
Manu			nterior doors					
Manu	al firefighting: Property loss:		nterior doors		exhaust fans are alarmed to MCR			

	Fire Area	· E1240	Description:	<b>Division 4 Battery</b>			
		: Reactor			NFPA 10, 14, 72, 101, 804		
	Dunung	DCD Fig:	Applicable codes.			E 1 man IDC 307 0 11	
		9 <b>A.2-2</b>	Building code occupancy classification: F-1 per IBC 307.9.11 Electrical classification: none				
		9A.2-2 9A.2-11		Cafata			
		9A.2-11			-related divisional equipment or cables:		
					edundant trains or equipment or cables:	none	
			Surround	ded by fire barriers rated at			
				Except	t: none		
			J				
Consisting	of the followin		Fire Detec	ction	Fire Suppressi	on	
		Potential					
		Combustibles					
EL	Room #	and Hazards	Primary	Backup	Primary	Backup	
-6400	1240	29,810 L of battery	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		acid		(outside stairwell)		(in nearby stairwell)	
		Battery cell cases					
		Cable insulation					
		< 1400	Anticipated combustible load, MJ		Assuming automatic & manual FP eq		
		1400	Unsprinklered combustible load l	imit, MJ/m2	function, impact of design basis fire on safe shutdown:		
					Complete burnout of all equipment		
			g equipment, impact of fire upon:	_	Fire Area results in loss of only Saf	ety Division 4	
	Plant operation				equipment; remaining three safety	divisions and both	
Radio	logical release	None, no radiological	l materials present		redundant A and B equipment are	unaffected by fire and	
	Life safety	: Travel distance limit	s to EXITs meet NFPA 101		are operable. Automatic logic cont	trol scheme (any two	
Manu	al firefighting	: Access via stairwell a	and interior doors		out of four redundant signals) rema	、 <b>•</b>	
	Property loss:				exhaust fans are alarmed to MCR.	· · · ·	

	Fire Area:	F1262	Description:	<b>B</b> Demineralizers			
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189; I	NFPA 10, 14, 72, 101, 804		
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-2			Electrical classification:	none	
					elated divisional equipment or cables:		
					undant trains or equipment or cables:	В	
			Surround	ed by fire barriers rated at	:: 3 hours		
				Except	none		
			J				
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-6400	1261	Class IIIB lubricants	Area-wide ionization	<b>Process indication</b>	Hose racks at stairwells	ABC fire extinguishers	
	1262	Cable insulation			(via hatches at EL -1000)	(at EL -1000)	
		< 700	<b>1 a</b> 1 <b>a</b> 1 <b>a 1 a 1 <b>a 1 a 1 a 1 a 1 a 1 a 1 a 1</b></b>	-1.)(1/2	A second s		
		700	Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2		Assuming automatic & manual FP equipment does not		
		700	Unsprinklered combustible	Ioau IIIIIt, WIJ/III2	function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this		
Assuming o	peration of ins	talled fire extinguishing equ	uipment, impact of fire upor	ı.	Fire Area results in loss of only re		
	lant operation:		uipinent, impact of fife upor	1.	equipment; all safety divisions an		
		Contained within buildin	σ		are unaffected by fire and are op		
r.uuror		Travel distance limits to			site power sources are unaffected		
Manu		Limited access via hatche			operable.	by me and are	
	Property loss:				operation		
	1 2						

			Reactor Bu	uilding (Cont.)			
	Fire Area:		Description:	<b>Division 1 Electrical</b>			
	Building:	Reactor	Applicable codes:		9; NFPA 10, 14, 72, 101, 804		
	DCD Fig:		_	Bui	ilding code occupancy classification:	F-1	
	9A.2-2	9A.2-6			Electrical classification:		
	9A.2-3	9A.2-7			lated divisional equipment or cables:		
	9A.2-4	9A.2-10			undant trains or equipment or cables:	none	
	9A.2-5	9A.2-11	Surrounded b	by fire barriers rated at:			
				Except:	elevator doors (1.5 hr rated)		
Consisting	of the followin		Fire Dete	ection	Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-6400	1211	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
-1000	1211	Electrical equipment		(outside stairwell		at stairwells	
	1311	Cable insulation		at each landing)			
	1313						
4650	1211						
9060							
13570	1610, 1211						
17500	1711						
	1700, 1712	Cable insulation			ABC fire extinguishers		
	1713	Class IIIB lubricants					
	1710	Electical equipment			ABC fire extinguishers, CO2 fire		
		Cable insulation			extinguishers		
		<b>Class IIIB lubricants</b>					
		< 1400	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP ed	quipment does not	
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	on safe shutdown:	
			-		Complete burnout of all equipmen	t and cables within this	
			uipment, impact of fire upor	<u>n:</u>	Fire Area results in loss of only Sa	fety Division 1	
	lant operation:				equipment; remaining three safet	y divisions and both	
Radio		None, no radiological ma			redundant A and B equipment are	unaffected by fire and	
		Travel distance limits to			are operable. Automatic logic cor	itrol scheme (any two	
Manu		Access via stairwell and i	nterior doors		out of four redundant signals) rem	ains operable.	
	Property loss:	Significant				-	

Table 9A.5-1 Reactor Building (Cont.)

Table 9A.5-1
<b>Reactor Building (Cont.)</b>

				Junuing (Cont.)		
	Fire Area:			Division 2 Electrical		
	Building:	Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804	
	DCD Fig:		_	Bu	ilding code occupancy classification:	
	9A.2-2	9A.2-6		Electrical classification: none		
	9A.2-3 9A.2-7			Safety-related divisional equipment or cables: 2		
	9A.2-4				undant trains or equipment or cables:	none
	9A.2-5		Surround	Surrounded by fire barriers rated at: 3 hours		
	-		_	Except: elevator doors (1.5 hr rated)		
Consisting	Consisting of the following Rooms:		Fire De	etection	Fire Suppress	ion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-6400	1221	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks
-1000	1321, 1323	Electrical equipment		(outside stairwell		at stairwells
	1221	Cable insulation		at each landing)		
4650	1221			0,		
9060						
13570	1620, 1221					
17500	1721, 1221					
	1720	Cable insulation			ABC fire extinguishers	
	1722	<b>Class IIIB lubricants</b>			C	
	1723					
F Radio	Plant operation: logical release: Life safety: ual firefighting:	None None, no radiological m Travel distance limits to Access via stairwell and	EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual FP e function, impact of design basis fire <b>Complete burnout of all equipmen</b> <b>Fire Area results in loss of only Sa</b> <b>equipment; remaining three safet</b> <b>redundant A and B equipment are</b> <b>are operable.</b> Automatic logic co <b>out of four redundant signals) rem</b>	on safe shutdown: nt and cables within thi afety Division 2 ty divisions and both e unaffected by fire and ntrol scheme (any two
	Property loss:	Significant				-

			Reactor I	Building (Cont.)				
	Fire Area:	F1331	Description:	<b>Division 3 Electrical</b>				
	Building:	Reactor	Applicable codes:	IBC; Reg Guide 1.189; I	NFPA 10, 14, 72, 101, 804			
	DCD Fig:				ilding code occupancy classification:	F-1		
	9A.2-2	9A.2-6		Electrical classification: none				
	9A.2-3	9A.2-7	Safety-related divisional equipment or cables: 3					
	9A.2-4			Nonsafety-related redundant trains or equipment or cables: none				
	9A.2-5		Surround	Surrounded by fire barriers rated at: 3 hours				
			_	Except	elevator doors (1.5 hr rated)			
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppressi	on		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-6400	1231	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
-1000	1331, 1231	Electrical equipment		(outside stairwell		at stairwells		
4650	1231	Cable insulation		at each landing)				
9060	1							
13570	1630, 1231							
17500	1731, 1231							
	1703	Cable insulation			ABC fire extinguishers			
	1730	Class IIIB lubricants			8			
	1732							
		< 1400	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FP ed	uinment does not		
		1400	Unsprinklered combustible		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>Complete burnout of all equipment and cables within th</b>			
		1100	ensprinktered comoustione	10 <b>uu</b> 111111, 1015/1112				
Assuming of	operation of ins	stalled fire extinguishing ed	uipment, impact of fire upor	1:	Fire Area results in loss of only Sa			
	Plant operation:		1. r,		equipment; remaining three safety	•		
	*	None, no radiological m	aterials present		redundant A and B equipment are			
		Travel distance limits to			are operable. Automatic logic con			
Manu		Access via stairwell and			out of four redundant signals) rem	· •		
	Property loss:							
	1 2							

Table 9A.5-1Reactor Building (Cont.)

			Reactor I	Building (Cont.)			
	Fire Area:	F1341	Description:	<b>Division 4 Electrical</b>			
	Building:	Reactor	Applicable codes:		NFPA 10, 14, 72, 101, 804		
	DCD Fig:			Bı	uilding code occupancy classification:	F-1	
	9A.2-2	9A.2-6		Electrical classification: none			
	9A.2-3	9A.2-7		Safety-related divisional equipment or cables: 4			
	9A.2-4	9A.2-11		Nonsafety-related redundant trains or equipment or cables: none			
	9A.2-5		Surrounded by fire barriers rated at: <b>3 hours</b>				
			_	Except	t: none		
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppressi	on	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-6400	1241	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
-1000	1341, 1241	Electrical equipment		(outside stairwell	-	at stairwells	
4650	1241	Cable insulation		at each landing)			
9060							
13570	1640, 1241						
17500	1741, 1241						
	1701, 1742	Cable insulation			ABC fire extinguishers		
		<b>Class IIIB lubricants</b>					
	1740	Electrical equipment			ABC fire extinguishers, CO2 fire		
		Cable insulation			extinguishers		
		<b>Class IIIB lubricants</b>					
1		< 1400	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual FP ec	uipment does not	
		1400	Unsprinklered combustible		function, impact of design basis fire	* *	
				,	Complete burnout of all equipmen		
Assuming	operation of ins	stalled fire extinguishing ed	uipment, impact of fire upor	1:	Fire Area results in loss of only Sa		
	Plant operation:				equipment; remaining three safety	•	
		None, no radiological m	aterials present		redundant A and B equipment are		
		Travel distance limits to			are operable. Automatic logic cor		
Man		Access via stairwell and			out of four redundant signals) rem	· •	
	Property loss:				i i i i i i i i i i i i i i i i i i i	unis operable.	
	· · · · · · · · · · · · · · · · · · ·	0					

1450 eactor CD Fig: A.2-4	Applicable codes:	Bui Safety-rel	189; NFPA 10, 24, 50A, 72, 101, 497, ilding code occupancy classification: Electrical classification:	F-1
CD Fig:		Bui Safety-rel	ilding code occupancy classification: Electrical classification:	F-1
		Safety-rel	Electrical classification:	
4.2-4				Group B Class 1 Div 2
			1.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1	
			elated divisional equipment or cables:	
			undant trains or equipment or cables:	A
	Surrounded by	fire barriers rated at:		
		Except:	: basemat (non-rated)	
Rooms:	Fire Detec	ction	Fire Suppressi	ion
otential Combustibles	Primary	Backup	Primary	Backup
lectrical equipment	Area-wide spot heat	Manual pull	ABC fire extinguisher	Hydrant
able insulation	-	-	8	·
6 m3 Hydrogen		, , ,		
one one, no radiological ma	iterials present	1:	Fire Area affects only redundant to no safety-related equipment; all sar redundant train B are operable. B power sources are unaffected by fin Potential for hydrogen buildup is no the top and bottom of the 3-hr fire Ignition within is prevented by req devices to be rated NEC Group B ( the event of an ignition and explosi Reactor Building or Control Buildin hr fire rated reinforced concrete w approximately 1.5 meters thick for Building and approximately 0.7 meters Control Building which is further a redundant hydrogen systems is pre- separating them by over 50 meters	fety divisions and Both A and B on-site re and are operable. mitigated by louvers in rated exterior wall. quiring all electrical Class I Division II. In ion, damage to the ing is prevented by 3- valls that are the nearby Reactor eters thick for the away. Damage to the
10 0 10 0 0	ectrical equipment able insulation <u>m3 Hydrogen</u> <700 700 ed fire extinguishing equipme one, no radiological maniferration avel distance limits to ecess via door	ectrical equipment       Area-wide spot heat         able insulation       Area-wide spot heat         m3 Hydrogen       Anticipated combustible lo         < 700       Anticipated combustible lo         700       Unsprinklered combustible         ed fire extinguishing equipment, impact of fire upor         one, no radiological materials present         avel distance limits to EXITs meet NFPA 101         ecess via door	Area-wide spot heat       Manual pull (outside room)         Manual pull (outside room)       Manual pull (outside room)         Anticipated combustible load, MJ/m2       Manual pull (outside room)         Anticipated combustible load, MJ/m2       Manual pull (outside room)         Manual pull (outside room)       Manual pull (outside room)         Anticipated combustible load, MJ/m2       Manual pull (outside room)         Manual pull (outside room)       Manual pull (outside room)         Anticipated combustible load, MJ/m2       Manual pull (outside room)         Image: state of the state of th	ectrical equipment ible insulation m3 Hydrogen       Area-wide spot heat (outside room)       Manual pull (outside room)       ABC fire extinguisher         < 700       Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP ec function, impact of design basis fire         ed fire extinguishing equipment, impact of fire upon: one, no radiological materials present avel distance limits to EXITs meet NFPA 101 inor       Assuming automatic & manual FP ec function, impact of design basis fire         redundant train B are operable. B power sources are unaffected by fir Potential for hydrogen buildup is r the top and bottom of the 3-hr fire Ignition within is prevented by req devices to be rated NEC Group B d the event of an ignition and explosi Reactor Building or Control Build hr fire rated reinforced concrete w approximately 1.5 meters thick for Building and approximately 0.7 meters

Table 9A.5-1Reactor Building (Cont.)

#### ESBWR

	Fire Area:	F1460	Description: H <sub>2</sub> Calibration Gas Skid Room B				
	Building:				1.189; NFPA 10, 24, 50A, 72, 101, 497, 80	4	
		DCD Fig:	Building code occupancy classification: F-1 Electrical classification: Group B Class 1 Div 2				
		9A.2-4					
				Sa	afety-related divisional equipment or cables:	none	
					ted redundant trains or equipment or cables:	В	
			Surrounded by fin	re barriers rated at:			
				Except:	basemat		
onsistin	g of the follo	owing Rooms:	Fire Detect	tion	Fire Suppression		
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
				r			
4650	1460	Electrical equipment	Area-wide spot heat	Manual pull	ABC fire extinguisher	Hydrant	
		Cable insulation	-	(outside room)	U U		
		16 m3 Hydrogen					
ssumin	operation o	< 700 700		e load limit, MJ/m2	Assuming automatic & manual FP equipme function, impact of design basis fire on safe <b>Complete burnout of all equipment and o</b>	shutdown: cables within this Fire	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is	
Plaı Radiolog Manual	nt operation: gical release: Life safety:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II.	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion,	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevente	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevented	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated cimately 1.5 meters thick	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevented reinforced concrete walls that are approx for the nearby Reactor Building and app	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated cimately 1.5 meters thick roximately 0.7 meters	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevented reinforced concrete walls that are approx for the nearby Reactor Building and app thick for the Control Building which is fu	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated cimately 1.5 meters thick roximately 0.7 meters urther away. Damage to	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevented reinforced concrete walls that are approx for the nearby Reactor Building and app thick for the Control Building which is fur the redundant hydrogen systems is prevented	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated cimately 1.5 meters thick roximately 0.7 meters urther away. Damage to nted by physically	
Plaı Radiolog Manual	nt operation: gical release: Life safety: firefighting:	700 f installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	Unsprinklered combustibles gequipment, impact of fire	e load limit, MJ/m2 upon:	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions an operable. Both A and B on-site power so fire and are operable. Potential for hydr mitigated by louvers in the top and botto exterior wall. Ignition within is prevente electrical devices to be rated NEC Group In the event of an ignition and explosion, Building or Control Building is prevented reinforced concrete walls that are approx for the nearby Reactor Building and app thick for the Control Building which is fu	shutdown: cables within this Fire pment and no safety- d redundant train A are urces are unaffected by ogen buildup is m of the 3-hr fire rated d by requiring all B Class I Division II. damage to the Reactor d by 3-hr fire rated cimately 1.5 meters thick roximately 0.7 meters urther away. Damage to nted by physically urrounding each by 3-hr	

	Fire Area:			Vestibule 1480		
	Building:	Reactor	Applicable codes:	IBC; Reg Guide	1.189; NFPA 10, 24, 50A, 72, 101, 497, 80	
		DCD Fig:			Building code occupancy classification:	F-1
		9A.2-4			Electrical classification:	
		9A.2-10			afety-related divisional equipment or cables:	
					ted redundant trains or equipment or cables:	В
			Surrounded by fir	e barriers rated at:	3-hours	
				Except:	basemat (non-rated)	
Consistin	g of the foll	owing Rooms:	Fire Detect	ion	Fire Suppression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
LL	Room #	i otentiai comoastioles	1 Timar y	Duckup	1 mary	Buckup
4650	1480	Electrical equipment Cable insulation	Area-wide ionization	Manual pull (outside room)	CO2 fire extinguisher	Hose racks in nearby stairwells
				(outside room)		stan wens
		700	Unsprinklered combustible lo	oad limit, MJ/m2	function, impact of design basis fire on safe	shutdown:
Plar Radiolog Manual	nt operation: ical release: Life safety:	of installed fire extinguishin None None, no radiological ma Travel distance limits to Access via door	ng equipment, impact of fire	·	function, impact of design basis fire on safe Complete burnout of all equipment and of Area affects only redundant train B equi related equipment; all safety divisions ar and are operable. Both A and B on-site p unaffected by fire and are operable.	cables within this Fir pment and no safety e unaffected by a fire

#### ESBWR

				8 (	,		
	Fire Area:			Vestibule 1481			
	Building:	Reactor	Applicable codes:	IBC; Reg Guide	1.189; NFPA 10, 24, 50A, 72, 101, 497, 80	4	
		DCD Fig:			Building code occupancy classification:	F-1	
		9A.2-4	Electrical classification: none				
			Safety-related divisional equipment or cables: none				
				Nonsafety-rela	ted redundant trains or equipment or cables:	Α	
			Surrounded by fire	e barriers rated at:	3-hours		
				Except:	basemat(non-rated)		
Consistin		owing Rooms:	Fire Detect	-	Fire Suppression	_	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	1481	Electrical equipment	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hose racks in nearby	
		Cable insulation		(outside room)	C C	stairwells	
		< 700	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FP equipme	nt does not	
		700	Unsprinklered combustible lo		function, impact of design basis fire on safe		
		700	Onsprinklered combustible fo	au mint, MJ/m2			
		6 in -t-11-1 6intini-1 in			Complete burnout of all equipment and c		
	t operation:		ng equipment, impact of fire		Area affects only redundant train A equi	- •	
			- 4 <sup>1</sup> - 1		related equipment; all safety divisions ar	-	
Radiolog		None, no radiological ma			and are operable. Both A and B on-site p	ower sources are	
X 1		Travel distance limits to	EXIIs meet NFPA 101		unaffected by fire and are operable.		
		Access via door					
Pi	roperty loss:	Minor					

Fire Area	a: <b>F1580</b>		Vestibule 1580			
Building	g: Reactor	Applicable codes:	IBC; Reg Guide	1.189; NFPA 10, 24, 50A, 72, 101, 497, 80		
	DCD Fig:			Building code occupancy classification:	F-1	
	9A.2-5	Electrical classification: <b>none</b> Safety-related divisional equipment or cables: <b>none</b>				
	9A.2-10					
				ted redundant trains or equipment or cables:	none	
		Surrounded by fir	e barriers rated at:			
			Except:	basemat (non-rated)		
Consisting of the fol	lowing Rooms:	Fire Detect	ion	Fire Suppression		
EL Room #		Primary	Backup	Primary	Backup	
EL KOOM#	I otential Combustibles	1 Thinai y	Баскир	1 millar y	Баскир	
9060 1580	Electrical equipment Cable insulation	Area-wide ionization	Manual pull (outside room)	CO2 fire extinguisher	Hose racks in nearby stairwells	
Plant operation Radiological release	e: None, no radiological m y: Travel distance limits to g: Access via door	aterials present	upon:	Area affects only redundant train A and safety-related equipment; all safety divisi fire and are operable. Both A and B on-s unaffected by fire and are operable.	ions are unaffected by	

ESBWR

	-	F1581 Reactor DCD Fig: 9A.2-5 9A.2-10		Vestibule 1581 IBC; Reg Guide	<b>1.189; NFPA 10, 24, 50A, 72, 101, 497,</b> Building code occupancy classificati	804
B	-	DCD Fig: 9A.2-5	Applicable codes:	IBC; Reg Guide		804
		9A.2-5	]		Building code occupancy classificati	001
					Building coue occupancy classificati	on: <b>F-1</b>
		9A.2-10			Electrical classificati	
					afety-related divisional equipment or cabl	
					ted redundant trains or equipment or cabl	es: none
			Surrounded by fir	e barriers rated at:		
				Except:	basemat (non-rated)	
onsisting of	the follo	wing Rooms:	Fire Detect	ion	Fire Suppressi	on
		Potential Combustibles	Primary	Backup	Primary	Backup
	00111 //	i otentiai combastibles	1 Timur y	Buckup	1 minur y	Buckup
9060 1	1581	Electrical equipment	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hose racks in nearby
		Cable insulation		(outside room)		stairwells
Plant op Radiological Life Manual firef	release: e safety:	None None, no radiological ma Travel distance limits to Access via door		upon:	function, impact of design basis fire on s Complete burnout of all equipment an Area affects only redundant train A a safety-related equipment; all safety di fire and are operable. Both A and B o unaffected by fire and are operable.	d cables within this Fire nd B equipment and no visions are unaffected by :

	Fire Area:	F1600	Description:	Reactor Building I	HVAC Fan / Filter Room A	ſ
	Building:				189; NFPA 10, 14, 72, 90A, 1	01, 804
	DCD Fig:				code occupancy classification:	
	9A.2-6	9A.2-11	]	-	Electrical classification:	none
	9A.2-8			Safety-related d	livisional equipment or cables:	none
	9A.2-9		Nonsafe	ty-related redundant	trains or equipment or cables:	Α
	9A.2-10		Surrounded by f	ire barriers rated at:	3 hours	
				Except:	elevator doors (1.5 hr rated)	
Consisting	of the following Roo	oms:	Fire Detec	tion	Fire Sup	pression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
13570	1600	Class IIIB lubricants	Area-wide linear heat	Manual pulls	Hose racks	ABC fire extinguishers
		Electrical equipment		(outside stairwell	at stairwells	
		Cable insulation		at each landing)		
27000	17P3, 18P0, 18P1,	None				
24000	18P2					
34000	17P3, 18P2,	Transient combustibles	Area-wide ionization			
	1294, 1900,	Electrical equipment				
	1903, 1904,	Cable insulation				
	1905, 1906	Class A combustibles				
	above ceiling	Filter media Cable insulation				
	1905, 1906					
	1703, 1700					
	1901, 1902, 1907	None				
	1908, 18P0, 17P3,					
	18P1					

Fire Area:	F1600 (continued)	Description: Reactor Buildi	ng HVAC Fan / Filter Room A
		Anticipated combustible load, MJ/m2	Assuming automatic & manual FP equipment does not
	700	Unsprinklered combustible load limit, MJ/	n2 function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within
Assuming operation of installed			this Fire Area affects only redundant train A and B
Plant operation:	None; restoration require	ed before refueling	equipment, but does not affect any safety-related
Radiological release:	Contained within buildin	g	equipment; all safety divisions are unaffected by a fire
Life safety:	Travel distance limits to	EXITs meet NFPA 101	and are operable. Both A and B on-site power sources
Manual firefighting:	Access via stairwells		are unaffected by fire and are operable.
Property loss:	Moderate		

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#### **Design Control Document/Tier 2**

			Table 9A Reactor Buildi			
	Fire Area Building DCD Fig: 9A.2-4 9A.2-5 9A.2-6 9A.2-7	F1601 Reactor 9A.2-8 9A.2-9 9A.2-11	Applicable codes: Nonsafe	IBC; Reg Guide 1. Building Safety-related d ety-related redundant fire barriers rated at:	IVAC Fan / Filter Room B 189; NFPA 10, 14, 72, 90A, 1 code occupancy classification: Electrical classification: ivisional equipment or cables: trains or equipment or cables: 3 hours driveway (non-rated); elevat	F-1 none none B
Consisting	of the following Ro	oms:	Fire Detec	tion	Fire Sup	pression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
4650 9060	1490 fuel grapple test pit	Transient combustibles	Area-wide linear heat	Manual pulls (outside stairwell at each landing)	Hose racks at stairwells	ABC fire extinguishers
13570		Class IIIB lubricants Electrical equipment Cable insulation				
17500 27000 34000	17P3, 1490 1490 1490	None				

Fire Area:	F1601 (continued)	Description: Reactor Building	HVAC Fan / Filter Room B
		Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:
		1	Complete burnout of all equipment and cables within
Assuming operation of installed			this Fire Area affects only redundant train A and B
Plant operation:	None; restoration require	ed before refueling	equipment, but does not affect any safety-related
Radiological release:	Contained within buildin	g	equipment; all safety divisions are unaffected by a fire
Life safety:	Travel distance limits to	EXITs meet NFPA 101	and are operable. Both A and B on-site power sources
Manual firefighting:	Access via stairwells		are unaffected by fire and are operable.
Property loss:	Moderate		

Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells          Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:          700       Unsprinklered combustible load limit, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon:       Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b	Building:       Reactor       Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 101, 497, 804         DCD Fig:       9A.2-6       9A.2-6       Building code occupancy classification:       F-1         9A.2-10       Electrical classification:       Imone       Imone         Safety-related divisional equipment or cables:       Imone       Imone       Imone         Surrounded by fire barriers rated at:       Imone       Imone       Imone         Consisting of the following Rooms:       Fire Detection       Fire Suppression       Imone         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation:       None       Assuming automatic & manual FP equipment and cables within this Fire are affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable.       Both A and B on-site p	Building: Reactor         Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 101, 497, 804         Building code occupancy classification: F-1         9A.2-6       9A.2-10       Building code occupancy classification: F-1         Safety-related divisional equipment or cables: A, B         Surrounded by fire barriers rated at: 3 hours         Except: none         Consisting of the following Rooms:       Fire Detection         Fire Suppression         Primary       Backup         Primary       Backup         ISOM Primary       Backup	Building: <b>Reac</b> DCD <b>9A.2</b> -	tor Fig: -6		IBC; Reg Guide	Building code occupancy classification	: <b>F-1</b>
DCD Fig:       9A.2-6       9A.2-6       9A.2-10       Building code occupancy classification: none         BA.2-10       Electrical classification: none       Inone         Safety-related redundant trains or equipment or cables: A, B       Inone         Surrounded by fire barriers rated at: Except:       Boundant trains or equipment or cables: A, B         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable ionization       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable ionization       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment combustible load, MJ/m2 Table combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None       Complete burnout of all equipmen	DCD Fig:       9A.2-6       9A.2-6       9A.2-10       Building code occupancy classification: Electrical classification: none         Safety-related divisional equipment or cables:       Nonsafety-related redundant trains or equipment or cables:       A.B         Surrounded by fire barriers rated at:       3 hours       none         Surrounded by fire barriers rated at:       3 hours       none         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearh stairwells         4          Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearh stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearh stairwells         13570       1680       Electrical equipment, impact of fire upon: To0       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, inpact of design basis fire on sa	DCD Fig:       9A.2-6       9A.2-6       9A.2-10       Electrical classification: F-1         Safety-related divisional equipment or cables:       none       none         Surrounded by fire barriers rated at:       3 hours       none         Surrounded by fire barriers rated at:       3 hours       A.B         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary         Manual pull       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)           Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Rasuming operation of installed fire extinguishing equipment, impact of fire upon:       None       Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	DCD 9A.2-	Fig: -6	Applicable codes:		Building code occupancy classification	: <b>F-1</b>
9A.2-6       Safety-related divisional equipment or cables:       none         9A.2-10       Safety-related divisional equipment or cables:       none         Nonsafety-related redundant trains or equipment or cables:       A, B         Surrounded by fire barriers rated at:       3 hours         Except:       none         Consisting of the following Rooms:       Fire Detection         EL       Room #       Potential Combustibles         Primary       Backup       Primary         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells            Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Plant operation: Radiological release: Life safety: Manual firefighting; Access via door       None       Complete burnout of all equipment and cables within this Fir 	9A.2-6       9A.2-10       Electrical classification: none         Surrounded by fire barriers rated at:       3 hours       none         Surrounded by fire barriers rated at:       3 hours       none         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells              Stairwells       Stairwells               Stairwells               Stairwells	9A.2-6       9A.2-6       Electrical classification: none         9A.2-10       Safety-related divisional equipment or cables: A, B         Surrounded by fire barriers rated at: 3 hours         Surrounded by fire barriers rated at: 3 hours         Onsisting of the following Rooms:         EL       Room #       Potential Combustibles       Fire Detection       Fire Suppression         Backup       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Nadiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via door       None       Safety-related equipment; all safety divisions are unaffected by fire and are operable.	9A.2-	-6				
9A.2-10       Safety-related divisional equipment or cables: A, B         Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at: Except:         Consisting of the following Rooms:       Fire Detection         EL       Room #         Potential Combustibles       Primary         Primary       Backup         13570       1680         Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells           Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Plant operation: Plant operation: Considered within building Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via door       None       Safety-related equipment; all safety divisions are unaffected by fire and are operable.	9A.2-10       Safety-related divisional equipment or cables: A, B         Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at: Except: none         Consisting of the following Rooms:       Fire Detection         EL       Room #         Potential Combustibles       Primary         Backup       Primary         13570       1680         Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher	9A.2-10       Safety-related divisional equipment or cables: A, B         Nonsafety-related divisional equipment or cables: A, B       Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at: B       3 hours         EX. Room # Potential Combustibles       Fire Detection         E1.       Room # Potential Combustibles       Primary         Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         < 700					Electrical classification	· none
Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at: Except:         Surrounded by fire barriers rated at: Except:         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         4	Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at: Except:         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearh stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearh stairwells         4       4       4       4       4       4       4         5       700       Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:       Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	Nonsafety-related redundant trains or equipment or cables: A, B         Surrounded by fire barriers rated at Except       Shours none         Consisting of the following Rooms:       Fire Detection Primary       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety: Life safety: Manual firefighting: Manual firefighting: Access via door       None       South and Bon-site power source	9A.2·	-10				
Surrounded by fire barriers rated at: Except: inone         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         3370       1680       Electrical equipment (outside combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:       Complete burnout of all equipment and cables within this Fir Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.         Nanual firefighting:       Access via door       Travel distance limits to EXITs meet NFPA 101       Manual firefighting:       Note Prime Primary Primary Primary Primary Primary Primary Primary Pri	Surrounded by fire barriers rated at: Except:         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual fire       Manual fire       Area affects only redundant train A and B equipment	Surrounded by fire barriers rated at: Except:         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety: Life safety: Manual firefighting;       Contained within building Travel distance limits to EXITs meet NFPA 101 A				Sa	afety-related divisional equipment or cables	none
Except: none         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation       Installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety:       None       Contained within building Life safety:       Soft A and B on-site power sources ar unaffected by fire and are operable.       Both A and B on-site power sources ar unaffected by fire and are operable.	Except: none         Except: none         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual FP       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Plant operation: Plant operation: Contained within building Life safety: Manual firefighting: Access via door       Contained within buildi	Except: Inone         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety:       None       Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.         Manual firefighting: Access via door       Travel distance limits to EXIT's meet NFPA 101       unaffected by fire and are operable.						: A, B
Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells            Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None       None       Complete burnout of all equipment and cables within this Fir Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.	Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells <td>Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic &amp; manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.   <td></td><th></th><td>Surrounded by fire</td><td>e barriers rated at:</td><td>3 hours</td><td></td></td>	Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable. <td></td> <th></th> <td>Surrounded by fire</td> <td>e barriers rated at:</td> <td>3 hours</td> <td></td>			Surrounded by fire	e barriers rated at:	3 hours	
EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells           Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety: Life safety: Manual firefighting: Access via door       Source of the safety of the safety divisions are unaffected by fire and are operable.       Source of the safety of the safety.         Manual firefighting:       Access via door       Sources ar       Safety-related equipment; all safety divisions are unaffected by fire and are operable.       Safety of the safety.	EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable.       South A and B on-site power sources are unaffected by fire and are oper	EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         1000       1000       Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None Life safety: Life safety: Manual firefighting: Access via door       None       None         Manual firefighting: Manual firefighting:       Contained within building Access via door       EXITs meet NFPA 101       None				Except:	none	
EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells           Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety: Life safety: Manual firefighting: Access via door       Source of the safety of the safety divisions are unaffected by fire and are operable.       Source of the safety of the safety.         Manual firefighting:       Access via door       Sources ar       Safety-related equipment; all safety divisions are unaffected by fire and are operable.       Safety of the safety.	EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization Cable insulation       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable.       South A and B on-site power sources are unaffected by fire and are oper	EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.						
13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in near stairwells         13570       1680       Electrical equipment Cable insulation       Anticipated combustible load, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Unsprinklered combustible load limit, MJ/m2 Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment and cables within this Fir Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.         Manual firefighting:       Access via door       unaffected by fire and are operable.	13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual pull (outside room)       CO2 fire extinguisher       Hose racks in nearth stairwells         13570       1680       Electrical equipment Cable insulation       Area-wide ionization (outside room)       Manual FP equipment function, impact of design basis fire on safe shutdown:         13570       1       Sasuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Life safety:       Anno       Anno       And B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.         Manual firefighting:       Access via door       Manual fire fighting:       Both A and B on-site power sources are unaffected by fire and are operable.	Image: Installed fire extinguishing operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Iravel distance limits to EXITs meet NFPA 101       Area-wide ionization (outside room)       CO2 fire extinguisher       Hose racks in nearb stairwells         Manual firefighting: Access via door       Area-wide ionization (outside room)       Manual firefighting: Access via door						
Cable insulation       (outside room)       stairwells            stairwells <td>Cable insulation       (outside room)       stairwells               stairwells                                                                                                                        <td>Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins</td><td>EL Room # Poter</td><th>ntial Combustibles</th><td>Primary</td><td>Backup</td><td>Primary</td><td>Backup</td></td>	Cable insulation       (outside room)       stairwells               stairwells <td>Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins</td> <td>EL Room # Poter</td> <th>ntial Combustibles</th> <td>Primary</td> <td>Backup</td> <td>Primary</td> <td>Backup</td>	Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins	EL Room # Poter	ntial Combustibles	Primary	Backup	Primary	Backup
Cable insulation       (outside room)       stairwells            stairwells <td>Cable insulation       (outside room)       stairwells               stairwells                                                                                                                        <td>Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins</td><td></td><th></th><td></td><td></td><td></td><td></td></td>	Cable insulation       (outside room)       stairwells               stairwells <td>Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins</td> <td></td> <th></th> <td></td> <td></td> <td></td> <td></td>	Cable insulation       (outside room)       stairwells         Cable insulation       (outside room)       stairwells         Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable insulation       Image: Cable insulation       stairwells         Cable insulation       Image: Cable ins						
< 700	< 700	<td< td=""><td>13570 1680 Elect</td><th>rical equipment</th><td>Area-wide ionization</td><td>Manual pull</td><td>CO2 fire extinguisher</td><td>Hose racks in nearby</td></td<>	13570 1680 Elect	rical equipment	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hose racks in nearby
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via doorfunction, impact of design basis fire on safe shutdown:Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety:function, impact of design basis fire on safe shutdown:Contained within building Life safety:Contained within building Iravel distance limits to EXITs meet NFPA 101 Manual firefighting:function, impact of design basis fire on safe shutdown:	Cabl	e insulation		(outside room)		stairwells
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via doorfunction, impact of design basis fire on safe shutdown:Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety:function, impact of design basis fire on safe shutdown:Contained within building Life safety:Contained within building Iravel distance limits to EXITs meet NFPA 101 Manual firefighting:function, impact of design basis fire on safe shutdown:						
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected b fire and are operable. Both A and B on-site power sources ar unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via doorfunction, impact of design basis fire on safe shutdown:Complete burnout of all equipment and cables within this Fire Area affects only redundant train A and B equipment and no safety-related equipment; all safety divisions are unaffected by fire and are operable. Both A and B on-site power sources are unaffected by fire and are operable.	700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety:function, impact of design basis fire on safe shutdown:Contained within building Life safety:Contained within building Iravel distance limits to EXITs meet NFPA 101 Manual firefighting:function, impact of design basis fire on safe shutdown:						
Property loss: Minor	Property loss: Minor	Property loss: Minor	Plant operation: None Radiological release: Cont Life safety: Trav Manual firefighting: Acces	lled fire extinguishing ained within building el distance limits to E ss via door	equipment, impact of fire	upon:	Complete burnout of all equipment and Area affects only redundant train A and safety-related equipment; all safety divis fire and are operable. Both A and B on-	cables within this Fire B equipment and no sions are unaffected by :
			Property loss: Mino	)r		J		

#### ESBWR

				Dunuing (Con	/	
	Fire Area:	F1681		Vestibule 1681		
	Building:	Reactor	Applicable codes:	IBC; Reg Guide	1.189; NFPA 10, 24, 50A, 72, 101, 497, 80	4
		DCD Fig:			Building code occupancy classification:	F-1
		9A.2-6			Electrical classification:	none
		9A.2-10		Sa	afety-related divisional equipment or cables:	none
					ted redundant trains or equipment or cables:	A, B
			Surrounded by fir	e barriers rated at:	3 hours	
				Except:	none	
		owing Rooms:	Fire Detect	-	Fire Suppression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
13570	1681	Electrical equipment	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hose racks in nearby
		Cable insulation		(outside room)		stairwells
		< 700	Anticipated combustible lo	ad MJ/m2	Assuming automatic & manual FP equipme	nt does not
		700			function, impact of design basis fire on safe	
			e noprimiere a como astron	1	Complete burnout of all equipment and c	
Assuming	operation c	of installed fire extinguishing	ng equipment, impact of fire		Area affects only redundant train A and	
	t operation:		ig equipment, impact of me		safety-related equipment; all safety divisi	
		Contained within building	nσ		fire and are operable. Both A and B on-s	
icuatorog		Travel distance limits to			unaffected by fire and are operable.	she power sources are
Manual		Access via door			unaffected by fire and are operable.	
	operty loss:					
	openty 1055.	MINU				

### Reactor Building (Cont.)

	Fire Area	F1770	Description:	Main Steam Tunnel				
	Building	Reactor & Turbine	Applicable codes:		89; NFPA 10, 14, 72, 101, 804			
	DCD Fig:		_	Building code occupancy classification: <b>F-1</b>				
	9A.2-7			Electrical classification: none				
				Safety-related divisional equipment or cables: 1, 2, 3, 4				
					undant trains or equipment or cab	les: none		
			Surrounded by	y fire barriers rated at:				
				Except:	north side (water curtain sprin	nklers in F4100)		
Consisting	of the followir	ig Rooms:	Fire Dete	ection	Fire Supp	ression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
17500	1770	Class IIIB lubricants Cable insulation	Area-wide linear heat	Manual pulls (outside stairwell at each landing)	Hose racks at stairwells	ABC fire extinguisher at access doors		
		< 700			A			
		< 700 700	Anticipated combustible lo	,	Assuming automatic & manual I	1 1		
		/00	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis			
	naration of in	stallad fire extinguishing ag	uipment, impact of fire upor	n ·	Complete burnout of all equip			
A gauming a	operation of m			11. <b>I</b>	Fire Area results in loss of Div			
		Depaton conomi turbino (	win .					
		Reactor scram; turbine to				entation; containment		
P	lant operation	outage required to restor	re		isolation is maintained by inbo	oard MSIVs, outside of thi		
P	lant operation	outage required to restor Contained within buildin	re Ig	-	isolation is maintained by inbo Fire Area. No safe shutdown	oard MSIVs, outside of thi functions are affected by		
P Radiol	lant operation logical release Life safety	outage required to restor Contained within buildin Travel distance limits to	re 1g EXITs meet NFPA 101	- - -	isolation is maintained by inbo Fire Area. No safe shutdown this fire; all other safety-relate	oard MSIVs, outside of thi functions are affected by ed equipment and both		
P Radiol	lant operation logical release Life safety	outage required to restor Contained within buildin Travel distance limits to Access via interior doors	re 1g EXITs meet NFPA 101		isolation is maintained by inbo Fire Area. No safe shutdown	oard MSIVs, outside of this functions are affected by ed equipment and both pment are unaffected by		

#### **Reactor Building (Cont.)**

	Fire Area: Building:	F1890           Reactor           DCD Fig:           9A.2-8           9A.2-9	Applicable codes:	Bu Safety-re	89; NFPA 10, 14, 72, 90A, 101, 80 ilding code occupancy classification Electrical classification lated divisional equipment or cable undant trains or equipment or cable	n: F-1 n: none s: none
Consisting EL	of the followin Room #	g Rooms: Potential Combustibles	Fire Dete Primary	ction Backup	Fire Suppre Primary	ssion Backup
27000 34000	1294	Cable insulation Electrical equipment	Area-wide ionization	Manual pulls (outside Elev at each landing)	CO2 fire extinguisher (outside chase)	Hose racks (in nearby stairwell)
					ABC fire extinguishers (outside Elev at each landing)	_
P. Radiol	lant operation: ogical release: Life safety:	None Contained within buildi Travel distance limits to Access via stairwells	Anticipated combustible lo Unsprinklered combustible quipment, impact of fire upon ng EXITs meet NFPA 101	e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fi Complete burnout of all equipm Fire Area affects no safety-relat divisions and both redundant tr operable. This fire area provide Divisional Commodity Chase B (bottom of concrete for elevation 34000 to provide upper and low	re on safe shutdown: tent and cables within the ed equipment; all safety ains A and B are s separation of Non between elevations 2460 on 27000) and elevation

	Fire Area:	F1891	Description:	Non Divisional Com	modity Chase C	
	Building	Reactor	Applicable codes:	IBC; Reg Guide 1.18	89; NFPA 10, 14, 72, 90A, 101, 804	
		DCD Fig:		Bui	lding code occupancy classification:	F-1
		9A.2-8			Electrical classification:	
		9A.2-9		Safety-rel	ated divisional equipment or cables:	none
			1	Nonsafety-related redu	indant trains or equipment or cables:	none
			Surrounded by	y fire barriers rated at:	3 hours	
				Except:	none	
			J			
Consisting of	of the followin		Fire Dete	ction	Fire Suppress	ion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
27000	1295	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguisher	Hose racks
34000		Electrical equipment		(outside Elev	(outside chase)	(in nearby stairwell)
				at each landing)		
					ABC fire extinguishers	
					(outside Elev	
					at each landing)	
		< 700	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual FP e	quipment does not
		700	Unsprinklered combustible		function, impact of design basis fire	
					Complete burnout of all equipment	
Assuming o	peration of ins	stalled fire extinguishing eq	uipment, impact of fire upor	1:	Fire Area affects no safety-related	
	lant operation:		1 / 1 1		divisions and both redundant trai	
Radiological release: Contained within buildin			Ig		operable. This fire area provides	
		Travel distance limits to			Divisional Commodity Chase C be	
Manu		Access via stairwells			(bottom of concrete for elevation	
	0 0				34000 to provide upper and lower	· · · · · · · · · · · · · · · · · · ·
					e loos to provide apper and lower	portions of the chuse.
	Property loss:	Negligible				
	1 10perty 1055.	rieginginie		l		

#### Fuel Building

	Fire Area:	F2100	Description:	New and Spent Fu	iel Handling	
	Buildings:	Fuel & Reactor	Applicable codes:	IBC; Reg Guide 1	.189; NFPA 10, 14, 72, 90A, 101, 8	04
	DCD Fig:			Bui	lding code occupancy classification:	F-1
	9A.2-1	9A.2-5			Electrical classification:	
	9A.2-2	9A.2-6			ated divisional equipment or cables:	
	9A.2-3	9A.2-10			ndant trains or equipment or cables:	A, B
	9A.2-4		Surrounded by f	ire barriers rated at:		
				Except:	basemat (non-rated); elevator do	ors (1.5 hr rated)
Consisting	of the following Roo		Fire Detec	tion	Fire Suppress	sion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-11500	2101	Class IIIB lubricants	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire
	2100, 2150, 2151	Cable insulation	Area-wide ionization	(outside stairwell	(in nearby stairwells)	extinguishers
	2160, 2161			at each landing)		
	2102, 2190, 2191					
	21P0, 21P1, 21P2					
-6400		Class IIIB lubricants	Area-wide ionization			
	2251, 2261	Cable insulation				
		Electrical equipment				
	21P0, 21P1, 21P2,	none				
	2190, 2191					
-1000	2300, 2301,	Class IIIB lubricants				
	2302, 2190,	Cable insulation				
	2191, 21P0,	Electrical equipment				
	21P1, 21P2					
4650	2400	Class IIIB lubricants	Area-wide linear heat			
		Cable insulation				
		Transient combustibles				
		Class A combustibles				
	2401, 2302, 21P2,	none				
	21P1, 21P0, 2190					

Table 9A.5-2
Fuel Building (Cont)

Buildings:       Fuel & Reactor       Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804         9060       2400       Manual Pulls (outside stairwell at each landing)       Manual Pulls (outside stairwell at each landing)       ABC fire extin         13570       Class IIIB lubricants Cable insulation Transient combustibles       Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment does 1 function, impact of design basis fire on safe shutdow          700       Unsprinklered combustible load limit, MJ/m2       Assuming automatic & manual FP equipment does 1 function, impact of design basis fire on safe shutdow         Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation:       Contained within building       Complete burnout of all equipment and cables w Fire Area results in loss of DIV 1, 2, 3 and 4 Proc Radiation Monitor instrumentation resulting in so of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S Fuel Pool from the FP system is unaffected by fir operable. Both A and B on-site power sources an unaffected by fire and are operable.		Fire Area:	F2100 (continued)	Description:	New and Spent Fu	iel Handling	
13570       Class IIIB lubricants Cable insulation Transient combustibles Class A combustibles       (outside stairwell at each landing)       Hose racks (in nearby stairwells)       ABC fire extin at each landing) <ul> <li></li></ul>							04
Cable insulation Transient combustibles Class A combustibles       at each landing)          Anticipated combustible load, MJ/m2          Anticipated combustible load, MJ/m2          To0         Unsprinklered combustible load limit, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon:         Plant operation         None; restoration required before refueling         Contained within building         Life safety:         Life safety:         Manual firefighting:         Property loss:         Moderate	9060	2400			Manual Pulls		
Cable insulation Transient combustibles Class A combustibles       at each landing)          Anticipated combustible load, MJ/m2          Anticipated combustible load, MJ/m2          To0         Unsprinklered combustible load limit, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon:         Plant operation         None; restoration required before refueling         Contained within building         Life safety:         Life safety:         Manual firefighting:         Property loss:         Moderate	13570		Class IIIB lubricants		(outside stairwell	Hose racks (in nearby stairwells)	ABC fire extinguishers
Transient combustibles       Transient combustibles         Class A combustibles       Anticipated combustible load, MJ/m2         700       Unsprinklered combustible load limit, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon:       Assuming operation:         Plant operation:       None; restoration required before refueling         Radiological release:       Contained within building         Life safety:       Travel distance limits to EXITs meet NFPA 101         Manual firefighting:       Access via stairwells         Property loss:       Moderate	10570					hose facks (in hearby start wens)	The fire extinguishers
Class A combustibles       Anticipated combustible load, MJ/m2         Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment does a function, impact of design basis fire on safe shutdow         Assuming operation of installed fire extinguishing equipment, impact of fire upon:       Complete burnout of all equipment and cables were stated within building         Radiological release:       Contained within building       Contained within building         Life safety:       Travel distance limits to EXITs meet NFPA 101       Radiation Monitor instrumentation resulting in so of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S Fuel Pool from the FP system is unaffected by fire operable. Both A and B on-site power sources and the source source sources and the source sources and the source source sources and the source source source source sources and the source source so					w own innung)		
< 700Anticipated combustible load, MJ/m2Assuming automatic & manual FP equipment does to function, impact of design basis fire on safe shutdowAssuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via stairwells Property loss: ModerateAssuming automatic & manual FP equipment does to function, impact of design basis fire on safe shutdow Complete burnout of all equipment and cables w Fire Area results in loss of DIV 1, 2, 3 and 4 Proc Radiation Monitor instrumentation resulting in so of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S Fuel Pool from the FP system is unaffected by fin operable. Both A and B on-site power sources and operable.							
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdowAssuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Property loss:function, impact of design basis fire on safe shutdowRadiological release: Difference Property loss:function, impact of design basis fire on safe shutdowRadiological release: Difference Property loss:function, impact of design basis fire on safe shutdowManual firefighting: Property loss:function, impact of design basis fire on safe shutdowModeratefunction, impact of design basis fire on safe shutdowComplete burnout of all equipment and cables wFire Area results in loss of DIV 1, 2, 3 and 4 ProopRadiation Monitor instrumentation resulting in sofunction, impact of fire upon:None; restoration required before refuelingRadiation Monitor instrumentation resulting in sofunction, impact of Fuel Building.Loss ofFuel Pool from the FP system is unaffected by fir operable.Both A and B on-site power sources and				Antioinstad sombustible la	ad MI/m2	A comming outomotic & morreal ED	auinmont doog not
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Property loss: Moderate Moderate Moderate Manual firefighting: Property loss: Moderate Complete burnout of all equipment and cables w Fire Area results in loss of DIV 1, 2, 3 and 4 Proc Radiation Monitor instrumentation resulting in so of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S Fuel Pool from the FP system is unaffected by fin operable. Both A and B on-site power sources an						÷	
Assuming operation of installed fire extinguishing equipment, impact of fire upon:Fire Area results in loss of DIV 1, 2, 3 and 4 ProofPlant operation:None; restoration required before refuelingRadiation Monitor instrumentation resulting in sector and isolation of Fuel Building. Loss ofRadiological release:Contained within buildingof HVAC and isolation of Fuel Building. Loss ofLife safety:Travel distance limits to EXITs meet NFPA 101loss of FAPCS. Makeup water capability to the SManual firefighting:Access via stairwellsFuel Pool from the FP system is unaffected by fire operable. Both A and B on-site power sources and			/00	Unsprinklered combustible	ioau minit, MJ/m2		
Plant operation:None; restoration required before refuelingRadiation Monitor instrumentation resulting in sector of HVAC and isolation of Fuel Building. Loss of of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S Property loss:ModerateModerateModerateFuel Pool from the FP system is unaffected by fin operable. Both A and B on-site power sources and the sector of th	Assuming on	veration of installed	fire extinguishing equipme	ent impact of fire upon:			
Radiological release:       Contained within building         Life safety:       Travel distance limits to EXITs meet NFPA 101         Manual firefighting:       Access via stairwells         Property loss:       Moderate         Of HVAC and isolation of Fuel Building. Loss of redundant train A and B FAPCS equipment will loss of FAPCS. Makeup water capability to the S         Property loss:       Moderate	rissunning op						
Life safety:Travel distance limits to EXITs meet NFPA 101redundant train A and B FAPCS equipment willManual firefighting:Access via stairwellsloss of FAPCS. Makeup water capability to the SProperty loss:ModerateFuel Pool from the FP system is unaffected by fin operable. Both A and B on-site power sources and	Ra						-
Manual firefighting:       Access via stairwells         Property loss:       Moderate         Image: State stairwell of the state st							-
Property loss: Moderate Fuel Pool from the FP system is unaffected by fin operable. Both A and B on-site power sources an	Μ						
operable. Both A and B on-site power sources an							-
						÷	-

	Fire Area:	F2192	Description:	Elevator A				
	Building:			Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1				
	U	DCD Fig:		Building code occupancy classification: F-1				
		9A.2-1	Electrical classification: none					
		9A.2-2	Safety-related divisional equipment or cables: none					
		9A.2-3			lundant trains or equipment or cable	s: none		
		9A.2-4	Surround	ed by fire barriers rated a				
		9A.2-5 Except: basemat (non-rated); elevator doors (1.						
			1					
Consisting of the following Rooms:			Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-11500	2192	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks		
-6400		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)		
-1000				at each landing)	at each landing)	· · · ·		
4650								
9060	2500	Class IIIB lubricants			CO2 fire extinguisher			
		Cable insulation			(outside room)			
		Electrical equipment						
		< 700	Anticipated combustible lo		Assuming automatic & manual FF	equipment does not		
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fi			
					Complete burnout of all equipm			
			uipment, impact of fire upon	•	Fire Area affects no safety-relat			
	lant operation:				equipment; all safety divisions a	nd both redundant train		
Radiol		None, no radiological m			A and B are operable.			
	Lite satety.	Travel distance limits to	EXITs meet NFPA 101					
			1 • 4 1					
		Access via stairwell and	hoistway doors					

	Fire Area		Description: Stairwell A				
	Building:	Fuel	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804 Building code occupancy classification: F-1			
	DCD Fig: 9A.2-1	9A.2-5	Electrical classification: none				
	9A.2-1 9A.2-2	9A.2-5 9A.2-6		C - f- f-			
					elated divisional equipment or ca		
	9A.2-3	9A.2-7	C		dundant trains or equipment or ca	loles: none	
	9A.2-4		Surrounde	ed by fire barriers rated a			
				Excep	t: basemat		
Consisting of	of the following	g Rooms:	Fire De	tection	Fire Sur	pression	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500 -6400 -1000 4850 9060 17500 22700	2193	None	Area-wide ionization	Manual pulls (outside stairwell at each landing)	Hose racks	ABC fire extinguishers	
		negligible 700	Anticipated combustible los Unsprinklered combustible	load limit, MJ/m2	Assuming automatic & manua function, impact of design bass <b>Complete burnout of all equ</b>	s fire on safe shutdown: pment and cables within this	
			uipment, impact of fire upon:	•	Fire Area affects no safety-r		
	lant operation:				equipment; all safety division	is and both redundant trains	
Radio		None, no radiological m			A and B are operable.		
		Travel distance limits to					
Manu		Access via exterior and i	nterior doors				
	Property loss:	Nagligibla					

	Fire Area:	F2490	Description:	Stairwell B			
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	Dunung.	DCD Fig:			uilding code occupancy classification	: F-1	
		9A.2-4	Electrical classification: <b>none</b>				
		9A.2-5		Safety-re	elated divisional equipment or cables	none	
		9A.2-6	Nonsafety-related redundant trains or equipment or cables: <b>none</b>				
		9A.2-7	Surround	ed by fire barriers rated a			
				Excep	t: basemat		
				-			
a:	<u>C.I.</u> C.II. :	D			E. 0	•	
	of the following			etection	Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650 9060	2490	None	Area-wide ionization	Manual pulls (outside stairwell	Hose racks	ABC fire extinguishers	
13570 22500				at each landing)			
		negligible	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fir		
Assuming or	peration of inst		upment, impact of fire upon	·	Complete burnout of all equipmo Fire Area affects no safety-relate	ent and cables within this	
	lant operation:				equipment; all safety divisions an		
		None, no radiological ma	terials present		A and B are operable.		
		Travel distance limits to					
Manu		Access via exterior door					
	Property loss:						

	Fire Area:	F2600	Description:	HVAC Penthouse A				
	Building:	Fuel			FPA 10, 14, 72, 90A, 101, 804			
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-7	Electrical classification: none					
		9A.2-10	Safety-related divisional equipment or cables: none					
					indant trains or equipment or cables:	A		
			Surround	ed by fire barriers rated at:				
				Except:	none			
			J					
Consisting o	of the following	g Rooms:	Fire De	etection	Fire Suppres	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
22500	2600	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
		Cable insulation		(outside stairwells)	(in nearby stairwells)			
		Filter media						
		< 700	Anticipated combustible lo	ad MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fire			
					Complete burnout of all equipme			
Assuming of	peration of ins	talled fire extinguishing eq	uipment, impact of fire upon		Fire Area results in loss of only r			
		None; restoration requir			safety-related or safe shutdown a			
		None, no radiological ma			equipment is unaffected by fire a			
		Travel distance limits to			and B on-site power sources are u	_		
Manu	al firefighting:	Access via stairwells			are operable.	·		
	Property loss:							
1								

	Fire Area:		Description: HVAC Penthouse B				
	Building:	Fuel	Applicable codes:		NFPA 10, 14, 72, 90A, 101, 804		
	DCD Fig:		-	Bu	ilding code occupancy classification		
	9A.2-1	9A.2-5			Electrical classification: none		
	9A.2-2	9A.2-6			lated divisional equipment or cables		
	9A.2-3	9A.2-7			undant trains or equipment or cables	: <b>B</b>	
	9A.2-4	9A.2-10	Surrounded by fire barriers rated at: <b>3 hours</b>				
				Except	basemat (non-rated)		
	the following		Fire De	etection	Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-11500	2194	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
-6400	ł			(outside stairwell			
-1000	4			at each landing)			
4650	4						
9060 13570	4						
22700	2601	Class IIIB lubricants					
22700	2001	Cable insulation					
	2174	Filter media					
		T liter literia					
		< 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not	
		700	Unsprinklered combustible	-	function, impact of design basis fir		
			-		Complete burnout of all equipme	ent and cables within this	
			pment, impact of fire upon:		Fire Area results in loss of only i	edundant train B; all	
		None; restoration requir			safety-related or safe shutdown a		
Radio		None, no radiological ma			equipment is unaffected by fire a	nd are operable. Both A	
		Travel distance limits to	EXITs meet NFPA 101		and B on-site power sources are	unaffected by fire and	
Manu		Access via stairwells			are operable.		
	Property loss:	Moderate					

#### **Control Building**

1	Fire Area:	F3100	Description:	Corridor A				
	Building:				89; NFPA 10, 14, 72, 90A, 101, 804			
	O	DCD Fig:	ff ff		uilding code occupancy classification			
		9A.2-2	Electrical classification: <b>none</b>					
		9A.2-3		Safety-re	elated divisional equipment or cables	none		
		9A.2-4	Nonsafety-related redundant trains or equipment or cables: none					
		9A.2-11	Surrounded by	fire barriers rated a	t: <b>3 hours</b>			
			Except: basemat (non-rated); elevator doors (1.5 hr rated)					
0	of the followin	0	Fire Detec		Fire Suppres	1		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	3100	Cable insulation	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire extinguishers		
	over sump	Class A combustibles		(at EXITs)	(in nearby stairwells)			
	3100	-	Area-wide ionization					
-2000	3200							
-1400	3203							
4650	3300							
			-					
		< 700	Anticipated combustible loa		Assuming automatic & manual FP			
		< 700 700	Anticipated combustible loa Unsprinklered combustible l		function, impact of design basis fir	re on safe shutdown:		
		700	Unsprinklered combustible l	oad limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme	re on safe shutdown: ent and cables within this		
		700 stalled fire extinguishing ea	*	oad limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme Fire Area affects no safety-relate	re on safe shutdown: ent and cables within this ed or safe shutdown		
P	Plant operation:	700 stalled fire extinguishing ea None	Unsprinklered combustible l quipment, impact of fire upon:	oad limit, MJ/m2	function, impact of design basis für Complete burnout of all equipme Fire Area affects no safety-relate equipment; all safety divisions an	re on safe shutdown: ent and cables within this ed or safe shutdown		
P	Plant operation: logical release:	700 stalled fire extinguishing ea None None, no radiological m	Unsprinklered combustible l quipment, impact of fire upon: aterials present	oad limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme Fire Area affects no safety-relate	re on safe shutdown: ent and cables within this ed or safe shutdown		
P Radio	Plant operation: logical release: Life safety:	700 stalled fire extinguishing ea None None, no radiological m Travel distance limits to	Unsprinklered combustible l quipment, impact of fire upon: aterials present	oad limit, MJ/m2	function, impact of design basis für Complete burnout of all equipme Fire Area affects no safety-relate equipment; all safety divisions an	re on safe shutdown: ent and cables within this ed or safe shutdown		
P Radio	Plant operation: logical release: Life safety:	700 stalled fire extinguishing ea None None, no radiological m Travel distance limits to Access via doors	Unsprinklered combustible l quipment, impact of fire upon: aterials present	oad limit, MJ/m2	function, impact of design basis für Complete burnout of all equipme Fire Area affects no safety-relate equipment; all safety divisions an	re on safe shutdown: ent and cables within this ed or safe shutdown		

#### **Control Building (cont.)**

	Fire Area:	F3101	Description:	Corridor B			
		Control	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-2			Electrical classification	n: <b>none</b>	
		9A.2-3			elated divisional equipment or cable		
		9A.2-4			lundant trains or equipment or cable	s: none	
			Surround	ed by fire barriers rated a			
			Except: basemat (non-rated); elevator doors (1.5 hr rated)				
a i i		D					
	Consisting of the following Rooms:		Fire De		Fire Suppre		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
- 100	2101						
-7400	3101	Cable insulation	Area-wide photoelectric	Manual pulls	Hose racks	ABC fire extinguishers	
-2000	over sump	Class A combustibles	Area-wide ionization	(at EXITs)	(in nearby stairwells)		
-2000	rest of 3101 3262	-	Area-wide ionization				
4650	5202						
1000							
		< 700	Anticipated combustible loa	ad, MJ/m2	Assuming automatic & manual FI	P equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fi		
				,	Complete burnout of all equipm		
Assuming	operation of ins	stalled fire extinguishing ec	uipment, impact of fire upon	1:	Fire Area affects no safety-relat		
	Plant operation:				equipment; all safety divisions a		
Radio		None, no radiological ma			A and B are operable.		
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		-		
Man	ual firefighting:	Access via doors					
	Property loss:	Negligible					

#### **Control Building (cont.)**

	Fire Area:	F3110	Description:	<b>Division 1 Electrical</b>				
	Building:				89; NFPA 10, 14, 72, 75, 90A, 101,	804		
	Dunung.	DCD Fig:	ripplicable codes.	Building code occupancy classification: <b>F-1</b>				
		9A.2-2	Electrical classification: none					
		9A.2-3	Safety-related divisional equipment or cables: 1					
		9A.2-4	Nonsafety-related redundant trains or equipment or cables: A					
		9A.2-5	Surrounded by fire barriers rated at: 3 hours					
		9A.2-11	Surrounded by		basemat (non-rated)			
				-				
Consisting	of the followin		Fire Dete		Fire Sup			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	duct bank	Cable insulation	None	None	None	None		
	3110		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
	below floor			(outside stairwell		(in nearby stairwells)		
-6800	3110	Cable insulation		at each landing)				
		Electrical equipment						
-2000	3250				Hose racks	ABC fire		
-1400	3251				(in nearby stairwells)	extinguishers		
5250								
9060		Class IIIB lubricants						
	3403	Cable insulation						
	3406	Filter media						
	Charcoal	Charcoal	HVAC temperature		Internal manual spray			
	Filter		indication					

# Table 9A.5-3Control Building (cont.)

Fire Area: F3110 (continued)	Description:	Division 1 Electrica	ıl
Building: Control	Applicable codes:	BC; Reg Guide 1.1	189; NFPA 10, 14, 72, 75, 90A, 101, 804
< 700 at EL 9060; < 1400 EL -6800 & belowAnticipated combustible loa700 at EL 9060; 1400 EL -6800 & belowUnsprinklered combustible			Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: <b>The nonsafety-related MCR HVAC has redundant air handling</b>
Assuming operation of installed fire extinguishing equi Plant operation: None Radiological release: None, no radiological mate Life safety: Travel distance limits to E Manual firefighting: Access via stairwells Property loss: Significant	erials present		units, but uses common ductwork. Where the common ductwork for one air handling unit could be exposed to fire involving the other redundant air handling unit, the HVAC ductwork will be wrapped or encapsulated in 3-hour fire rated material. Complete burnout of all equipment and cables within this Fire Area results in loss of only Division 1 safe shutdown equipment circuits, as well as redundant train A non-safety equipment; remaining three divisions of safe shutdown and redundant train B equipment are unaffected by fire and are operable. Automatic logic control scheme (any two out of four redundant signals) remains operable.

#### ESBWR

### Table 9A.5-3

#### **Control Building (cont.)**

	Fire Area:	F3120	Description: Division 2 Electrical				
	Building:				NFPA 10, 14, 72, 75, 101, 804		
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-2	Electrical classification: none				
		9A.2-3	Safety-related divisional equipment or cables: 2				
					undant trains or equipment or cables	: none	
			Surround				
				Except	t: basemat (non-rated)		
Consisting	of the followin	g Rooms.	Fire De	tection	Fire Suppre	sion	
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
			1 minur y	Duckup	1 milling	Duckup	
-7400	duct bank	Cable insulation	None	None	None	None	
	3120		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
	below floor			(outside stairwell		(in nearby stairwells)	
-6800	3120	Cable insulation		at each landing)			
		Electrical equipment					
		< 1400	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	1 1	
	1400		Unsprinklered combustible load limit, MJ/m2 function, impact of design basis fire on safe		ra an cafa chutdaum		
		1400		10au 111111, MJ/1112			
					Complete burnout of all equipm	ent and cables within	
		talled fire extinguishing ec	uipment, impact of fire upor		Complete burnout of all equipm this Fire Area results in loss of o	ent and cables within nly Division 2 safe	
Р	lant operation:	talled fire extinguishing ec	uipment, impact of fire upor		Complete burnout of all equipm this Fire Area results in loss of o shutdown equipment circuits; r	ent and cables within nly Division 2 safe emaining three divisions	
Р	Plant operation: logical release:	talled fire extinguishing ec None None, no radiological m	uipment, impact of fire upor aterials present		Complete burnout of all equipm this Fire Area results in loss of o shutdown equipment circuits; r of safe shutdown and redundant	ent and cables within nly Division 2 safe emaining three divisions t trains A and B	
P Radio	Plant operation: logical release: Life safety:	talled fire extinguishing ec None None, no radiological m Travel distance limits to	uipment, impact of fire upor aterials present		Complete burnout of all equipm this Fire Area results in loss of o shutdown equipment circuits; r of safe shutdown and redundant equipment are unaffected by fir	ent and cables within nly Division 2 safe emaining three divisions trains A and B e and are operable.	
P Radio	Plant operation: logical release: Life safety:	talled fire extinguishing ec None None, no radiological m Travel distance limits to Access via stairwells	uipment, impact of fire upor aterials present		Complete burnout of all equipm this Fire Area results in loss of o shutdown equipment circuits; r of safe shutdown and redundant	ent and cables within nly Division 2 safe emaining three divisions t trains A and B e and are operable. (any two out of four	

# Table 9A.5-3Control Building (cont.)

				<b>2</b> , , ,				
	Fire Area:	F3130	Description:	<b>Division 3 Electrical</b>				
	Building:	Control	Applicable codes:	IBC; Reg Guide 1.18	89; NFPA 10, 14, 72, 75, 90A, 101, 804			
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-2	Electrical classification: none					
		9A.2-3	Safety-related divisional equipment or cables: 3					
		9A.2-4	Nonsafety-related redundant trains or equipment or cables: <b>B</b>					
		9A.2-5	Surrounded by fire barriers rated at: 3 hours					
					basemat (non-rated)			
Consisting of the following Rooms:			Fire Dete	ction	Fire Suppression			
EL	Room#	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	duct bank	Cable insulation	None	None	None	None		
	3130		Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
	below floor			(outside stairwell	_	(in nearby		
-6800	3130	Cable insulation		at each landing)		stairwells)		
		Electrical equipment		C.,		, ,		
		Insulation			Hose racks	ABC fire		
-1400	3260, 3261				(in nearby stairwells)	extinguishers		
4650						_		
9060		Class IIIB lubricants						
	3404	Cable insulation						
	3407	Filter media						
	Charcoal	Charcoal	HVAC temperature		Internal manual spray			
	Filter		indication					

## Table 9A.5-3Control Building (cont.)

control Bunning (contr)								
	Description: Division 3 Electrical Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 90A, 101, 804							
< 700 at EL 9060; < 1400 EL -6800 & below	Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown: The nonsafety-related MCR HVAC has redundant air handling units, but uses common ductwork. Where the common ductwork for one air handling unit could be exposed to fire involving the other redundant air handling unit, the HVAC ductwork will be wrapped or encapsulated in 3-hour fire rated material. Complete burnout of all equipment and cables within this Fire Area results in loss of only Division 3 safe shutdown equipment circuits, as well as redundant train B non-safety equipment; remaining three divisions of safe shutdown and redundant train A equipment are unaffected by fire and are operable. Automatic logic control scheme (any two out of four redundant signals) remains operable.							

Control	Building	(cont.)
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	Fire Area:	F3140	Description:	Division 4 Electrical				
	Building:	Control	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804				
		DCD Fig:		Building code occupancy classification: F-1				
		9A.2-2			Electrical classification			
		9A.2-11			elated divisional equipment or cables			
					lundant trains or equipment or cables	s: none		
			Surround	ed by fire barriers rated a				
				Excep	t: basemat (non-rated)	asemat (non-rated)		
Consisting	of the followin	g Rooms:	Fire De	Fire Detection Fire Suppression		ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	duct bank	Cable insulation	None	None	None	None		
-7400	3140 below floor		Area-wide ionization	Manual pulls (outside stairwell	CO2 fire extinguishers	Hose racks (in nearby stairwells		
(900	3140	Cable insulation	-	at each landing)				
-6800	5140	Electrical equipment						
<1400 Anticipated combustible load, MJ/m2		Assuming automatic & manual FF						
1400		Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:				
					Complete burnout of all equipm			
Assuming operation of installed fire extinguishing equipm Plant operation: None Radiological release: None, no radiological materia Life safety: Travel distance limits to EXI		ipment, impact of fire upon:		Fire Area results in loss of only Division 4 safe shutdow				
				equipment circuits; remaining				
				shutdown and redundant trains				
		EXITS meet NFPA 101		unaffected by fire and are opera	-			
	Manual firefighting: Access via stairwells Property loss: Significant				control scheme (any two out of f	four redundant signals)		
Manu					remains operable.	our redundant signais)		

<b>Table 9A.5-3</b>
Control Building (cont.)

	Fire Area:	F3150	Description:	DPS Control Room		
	Building:	Control	-		9; NFPA 10, 14, 72, 75, 101, 804	4
	-	DCD Fig.			g code occupancy classification:	
		9A.2-4			Electrical classification:	none
				Safety-related	d divisional equipment or cables:	4
			Nor	nsafety-related redunda	int trains or equipment or cables:	none
			Surrounded b	by fire barriers rated at:	3 hours	-
			l .	Except:	basemat (non-rated)	
consisting of	the following Ro	ooms:	Fire De	tection	Fire Suppr	ession
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
4(50	3303	Cable insulation	Area-wide ionization	M		Hose racks
4650	below floor		Area-wide ionization	Manual pulls (outside stairwell at each landing)	CO2 fire extinguishers	(in nearby stairwells)
		< 1400	Anticipated combustible	load MJ/m2	Assuming automatic & manual	FP equipment does not
		1400	Unsprinklered combusti		function, impact of design basis	
			1 p	····, ····,	Complete burnout of all equip	
Assuming op	eration of install	ed fire extinguishing equip	ment, impact of fire upon		this Fire Area results in loss o	
	Plant operation:				System (DPS) equipment circu	uits; four divisions of
Radi	iological release:	None, no radiological ma	terials present		safe shutdown and redundant	
	Life safety:	Travel distance limits to	EXITs meet NFPA 101		equipment are unaffected by f	fire and are operable.
Mai	nual firefighting:	Access via stairwells	Automatic logic control scheme (any two out o			-
	Property loss:	Significant			redundant signals) remains op	perable.
					·	

# Table 9A.5-3Control Building (cont.)

-	<b>D</b> ' <b>A</b>	E2100						
	Fire Area:		- ^ I	Description: Stairwell A Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	Building:		Applicable codes:					
		DCD Fig:	7	Bı	uilding code occupancy classification			
		9A.2-2			Electrical classification			
		9A.2-3			elated divisional equipment or cables			
		9A.2-4			lundant trains or equipment or cables	s: none		
		9A.2-5	Surround	ed by fire barriers rated a				
				Excep	t: basemat (non-rated)			
Consisting	of the followin		Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-7400	3190	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers		
-2000				(outside stairwell				
4650				at each landing)				
9060				8,				
	•	•			•	•		
		negligible	Anticipated combustible los	ad, MJ/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fi	re on safe shutdown:		
					Complete burnout of all equipm			
Assuming of	operation of ins	talled fire extinguishing eq	uipment, impact of fire upon	1:	this Fire Area affects no safety-			
	lant operation:				equipment; all safety divisions a			
	-	None, no radiological ma	aterials present		trains A and B are operable.			
		Travel distance limits to			in and D are operable.			
Manu		Access via exterior and i						
	Property loss:							
					L			

Control	Building	(cont.)
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	Fire Area:	F3101	Description:	Flovetor A		
	Building:				NFPA 10, 14, 72, 101, 804; ASME	A17 1
	Dunung.	DCD Fig:	Applicable codes.		uilding code occupancy classification	
		9A.2-2	1	D	Electrical classification	
		9A.2-3		Safety-re	elated divisional equipment or cables	
		9A.2-4			lundant trains or equipment or cables	
		9A.2-5	Surround	ed by fire barriers rated a		
		JA.2-3	Surround		ot: basemat (non-rated); elevator d	oors (1 5 hr rated)
			J	Елеер	basemat (non-rated), cicvator u	0013 (1.5 m 1accu)
Consisting	of the followin	g Rooms.	Fire De	tection	Fire Suppres	sion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
				p		p
-7400	3191	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks
-2000	• • • •	Cable insulation		(outside Elev	(outside Elev	(in nearby stairwell)
4650				at each landing)	at each landing)	
9060				at cach handing)	CO2 fire extinguisher	
2000					(outside room)	
					(outside room)	
			<u>.</u>			1
		< 700	Anticipated combustible los	ad, MJ/m2	Assuming automatic & manual FP	equipment does not
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:	
					Complete burnout of all equipme	
Assuming of	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upon	.:	this Fire Area affects no safety-r	
	lant operation:				equipment; all safety divisions a	
		None, no radiological ma	aterials present		trains A and B are operable.	
		Travel distance limits to				
Mon		Access via stairwells and				
Iviant						
wiant	Property loss:					

### **Control Building (cont.)**

	Fire Area	: <b>F3192</b>	Description:	Stairwell B			
	Building	: Control	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		Bu	ilding code occupancy classificati	on: <b>F-1</b>	
		9A.2-2			Electrical classificati	on: none	
		9A.2-3			elated divisional equipment or cab		
		9A.2-4			undant trains or equipment or cab	les: none	
		9A.2-5	Surround	ed by fire barriers rated a			
				Excep	t: basemat (non-rated)		
	onsisting of the following Rooms:		Fire De		Fire Supp		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-7400	3192	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers	
-2000 -2000 4650 9060	5172		Area-wide ionization	(outside stairwell at each landing)			
		negligible	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual	FP equipment does not	
		700	Unsprinklered combustible	-	function, impact of design basis		
		700		load limit, MJ/m2	function, impact of design basis Complete burnout of all equip	fire on safe shutdown: ment and cables within	
		700 stalled fire extinguishing eq	Unsprinklered combustible uipment, impact of fire upon	load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet	fire on safe shutdown: ment and cables within y-related or safe shutdown	
Р	Plant operation	700 stalled fire extinguishing eq	uipment, impact of fire upon	load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safety equipment; all safety divisions	fire on safe shutdown: oment and cables within y-related or safe shutdown	
Р	Plant operation logical release	700 stalled fire extinguishing eq None None, no radiological ma	uipment, impact of fire upon aterials present	load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safet	fire on safe shutdown: ment and cables within y-related or safe shutdowr	
P Radiol	Plant operation logical release Life safety	700 stalled fire extinguishing eq None None, no radiological ma Travel distance limits to	uipment, impact of fire upon aterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safety equipment; all safety divisions	fire on safe shutdown: ment and cables within y-related or safe shutdowr	
P Radiol	Plant operation logical release Life safety	700 stalled fire extinguishing eq None Travel distance limits to Access via exterior and i	uipment, impact of fire upon aterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis Complete burnout of all equip this Fire Area affects no safety equipment; all safety divisions	fire on safe shutdown: ment and cables within y-related or safe shutdown	

			Control Buildin	ig (cont.)		
	Fire Area:				Room Complex	
	Building:		Applicable codes:	IBC; Reg Gui	de 1.189; NFPA 10, 14, 72, 75, 101, 804	
		DCD Fig:	_		Building code occupancy classification	
		9A.2-3			Electrical classification	
		9A.2-11			ty-related divisional equipment or cables	
					redundant trains or equipment or cables	none
			Surrounded by fire b			
			interior fire l	parriers rated at:	1 hour, around room 3275 Main Cont	rol Room
Consistin	g of the following Room	s:	Fire Detection	ı	Fire Suppressio	on
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-2000	below access floor	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks
	3274	Cable insulation		(outside		(in nearby stairwells)
	3276	Class A combustibles		stairwells		
-1400	3275	Cable insulation		at each		
	3271, 3272, 3273	Electrical equipment		landing)	Hose racks	ABC fire
	3274, 3204, 3205	Class A combustibles			(in nearby stairwells)	extinguishers
	3206, 3207, 3208	Filter media				
	3206, 3207	Class IIIA lubricants				
	3277, 3274	none	1			
	3201, 3202	Class A combustibles	Area-wide photoelectric			
	above ceiling	Insulation	Area-wide ionization			
		< 1400	Anticipated combustible load	, MJ/m2	Assuming automatic & manual FP equip	oment does not
		1400			function, impact of design basis fire on s	
			-		Complete burnout of all equipment and ca	bles within this Fire Area
Assuming	g operation of installed fi	re extinguishing equipment	t, impact of fire upon:	_	affects MCR control of all four divisions o	
			rip; outage required to resto	re	Operators manually scram reactor before	
	Radiological release:	None, no radiological ma	iterials present		and safe shutdown control transferred to e	
		Travel distance limits to		]	Shutdown Panels (located in separate fire	
	Manual firefighting:	Access via stairwells		]	All safety-related circuits and train A and	
	Property loss:			]	optically isolated outside this fire area, so a	
				-	equipment both redundant trains A and B section 9A.6.	are operable. See also
					SCCI011 7A.0.	

Table 9A.5-3Control Building (cont.)

#### Table 9A.5-3 Control Building (cont.)

	Fire Area:	F3301	Description	Nonsofaty related Float	rical Train A		
	Building:		Description: Nonsafety-related Electrical Train A Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804				
	Dunung.	DCD Fig:	Applicable codes.		ilding code occupancy classification:	F-1	
		9A.2-3	1	Dt	Electrical classification:		
		9A.2-4		Safety-re	elated divisional equipment or cables:		
		9A.2-11			lundant trains or equipment or cables:		
			Surround	led by fire barriers rated a			
				•	t: none		
				1			
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-2000	electrical	Cable insulation	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
	chase			(outside stairwell	-	(in nearby stairwells)	
4650	3301 below			at each landing)			
	access floor						
5250	3301	Electrical equipment					
9060	3401, 3402	Cable insulation					
			-		-		
		< 1400	Anticipated combustible lo		Assuming automatic & manual FP		
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire	e on safe shutdown:	
					Complete burnout of all equipme		
			uipment, impact of fire upon	1:	Fire Area affects no safety-relate		
	lant operation:				equipment; all safety divisions an	ıd redundant train B are	
Radio		None, no radiological ma			operable.		
		Travel distance limits to	EXITs meet NFPA 101				
Manu		Access via stairwells					
	Property loss:	Significant					

### **Control Building (cont.)**

	Fire Area:	F3302	Description:	Nonsafety-related Elect	rical Train B		
	Building:	Control	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804				
	-	DCD Fig:			uilding code occupancy classification	: <b>F-1</b>	
		9A.2-4	1		Electrical classification	: none	
		9A.2-11		Safety-re	elated divisional equipment or cables	: none	
					lundant trains or equipment or cables	: <b>B</b>	
			Surround	led by fire barriers rated a	t: 3 hours		
				Excep	t: none		
Ŭ	of the followin	ě	Fire De	etection	Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	3302 below access floor	Cable insulation	Area-wide ionization	Manual pulls (outside stairwell	CO2 fire extinguishers	Hose racks (in nearby stairwells)	
5250	3302	Electrical equipment Cable insulation		at each landing)		(	
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin <b>Complete burnout of all equipme</b>	e on safe shutdown: ent and cables within thi	
			quipment, impact of fire upor	1:	Fire Area affects no safety-relate		
1	Plant operation:				equipment; all safety divisions a	nd redundant train A ar	
		INT 1* 1 * 1	aterials present		operable.		
		None, no radiological ma			· F · · · · · · · ·		
Radio	Life safety:	Travel distance limits to			• F • • • • • • • •		
Radio	Life safety:	Travel distance limits to Access via stairwells					

### **Turbine Building**

Fire Area: <b>F4190</b> Building: <b>Turbine</b> DCD Fig: <b>9A.2-12 9A.2-16a</b> <b>9A.2-13 9A.2-17</b> <b>9A.2-14</b> <b>9A.2-15</b> <b>9A.2-16</b>			Applicable codes:	Bu Safety-re Nonsafety-related red led by fire barriers rated at	NFPA 10, 14, 72, 101, 804; ASME a ilding code occupancy classification: Electrical classification: lated divisional equipment or cables: undant trains or equipment or cables: <b>3 hours</b> <b>basemat (non-rated); elevator do</b>	F-1 none none none
	of the followin			etection	Fire Suppres	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-1400 4650 12000 20000 28000 35000	4190	Class IIIB lubricants Cable Insulation	Area-wide ionization (in elevator pit)	Manual pulls (outside elevator at each elevation)	ABC fire extinguishers (outside Elevator at each elevation)	Hose racks (outside stairwell)
38000	4701	Class IIIB lubricants Cable Insulation Electrical Equipment	Area-wide ionization (in equipment room)		CO2 fire extinguisher (outside room)	
		<700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	
P Radio	Plant operation: logical release: Life safety: al firefighting	stalled fire extinguishing eq None None, no radiological ma Travel distance limits to Access via stairwells and Negligible	terials present EXITs meet NFPA 101	n:	Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment.	

	Fire Area:	F4191	Description:	Stairwell A				
		Turbine		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	e	DCD Fig:		Building code occupancy classification: F-1				
		9A.2-12 9A.2-16	a		Electrical classification	: none		
		9A.2-13 9A.2-17			lated divisional equipment or cables			
		9A.2-14			undant trains or equipment or cables	none		
		9A.2-15	Surround	ed by fire barriers rated at				
		9A.2-16		Except	t: basemat (non-rated)			
• .•	0.1 0.11	n						
	of the followin		Fire De		Fire Suppre			
EL	Room #	Potential Combustible	s Primary	Backup	Primary	Backup		
-1400 4650 12000 20000	4191	None	Area-wide ionization	Manual pulls (outside stairwell at each elevation)	Hose racks (outside stairwell at each elevation)	Area ABC fire extinguishers (outside stairwell a each elevation)		
28000 35000 38000								
		negligible 700	Anticipated combustible lo	-	Assuming automatic & manual FP function, impact of design basis fi	1 1		
P	lant operation:	None	g equipment, impact of fire upon	·	Complete burnout of all equipm this Fire Area affects no safety- divisional equipment.	ent and cables within		
Radiol		None, no radiological						
			s to EXITs meet NFPA 101					
N/-	ai firefighting:	Access via exterior a	ia interior doors					
	Property loss:							

			i ui bine i	Bunuing (Cont.)				
	Fire Area			Elevator (Personnel)				
	Building	: Turbine	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1				
		DCD Fig:	_	Bı	uilding code occupancy classification:			
		9A.2-12 9A.2-16a			Electrical classification:	none		
		9A.2-13 9A.2-17			elated divisional equipment or cables:			
		9A.2-14			lundant trains or equipment or cables:	none		
		9A.2-15	Surround	ed by fire barriers rated a				
		9A.2-16		Excep	t: basemat (non-rated); elevator de	oors (1.5 hr rated)		
Constations	of the followi		Fire De	4	Pine Querran			
EL	Room #	Potential Combustibles			Fire Suppres			
EL	KOOIII #	Potential Combustibles	Primary	Backup	Primary	Backup		
-1400	4192	Class IIIB lubricants	Area-wide ionization	Manual pulls	Area ABC fire extinguishers	Hose racks		
4650	11/2	Cable insulation	(in elevator pit)	(outside elevator	(outside elevator	(outside stairwell at		
12000	1	Cubic instruction	(in elevator pit)	at each elevation)	at each elevation)	each elevation)		
20000	1			at each cicvation)	at each chevation)	cach cicvation)		
28000	1							
35000	1							
38000	4702	Class IIIB lubricants	Area-wide ionization		CO2 fire extinguisher			
	-	Cable insulation	(in equipment room)		(outside room)			
		Electrical equipment	( <b>1 r · · · · )</b>		(11111111)			
			_					
		< 700	Anticipated combustible lo	-	Assuming automatic & manual FP	1 1		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire			
					Complete burnout of all equipme			
			quipment, impact of fire upor	1:	this Fire Area affects no safety-re	elated or safe shutdown		
	lant operation				divisional equipment.			
Radiol		None, no radiological m						
		Travel distance limits to						
Manu		: Access via stairwells an	d hoistway doors					
	Property loss	Negligible						

Table 9A.5-4
Turbine Building (Cont.)

	Fire Area	F4193	Description:				
	Building	Turbine	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		Bu	ilding code occupancy classification:		
		9A.2-12 9A.2-16a			Electrical classification:		
		9A.2-13 9A.2-17			lated divisional equipment or cables:		
		9A.2-14			undant trains or equipment or cables:	none	
		9A.2-15	Surround	ed by fire barriers rated at			
		9A.2-16		Except	: basemat (non-rated)		
onsisting of	f the followir	g Rooms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-1400	4193	None	Area-wide ionization	Manual pulls	Hose racks	Area ABC fire	
4650 12000 20000				(outside stairwell at each elevation)	(outside stairwell at each elevation)	extinguishers (outside stairwell a each elevation)	
28000 35000 38000 42000 56500							
		1				anvinnent daar oot	
		negligible 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fir	e on safe shutdown:	
Pla	ant operation gical release	700 stalled fire extinguishing eq None None, no radiological ma	Unsprinklered combustible uipment, impact of fire upor aterials present	load limit, MJ/m2	-	e on safe shutdown: ent and cables within	
Pla Radiolo	ant operation ogical release Life safety	700 stalled fire extinguishing eq None None, no radiological ma Travel distance limits to	Unsprinklered combustible uipment, impact of fire upor aterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme this Fire Area affects no safety-r	e on safe shutdown: ent and cables within	
Pla Radiolo Manua	ant operation ogical release Life safety	700 stalled fire extinguishing eq None None, no radiological ma Travel distance limits to Access via exterior and i	Unsprinklered combustible uipment, impact of fire upor aterials present EXITs meet NFPA 101	load limit, MJ/m2	function, impact of design basis fir Complete burnout of all equipme this Fire Area affects no safety-r	e on safe shutdown: ent and cables within	

			Turbine I	Building (Cont.)				
Fire Area: <b>F4194</b> Building: <b>Turbine</b>				Description: Stairwell C Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	Building	DCD Fig:	Applicable codes:		ilding code occupancy classification	<b>E</b> 1		
		9A.2-12 9A.2-16a	7	Du	Electrical classification			
		9A.2-12 9A.2-10a		Safety-re	lated divisional equipment or cables			
		9A.2-14			undant trains or equipment or cables			
		9A.2-15	Surround	ed by fire barriers rated at				
		9A.2-16			: basemat (non-rated)			
Consisting o	f the followi	ng Rooms:	Fire De	etection	Fire Suppres	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-1400	4194	None	Area-wide ionization	Manual pulls	Hose racks	Area ABC fire		
4650				(outside stairwell	(outside stairwell at each	extinguishers		
12000				at each elevation)	elevation)	(outside stairwell a		
20000						each elevation)		
28000 38000								
38000								
		negligible	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP	equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fit			
				1044 111110, 1110, 111-	Complete burnout of all equipm			
Assuming of	peration of in	stalled fire extinguishing e	quipment, impact of fire upor	1:	this Fire Area affects no safety-			
	ant operation		· · · · ·		divisional equipment.			
Radiolo	ogical release	None, no radiological m	naterials present					
		Travel distance limits to						
		: Access via exterior and	interior doors					
	Property loss	Negligible						

	<b>D</b> : 4	E 440 F						
Fire Area: <b>F4195</b> Building: <b>Turbine</b>			Description:					
	Building		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-12 9A.2-16a		~ ^	Electrical classification			
		9A.2-13			elated divisional equipment or cables			
		9A.2-14			undant trains or equipment or cables	none		
		9A.2-15	Surround	ed by fire barriers rated a				
		9A.2-16		Excep	t: basemat (non-rated)			
Consisting of the following Rooms:         EL       Room #       Potential Combustibles		Fire De Primary	etection Backup	Fire Suppre Primary	ssion Backup			
-1400 4650	4195	None	Area-wide ionization	Manual pulls (outside stairwell	Hose racks (outside stairwell at each	Area ABC fire extinguishers		
12000           20000           28000           38000				at each elevation)	elevation)	(outside stairwell a each elevation)		
	I	negligible 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fi	re on safe shutdown:		
F	Plant operation		quipment, impact of fire upor	1:	Complete burnout of all equipm this Fire Area affects no safety- divisional equipment.			
Radio	iogicul icicuse.							
Radio		Travel distance limits to						
	Life safety:	Travel distance limits to						
	Life safety:	Access via exterior and						

Table 9A.5-4
Turbine Building (Cont.)

			I di bille I	Junuing (Cont.)			
	Fire Area:	F4196		Charcoal Adsorbers			
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 14, 15, 72, 101, 804		
		DCD Fig:		Building code occupancy classification: F-1			
		9A.2-12			Electrical classification:	none	
		9A.2-13		Safety-rel	lated divisional equipment or cables:	none	
		9A.2-19			andant trains or equipment or cables:	none	
			Surround	ed by fire barriers rated at	3 hours		
				Except	basemat (non-rated)		
Consisting of	of the followin	g Rooms:	Fire De	etection	Fire Suppress	ion	
EL			Primary	Backup	Primary	Backup	
-1400	4196	Charcoal	Process indication	Manual pulls	Internal manual spray in each	Hose racks	
		Adsorber A	Rate of rise internal	(outside room)	adsorber vessel	(outside room)	
		Adsorber B					
		Adsorber C					
		Adsorber D					
		Adsorber E					
		Adsorber F					
		Adsorber G					
		Adsorber H					
		<b>Class IIIB lubricants</b>	Area-wide ionization		Area ABC fire extinguishers		
		Cable insulation			(outside room)		
		< 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP e	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fire		
			F		Complete burnout of all equipment		
Assuming o	peration of ins	talled fire extinguishing ed	uipment, impact of fire upor	1:	this Fire Area affects no safety-re		
	ant operation:				divisional equipment.		
		Contained within buildi	ng		and a store of a priority		
-		Travel distance limits to					
Manua	-	Access via stairwells and					
	Property loss:						
	1 9						

	Fire Area:	F4197	Description:	Turbine Equipment		
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	FPA 10, 12, 13, 14, 15, 72, 90A, 49	7, 101, 804
		DCD Fig:	_	Buile	ding code occupancy classification:	
		9A.2-12 9A.2-18			Electrical classification:	
		9A.2-13 9A.2-19			ted divisional equipment or cables:	
		9A.2-14			ndant trains or equipment or cables:	none
		9A.2-15		ed by fire barriers rated at:		
		9A.2-16	Except:		ed); basemat, exterior undergrou	id walls, exterior
			J	walls above EL 28000, ro	of (non-rated)	
Consisting	of the following Rooms:		Fire D	etection	Fire Suppressio	n
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
				··· · · r	·· 2	···· ·· F
-1400	4100, 4101, 4102A,	Class IIIB lubricants	Area-wide ionization	Manual pulls	Area ABC fire extinguishers	Area hose racks
	4102B, 4103, 4106,	Cable insulation		(outside stairwell at each	0	
	4107, 4108, 4109, 4180,	Filter media		elevation)		
	4181, 4182A, 4182B,					
	4182C, 4182D, 4182E,					
	4182F, 4183, 4197					
	4104, 4105A, 4105B,		Suppression flowswitch		Wet-pipe sprinkler	
	4197				16.3 L/min per m2	
	4100	4			over most remote 465 m2	
	4100 Reactor Feed		Area-wide ionization		Preaction Sprinkler	
	Booster Pumps				12.2 L/min per m2 over most remote 302 m2	
4650	4206A, 4206B				Wet-pipe sprinkler	
4050	120011, 12000				16.3 L/min per m2	
					over most remote 465 m2	
	4202A, 4202B	< 28 m3 Hydrogen	Area-wide spot heat		Area ABC fire extinguishers	
	,	Class IIIB lubricants	•			
	4200	Class IIIB lubricants	Area-wide ionization		Preaction Sprinkler	
	<b>Reactor Feed Pumps</b>	Cable insulation			12.2 L/min per m2	
		Filter media			over most remote 302 m2	

Table 9A.5-4 Turbine Building (Cont.)

				8( )		
		F4197 (continued)		Turbine Equipment (con		
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	IFPA 10, 12, 13, 14, 15, 72, 90A, 49	97, 101, 804
		DCD Fig:		Bui	lding code occupancy classification:	
		9A.2-12 9A.2-18			Electrical classification:	
		9A.2-13 9A.2-19			ated divisional equipment or cables:	
		9A.2-14			ndant trains or equipment or cables:	none
		9A.2-15		ed by fire barriers rated at:		
		9A.2-16			ted); basemat, exterior undergrou	nd walls, exterior
				walls above EL 28000, ro	oof (non-rated)	
<u> </u>	of the following Rooms:		Fire De		Fire Suppressi	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
1670	4000 4001 4000					
4650	4200, 4201, 4203,	Class IIIB lubricants	Area-wide ionization	Manual pulls	Area ABC fire extinguishers	Area hose racks
	4204A, 4204B, 4205,	Cable insulation		(outside stairwell		
	4280, 4281A, 4281B,			at each elevation)		
	4281C, 4281D, 4281E,					
	4281F, 4281G, 4281H,					
	4282A, 4282B, 4282C,					
	4282D, 4282E, 4282F,					
	4282G, 4282H, 4284,					
	4290, 4291, 4292,					
6000	4284	-				
7650	4283	1				
12000	4300, 4301A, 4301B,	Class IIIB lubricants	1			
	4304, 4350, 4390	Cable insulation				
	, , ,	Filter media				
	4300	<3,500 L Class IIIA	Suppression flowswitch		Dry-pilot deluge	
	EHC Unit	hydraulic oil			12.2 L/min per m2	
			4			
	4305, 4306	Cable insulation			Wet-pipe sprinkler	
		Class IIIB lubricants			16.3 L/min per m2	
					over most remote 465 m2	

Table 9A.5-4 Turbine Building (Cont.)

		F4197 (continued)	Description:	Turbine Equipment (con	tinued)	
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	FPA 10, 12, 13, 14, 15, 72, 90A, 49	7, 101, 804
		DCD Fig:	-	Buil	lding code occupancy classification:	F-1
		9A.2-12 9A.2-18	7		Electrical classification:	none
		9A.2-13 9A.2-19		Safety-rel:	ated divisional equipment or cables:	1, 2, 3, 4
		9A.2-14			ndant trains or equipment or cables:	
		9A.2-15	Surround	ed by fire barriers rated at:		
		9A.2-16	-		ted); basemat, exterior undergrou	nd walls, exterior
				walls above EL 28000, ro		
		R	- I			
Consisting	of the following Rooms:		Fire De	tection	Fire Suppressi	on
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
10700	4391 (steam tunnel)	Cable insulation	Suppression flowswitch	Manual pulls	Wet-pipe sprinkler	Area hose racks
	,	Class IIIB lubricants	**	•		
				(outside stairwell	16.3 L/min per m2	
17500	4391 (end of tunnel)	1		at each elevation)	over most remote 465 m2	
	(1 2 1 1 1 )			·····,		
20000	4400, 4401, 4402A,		Area-wide ionization		Area ABC fire extinguishers	
20000	4402B, 4404, 4405,					
	4460					
	4400 (northwest)	< 11.000 L Class IIIA	Suppression flowswitch		Dry-pilot deluge	
	H2 seal oil unit	seal oil	Suppression nowswitten		12.2 L/min per m2	
20000	4400	Class IIIB lubricants	Suppression flowswitch	Manual pulls	Dry-pipe sprinkler	Area hose racks
20000	Iso-Phase Bus	Cable insulation	Suppression nowswitch	(outside stairwells	8.1 L/min per m2	
	130-1 hase bus	Electrical Equipment		at each elevation)	over most remote 181 m2	
J		Electrical Equipment		at each elevation)	over most remote 101 m2	

Table 9A.5-4 Turbine Building (Cont.)

			I urbine Bulla			
	Fire Area:	F4197 (continued)	Description:	Turbine Equipment (con	tinued)	
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 12, 13, 14, 15, 72, 90A, 49	97, 101, 804
		DCD Fig:	-	Bui	lding code occupancy classification:	
		9A.2-12 9A.2-18			Electrical classification:	
		9A.2-13 9A.2-19			lated divisional equipment or cables:	
		9A.2-14			indant trains or equipment or cables:	none
		9A.2-15	Surround	ed by fire barriers rated at	3 hours	
		9A.2-16	Except:		ted); basemat, exterior undergrou	nd walls, exterior
			<u>]</u>	walls above EL 28000, r	oof (non-rated)	
	of the following Rooms:			etection	Fire Suppressi	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
28000	4500, 4501, 4502, 4503,	Class IIIB lubricants	Area-wide ionization		Area ABC fire extinguishers	
	4504, 4505, 4506	Cable insulation				
		Filter media				
	Turbine-generator	Class IIIB lubricants	Spot heat over each		Automatic preaction spray	
	bearings		bearing		16.3 L/min per m2	
					over entire area	
	Generator housing	< 56 m3 Hydrogen	Process indication		Manual low pressure CO2	CO2 fire
					<b>30%</b> concentration	extinguishers
	Exciter housing		Area-wide ionization		two-shot volume	
35000	4600, 4601	Class IIIB lubricants			Area ABC fire extinguishers	Area hose racks
		Cable insulation				
		Filter media				
	L					
			Anticipated combustible lo		Assuming automatic & manual FP	1 1
	700		Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	
					Complete burnout of all equipme	
Assuming (	Plant operation	extinguishing equipment, in <b>Turbine trip; restoration</b>	required prior to restort	1	this Fire Area affects no safety-re	
		Contained within buildin			shutdown divisional equipment; a operable. Fire-related failure of s	
		Travel distance limits to		1	instrumentation (13.8 kV Bus Un	
		Access via stairwells		1	transducers) may cause reactor s	0
	munuur monghting.	recess the scale wells		1	15.2.5.2.	cram. See Section
					15.2.5.2.	
	Property loss:	Significant				

Table 9A.5-4 Turbine Building (Cont.)

### **Turbine Building (Cont.)**

	Fire Area	· F4250	Description	<b>Reactor Component Co</b>	oling Water A			
		Turbine	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804 Building code occupancy classification: F-1					
		DCD Fig:						
		9A.2-13			Electrical classification:			
		9A.2-19		Safety-re	elated divisional equipment or cables:	none		
					undant trains or equipment or cables:	Α		
			Surround	ed by fire barriers rated a	t: 3 hours			
				Excep	t: none			
- U	of the following	<u> </u>		etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	4250	Electrical equipment	Area-wide ionization	Manual pulls	Hose racks	CO2 fire		
		Cable insulation		(outside stairwell)	(outside stairwell)	extinguishers		
		Class IIIB lubricants						
		< 700	Antipingtod combustible la	ad MI/m2	A gauming automatic & manual ED	aquinment dess not		
		700	Anticipated combustible lo		Assuming automatic & manual FP			
		/00	Unsprinklered combustible	e Ioad IIIIII, WIJ/III2	function, impact of design basis fire			
Assuming	operation of in	estalled fire extinguishing e	quipment, impact of fire upor	<u>.</u>	Complete burnout of all equipme			
	Plant operation		fulpment, impact of fife upor	1.	this Fire Area affects only redund and no safety-related or safe shu			
		None, no radiological m	atorials present		equipment. All redundant train H			
Raulo		Travel distance limits to			equipment. An redundant train r	s equipment is operable.		
Man		Access via stairwells						
141411	Property loss							
				l	L			

### **Turbine Building (Cont.)**

				8( )				
	Fire Area	n: <b>F4260</b>	Description:	<b>Reactor Component Co</b>	oling Water B			
	Building	g: Turbine	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:		Bu	ilding code occupancy classification	: <b>F-1</b>		
		9A.2-13			Electrical classification	: none		
				Safety-re	lated divisional equipment or cables	: none		
				Nonsafety-related red	undant trains or equipment or cables	: <b>B</b>		
			Surround	led by fire barriers rated at	: 3 hours			
				Except	:: none			
	- 6 41 6- 11	Decement						
Consisting of the following Rooms:		Fire Detection		Fire Suppression				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	4260	Electrical equipment Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell)	Hose racks (outside stairwell)	CO2 fire extinguishers		
		< 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fin	e on safe shutdown:		
ssuming (	peration of ir	stalled fire extinguishing eq	uipment, impact of fire upor	ı.	Complete burnout of all equipm this Fire Area affects only redun			
	lant operation		upment, impact of me upor		and no safety-related or safe shu			
		None, no radiological ma	aterials present		equipment. All redundant train			
1 cualor		Travel distance limits to			operable.			
Manu		: Access via stairwells			operable.			
	a. in enginning							
101unu	Property loss	s Moderate						

	Turbine I	Building (Cont.)				
: F4302	Description:	Instrument Air / Service	e Air Train A			
: Turbine						
DCD Fig:	Building code occupancy classification: F-1					
9A.2-14						
				Α		
	Surround	-				
		Except	none			
ng Rooms:	Fire De	etection	Fire Suppres	sion		
Potential Combustibles	Primary	Backup	Primary	Backup		
1			Ī			
Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell)	Hose racks (outside stairwell)	Area ABC fire extinguishers		
< 700 700		-		e on safe shutdown:		
-	Turbine DCD Fig: 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-14 9A.2-	F4302       Description:         Turbine       Applicable codes:         DCD Fig:       Surround         9A.2-14       Surround         ng Rooms:       Fire Deprimary         Potential Combustibles       Primary         Cable insulation       Area-wide ionization         Class IIIB lubricants       Area-wide ionization	Turbine       Applicable codes:       IBC; Reg Guide 1.189; I         DCD Fig:       Bu         9A.2-14       Safety-re         Nonsafety-related red       Surrounded by fire barriers rated at Except         rg Rooms:       Fire Detection         Potential Combustibles       Primary       Backup         Cable insulation       Area-wide ionization       Manual pulls (outside stairwell)         Class IIIB lubricants       Anticipated combustible load, MJ/m2	F4302       Description:       Instrument Air / Service Air Train A         Turbine       Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804         DCD Fig:       Building code occupancy classification:         9A.2-14       Electrical classification:         Safety-related divisional equipment or cables:         Nonsafety-related redundant trains or equipment or cables:         Surrounded by fire barriers rated at:         3 hours         Potential Combustibles         Primary         Backup         Primary         Cable insulation         Class IIIB lubricants		

			i ui bine i	Sunding (Cont.)		
	Fire Area	F4303	Description:	Instrument Air / Service	e Air Train B	
	Building	Turbine	Applicable codes:		NFPA 10, 14, 72, 101, 804	
		DCD Fig:	_	Bu	ilding code occupancy classification:	
		9A.2-14			Electrical classification:	
					elated divisional equipment or cables	
					undant trains or equipment or cables	B
			Surround	ed by fire barriers rated at		
				Except	t: none	
Consisting	of the followir	ng Rooms.	Fire De	tection	Fire Suppres	sion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
			1 Tinnar y	Бискир	1 minur y	Duckup
12000	4303	Cable insulation	Area-wide ionization	Manual pulls	Hose racks	ABC fire
		Class IIIB lubricants		(outside stairwells at each landing)	(in nearby stairwells)	extinguishers
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual FP function, impact of design basis fir	1 1
P Radio	Plant operation logical release Life safety	stalled fire extinguishing e None None, no radiological m Travel distance limits to Access via stairwells	quipment, impact of fire upor aterials present		Complete burnout of all equipme this Fire Area affects only redun and no safety-related or safe shu equipment; all safety division an equipment are operable.	ent and cables within dant train B equipmen tdown divisional

Table 9A.5-4	
<b>Turbine Building (Cont.)</b>	

			I urbine i	Sullaing (Cont.)		
	Fire Area:	F4403	Description:	Turbine Lube Oil		
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189; I	NFPA 10, 11, 13, 14, 15, 16, 72, 101	, 804
		DCD Fig:		Bu	ilding code occupancy classification:	F-1
		9A.2-15			Electrical classification:	none
					lated divisional equipment or cables:	
					undant trains or equipment or cables:	none
			Surround	ed by fire barriers rated at		
				Except	none	
Consisting	of the fellowin	a Doome:	Eiro Do	staatian	Fire Suppress	ion
EL	of the followin Room #	Potential Combustibles	Primary	Fire Detection		Backup
ĽĽ	Köölli #	I otential Compustibles	1 milar y	Backup	Primary	Васкир
20000	4403	< 50,000 L Class IIIB lubricants	Suppression flowswitch	Manual pulls (outside stairwell)	Dry-pilot foam-water deluge 16.3 L/min per m2	Area Hose racks
		Cable insulation		(outside sound went)		
		> 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP e	avinment dees not
		700	Unsprinklered combustible		function, impact of design basis fire	
		/00		10au IIIIII, MJ/III2	Complete burnout of all equipme	
Assuming	peration of ins	talled fire extinguishing eq	uipment, impact of fire upor	ı.	this Fire Area affects no safety-re	
			n required prior to restart	1.	divisional equipment.	aleu of sale silutuowi
		None, no radiological ma			divisional equipment.	
itadilli		Travel distance limits to				
Manu	•	Access via interior door				
ivialla	Property loss:					

	Fire Area	: F4550	Description:	Chilled Water A		
	Building	: Turbine			NFPA 10, 14, 72, 101, 804; ASHR	RAE 15
	-	DCD Fig:			ilding code occupancy classification	
		9A.2-16	7		Electrical classification	n: none
		9A.2-18		Safety-re	lated divisional equipment or cable	es: none
				Nonsafety-related red	undant trains or equipment or cable	es: A
			Surround	ed by fire barriers rated at		
				Except	t: none	
Consisting EL	of the followin Room #	ng Rooms: Potential Combustibles	Fire De Primary	etection Backup	Fire Suppre Primary	ession Backup
28000	4550	Electrical equipment Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell)	Area Hose racks	Area ABC fire extinguishers
F	Plant operation plogical release	None None, no radiological m		load limit, MJ/m2	Assuming automatic & manual FI function, impact of design basis f Complete burnout of all equipm this Fire Area affects only redu and no safety-related or safe sh equipment. All redundant train	ire on safe shutdown: nent and cables within ndant train A equipme utdown divisional
F Radio	Plant operation ological release Life safety	700 stalled fire extinguishing ea None None, no radiological m Travel distance limits to	Unsprinklered combustible quipment, impact of fire upor aterials present	load limit, MJ/m2	function, impact of design basis f Complete burnout of all equipm this Fire Area affects only redu and no safety-related or safe sh	ire on safe shutdown: nent and cables within ndant train A equipme utdown divisional
F Radio	Plant operation ological release Life safety	700 stalled fire extinguishing ea None None, no radiological m Travel distance limits to Access via stairwells	Unsprinklered combustible quipment, impact of fire upor aterials present	load limit, MJ/m2	function, impact of design basis f Complete burnout of all equipm this Fire Area affects only redu and no safety-related or safe sh	ire on safe shutdown: nent and cables within ndant train A equipme utdown divisional

#### ESBWR

				Ű,		
	Fire Area:	F4560		Chilled Water B		
	Building:	Turbine	Applicable codes:		NFPA 10, 14, 72, 101, 804; ASHRA	
		DCD Fig:	_	Bu	ilding code occupancy classification:	
		9A.2-16			Electrical classification:	
					lated divisional equipment or cables:	
					undant trains or equipment or cables:	В
			Surround	ed by fire barriers rated at		
				Except	: none	
- U	of the followin		Fire De		Fire Suppress	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
28000	4560	Electrical equipment	Area-wide ionization	Manual pulls	Area Hose racks	Area ABC fire
		Cable insulation		(outside stairwell)		extinguishers
		Class IIIB lubricants				
	1	I				
		< 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not
		700	Unsprinklered combustible		function, impact of design basis fire	
					Complete burnout of all equipme	
Assuming of	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upor	1:	this Fire Area affects only redund	
	lant operation:				and no safety-related or safe shut	
		None, no radiological ma	terials present		equipment. All redundant train A	
		Travel distance limits to			operable.	
Manu	al firefighting:	Access via stairwells			1	
	Property loss:					

#### ESBWR

			Turbine I	Building (Cont.)		
	Fire Area	F4650	Description:	Water Surge Tanks A (	CWS & RCCWS)	
	Building	Turbine			NFPA 10, 14, 72, 101, 804	
	-	DCD Fig:			ilding code occupancy classification:	F-1
		9A.2-16a			Electrical classification:	none
				Safety-re	lated divisional equipment or cables:	none
				Nonsafety-related red	undant trains or equipment or cables:	Α
			Surround	ed by fire barriers rated at	: 3 hours	
				Except	roof (non-rated)	
Consisting	of the followir	ng Rooms:	Fire De	etection	Fire Suppress	ion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
35000	4650	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell)	Area Hose racks	Area ABC fire extinguishers
P Radio	Plant operation: logical release Life safety:			load limit, MJ/m2	Assuming automatic & manual FP effunction, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund and no safety-related or safe shut equipment. All redundant train H operable.	on safe shutdown: nt and cables within lant train A equipment down divisional

			I urbine r	Suliding (Cont.)		
	Fire Area:	F4660	Description:	Water Surge Tanks B (	CWS & RCCWS)	
	Building:	Turbine	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804	
		DCD Fig:		Bu	ilding code occupancy classification	on: F-1
		9A.2-16a			Electrical classification	on: none
					lated divisional equipment or cabl	
					undant trains or equipment or cabl	es: B
			Surround	ed by fire barriers rated a		
				Excep	t: roof (non-rated)	
onsisting	of the followin	g Rooms:	Fire De	tection	Fire Supp	ression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
35000	4660	Cable insulation Class IIIB lubricants	Area-wide ionization	Manual pulls (outside stairwell)	Area Hose racks	Area ABC fire extinguishers
		< 700 700	Anticipated combustible lo Unsprinklered combustible	-	Assuming automatic & manual I function, impact of design basis	1 1
P Radiol	lant operation: ogical release: Life safety:	None None, no radiological m Travel distance limits to		1:	Complete burnout of all equip this Fire Area affects only red and no safety-related or safe s equipment. All redundant tra operable.	undant train B equipme hutdown divisional
P Radiol	lant operation: ogical release: Life safety:	None None, no radiological m Travel distance limits to Access via stairwells	aterials present		this Fire Area affects only red and no safety-related or safe s equipment. All redundant tra	undant train B equipme hutdown divisional

#### **Radwaste Building**

		F6101		Description: Radwaste Ha	andling Equipment	
	Building:	Radwaste	App		ide 1.189; NFPA 10, 13, 14,	, 72, 90A, 101, 804
		DCD Fig:		Building co	ode occupancy classification:	F-1
		9A.2-20			Electrical classification:	none
		9A.2-21		Safety-related di	visional equipment or cables:	none
		9A.2-22	N	onsafety-related redundant t	rains or equipment or cables:	none
		9A.2-23	Surrou	nded by fire barriers rated at	: 3 hours	
		9A.2-24		Except: basemat (nor	n-rated); exterior undergro	und walls (non-rated);
onsisting	of the following Rooms:		Fin	re Detection	Fire Su	ppression
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-9350	6100, 6101, 6102, 6103, 6104,	Class IIIB lubricants	Suppression	M anual pulls	Wet-pipe sprinkler	Hose racks
	6105, 6106, 6107, 6108, 6109,	Cable insulation	flowswitch	(outside stairwell	8.1 L/min per m2	(in nearby stairwells)
	6150, 6151, 6160, 6161,	Transient combustibles		at each landing)	over 140 m2	ABC fire extinguishers
	6171, 6172, 6180, 6181, 6182,	Class A combustibles				
	6183, 6184, 6185,					
	6186, 6187, 6188, 6189					
-2350	6103, 6104, 6105, 6106,					
	6107, 6108, 6109, 6150, 6151,					
	6160, 6161, 6171, 6172,					
	6200, 6201, 6280, 6281, 6282,					
	6283, 6284, 6285, 6286					
4650	6381					
-	6381, Charcoal Filter	Charcoal	HVAC		Internal manual spray	-
			temperature			
			indication			
		> 700	Anticipated combus	stible load MI/m2	Assuming automatic & man	ual ED aquinmant door not
				bustible load limit, MJ/m2	function, impact of design b	
		700	o iisprinkiered com	bustible load mint, wij/m2		uipment and cables within
ssuming	operation of installed fire extinguis	hing equipment, impact of f	ire upon:		this Fire Area affects no sa	
		None; restoration require		radwaste	shutdown divisional equip	
		Contained within buildin			and both redundant trains	,
		Travel distance limits to l		101	and both requireant trains	A and D are operable.
		Access via stairwells and		-		
	Property loss:					
	11000109 10000.					

			Radwaste B	uilding (cont.)		
	Fire Area	F6102	Description	: Electrical Equipment		
	Building	Radwaste			; NFPA 10, 14, 72, 101, 804	
	-	DCD Fig:		Build	ling code occupancy classification	: <b>F-1</b>
		9A.2-20			Electrical classification	: none
				Safety-rela	ted divisional equipment or cables	s: none
				Nonsafety-related redun	dant trains or equipment or cables	s: none
			Surrounded	by fire barriers rated at:	3 hours	
					basemat (non-rated); elevator d	
				_	exterior underground walls (no	n-rated)
	of the followir		Fire Detec		Fire Suppre	ssion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-9350	6170	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwells at each landing)	CO2 fire extinguishers	Hose racks (in nearby stairwells)
		< 1400	Anticipated combustible load	MI/m2	Assuming automatic & manual FP	aquinment dees not

## Table 9A.5-5

					1
	<1400 1400	Anticipated combustible load, Unsprinklered combustible loa		Assuming automatic & manual FP of function, impact of design basis fire	
Plant operation: Radiological release: Life safety:	stalled fire extinguishing eq None; restoration requir None, no radiological ma Travel distance limits to Access via stairwells	uipment, impact of fire upon: ed before handling radwaste iterials present	_	Complete burnout of all equipme this Fire Area affects no safety-re divisional equipment; all safety d redundant trains A and B are ope	nt and cables within elated or safe shutdown ivisions and both

## Table 9A.5-5Radwaste Building (cont.)

	Fire Area:	F6190	Description:	Elevator		
	Building	Radwaste	Applicable codes:		NFPA 10, 14, 72, 101, 804; ASME	
		DCD Fig:		Bu	ilding code occupancy classification	: <b>F-1</b>
		9A.2-20			Electrical classification	i: none
		9A.2-21		Safety-re	elated divisional equipment or cables	s: none
		9A.2-22		Nonsafety-related red	undant trains or equipment or cables	: none
		9A.2-23	Surround	ed by fire barriers rated a	t: 3 hours	
				Excep	t: basemat (non-rated); elevator d	loors (1.5 hr rated)
			_			
onsisting c	of the followin	ig Rooms:	Fire De	etection	Fire Suppres	ssion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
-9350	6190	Class IIIB lubricants	Area-wide ionization	Manual pulls	ABC fire extinguishers	Hose racks
-2350		Cable insulation		(outside Elev	(outside Elev	(in nearby stairwel
4650				at each landing)	at each landing)	
10650				8,	6,	
13650	6580	Class IIIB lubricants			CO2 fire extinguisher	
10000					0	
10000	0000	Cable insulation			(outside room)	
10000	0000				(outside room)	
10000		Cable insulation Electrical equipment			(outside room)	
10000		Electrical equipment		-1 MI/2		
19000		Electrical equipment	Anticipated combustible lo		Assuming automatic & manual FP	
10000		Electrical equipment	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fin	re on safe shutdown:
		Electrical equipment <700 700	Unsprinklered combustible	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin <b>Complete burnout of all equipm</b>	re on safe shutdown: ent and cables within
ssuming o	peration of ins	Electrical equipment < 700 700 stalled fire extinguishing equipment	<u>^</u>	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm this Fire Area affects no safety-r	re on safe shutdown: ent and cables within related or safe shutdow
ssuming of Pl	peration of inslant operation	Electrical equipment 700 700 stalled fire extinguishing equipment	Unsprinklered combustible	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm this Fire Area affects no safety-i divisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdow divisions and both
ssuming of Pl	peration of inslant operation	Electrical equipment Contemporation of the second secon	Unsprinklered combustible quipment, impact of fire upor aterials present	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm this Fire Area affects no safety-r	re on safe shutdown: ent and cables within related or safe shutdow divisions and both
ssuming of Pl Radiolo	peration of ins lant operation ogical release Life safety:	Electrical equipment 700 700 stalled fire extinguishing equipment None None, no radiological m Travel distance limits to	Unsprinklered combustible quipment, impact of fire upor aterials present • EXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm this Fire Area affects no safety-i divisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdow divisions and both
Assuming op Pl Radiolo Manua	peration of ins lant operation ogical release Life safety:	Electrical equipment 700 700 stalled fire extinguishing equipment None None, no radiological m Travel distance limits to Access via stairwells and	Unsprinklered combustible quipment, impact of fire upor aterials present • EXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm this Fire Area affects no safety-i divisional equipment; all safety of	re on safe shutdown: ent and cables within related or safe shutdow divisions and both

# Table 9A.5-5Radwaste Building (cont.)

	Fire Area:	F6191	Description:	Description: Stairwell A					
	Building	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804						
		DCD Fig:	Building code occupancy classification: F-1						
		9A.2-20	Electrical classification: none						
		9A.2-21		Safety-related divisional equipment or cables: none					
		9A.2-22	Nonsafety-related redundant trains or equipment or cables: <b>none</b>						
9A.2-23			Surround	ed by fire barriers rated at:					
				-	basemat (non-rated)				
			-	-					
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppress	sion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-9350	6191	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers			
-2350	1			(outside stairwell		- 0			
4650	1			at each landing)					
10650	1			•••••••••••••••••••••••••					
13650	1								
'									
		negligible	Anticipated combustible lo	ad. MJ/m2	Assuming automatic & manual FP	eauipment does not			
		700	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:				
					Complete burnout of all equipme				
Assuming c	operation of ins	stalled fire extinguishing eq	uipment, impact of fire upor	ı <sup>.</sup>	this Fire Area affects no safety-re				
	lant operation:		«		divisional equipment; all safety d				
	1	None, no radiological ma	nterials present		redundant trains A and B are ope				
		Travel distance limits to			require and reality is and b are op-	ci abic.			
Manu		Access via exterior and i							
	Property loss:								
	Tiopenty 1888.								

### Radwaste Building (cont.)

	Fire Area	: F6192	Description:	Stairwell B				
	Building	: Radwaste	Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804         Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none					
		DCD Fig:						
		9A.2-20						
		9A.2-21						
		9A.2-22			lundant trains or equipment or cal	oles: none		
		9A.2-23	Surround	ed by fire barriers rated a	at: 3 hours			
				Excep	ot: basemat (non-rated)			
Consisting	of the following	0	Fire De	etection	Fire Sup	pression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350	6192	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguisher		
-2350	0172	TUNC		(outside stairwell	HOSE TACKS	ADC In c cxunguisne		
4650				at each landing)				
10650	1			w owen minang)				
			<b>1 A</b> and <b>C C A</b> and <b>C C B C C C C C C C C C C</b>	- 1 MI/				
		negligible	Anticipated combustible lo		Assuming automatic & manual			
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basi			
annina	amoration of in	stallad fire autinomiching as	winneght immed of fire where		Complete burnout of all equi	-		
			uipment, impact of fire upor	1.	this Fire Area affects no safety-related or safe shutdown			
	Plant operation				divisional equipment; all safety divisions and both			
Kadio		None, no radiological ma			redundant trains A and B ar	e operable.		
	Life safety	Travel distance limits to						
Mer		A a a a a a a a a a a a a a a a a a a a						
Manı		Access via exterior and i	nterior doors					

#### Radwaste Building (cont.)

	Fire Area:	F6193	Description:	Stairwell C				
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none					
		9A.2-20						
		9A.2-21						
		9A.2-22			lundant trains or equipment or cables:	none		
			Surround	ed by fire barriers rated a	t: 3 hours			
				Excep	t: basemat (non-rated)			
			-					
Ŭ	of the following	0	Fire De			Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350	6193	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguisher		
-2350 4650			Area-while ionization	(outside stairwell at each landing)	HOSE FACKS	ADC III CAunguisne		
		negligible 700	Anticipated combustible log		Assuming automatic & manual FP function, impact of design basis fir			
			-		Complete burnout of all equipme			
	operation of ins		uipment, impact of fire upon	1:	this Fire Area affects no safety-related or safe shutdown			
			divisional equipment; all safety divisions and both					
P	lant operation:							
P	Plant operation: logical release:	None, no radiological m			redundant trains A and B are op			
P Radio	Plant operation: logical release: Life safety:	None, no radiological m Travel distance limits to	EXITs meet NFPA 101					
P Radio	Plant operation: logical release: Life safety:	None, no radiological m Travel distance limits to Access via exterior and i	EXITs meet NFPA 101					

Radwaste Building (cont.)
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	Fire Area	.: <b>F6194</b>	Description:	Stairwell D				
	Building	: Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1					
		9A.2-20		Electrical classification: none				
		9A.2-21	Safety-related divisional equipment or cables: none					
		9A.2-22		Nonsafety-related redundant trains or equipment or cables: none				
		9A.2-23	Surround	led by fire barriers rated a	t: 3 hours			
				Excep	t: basemat (non-rated)			
			-					
	of the following			etection	Fire Suppress			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-9350	6194	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishe		
-2350				(outside stairwell				
4650	_			at each landing)				
10650								
		negligible	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FP	aquinment dess not		
		700	Unsprinklered combustible		function, impact of design basis fire			
		/00		: Ioau IIIIII, WIJ/III2				
ssuming	operation of in	stalled fire extinguishing e	auinment impact of fire upor	<b>.</b>	Complete burnout of all equipme this Fire Area affects no safety-re			
ssuming operation of installed fire extinguishing equipment, impact of fire upon Plant operation: None				1.	•			
	1	None, no radiological m	natorials prosont		divisional equipment; all safety d			
		Travel distance limits to			redundant trains A and B are op	erable.		
Kaulo								
		· A agong via avtanian and	interior doors					
		Access via exterior and	interior doors					

#### Table 9A.5-5 Radwaste Building (cont.)

	Fire Area:	F6270	Description:	Radwaste Control R	oom Complex				
	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804						
	-	DCD Fig:		Building code occupancy classification: <b>B</b>					
		9A.2-21	Electrical classification: none Safety-related divisional equipment or cables: none						
		9A.2-22							
			Nonsafety-related redundant trains or equipment or cables: <b>none</b>						
			Surrounded	by fire barriers rated at:					
				5	elevator doors (1.5 hr rated);				
				Except	basemat for 6287 (non-rated)				
			interi	or fire barriers rated at:					
				between	rooms 6270 and 6287				
Consisting	of the followin	g Rooms:	Fire Detec	tion	Fire Suppres	sion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
-2350	6270	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks			
		Cable insulation		(outside stairwells		(in nearby stairwell			
		<b>Class A combustibles</b>		at each landing)					
	6270	Cable insulation			Hose racks	ABC fire			
	below floor				(in nearby stairwells)	extinguishers			
	6287	Electrical equipment							
		Cable insulation							
4650	6382	Class A combustibles							
		< 1400	Anticipated combustible load,		Assuming automatic & manual FP				
		< 1400 1400	Anticipated combustible load, Unsprinklered combustible loa		function, impact of design basis fin	e on safe shutdown:			
·		1400	Unsprinklered combustible loa		function, impact of design basis fin Complete burnout of all equipme	e on safe shutdown: ent and cables within			
		1400 talled fire extinguishing e	Unsprinklered combustible loa quipment, impact of fire upon:		function, impact of design basis fin Complete burnout of all equipme this Fire Area affects no safety-r	e on safe shutdown: ent and cables within elated or safe shutdow			
Р	lant operation:	1400 talled fire extinguishing e None; restoration requi	Unsprinklered combustible loa quipment, impact of fire upon: ired before handling radwaste		function, impact of design basis fin Complete burnout of all equipment this Fire Area affects no safety-r divisional equipment; all safety of	e on safe shutdown: ent and cables within elated or safe shutdov livisions and both			
Р	lant operation: logical release:	1400 talled fire extinguishing e None; restoration requi None, no radiological m	Unsprinklered combustible loa quipment, impact of fire upon: ired before handling radwaste naterials present		function, impact of design basis fin Complete burnout of all equipme this Fire Area affects no safety-r	e on safe shutdown: ent and cables within elated or safe shutdov livisions and both			
P Radiol	Plant operation: logical release: Life safety:	1400 stalled fire extinguishing e None; restoration requi None, no radiological m Travel distance limits to	Unsprinklered combustible loa quipment, impact of fire upon: ired before handling radwaste		function, impact of design basis fin Complete burnout of all equipment this Fire Area affects no safety-r divisional equipment; all safety of	e on safe shutdown: ent and cables within elated or safe shutdow livisions and both			
P Radiol	Plant operation: logical release: Life safety:	1400 stalled fire extinguishing e None; restoration requi None, no radiological m Travel distance limits to Access via stairwells	Unsprinklered combustible loa quipment, impact of fire upon: ired before handling radwaste naterials present		function, impact of design basis fin Complete burnout of all equipment this Fire Area affects no safety-r divisional equipment; all safety of	e on safe shutdown: ent and cables within elated or safe shutdow livisions and both			

# Table 9A.5-5Radwaste Building (cont.)

			Kauwaste	8 ( )					
F	Fire Area:	F6290	Description:	Stairwell E					
H	Building:	Radwaste	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804						
	-	DCD Fig:	Building code occupancy classification: F-1						
		9A.2-21		Electrical classification: none					
		9A.2-22	Safety-related divisional equipment or cables: none						
				Nonsafety-related red	undant trains or equipment or cables	: none			
			Surround	ed by fire barriers rated a	t: <b>3 hours</b>				
				Excep	t: basemat (non-rated)				
	-								
Consisting of the	following	g Rooms:	Fire De	etection	Fire Suppres	ssion			
EL Ro	oom #	Potential Combustibles	Primary	Backup	Primary	Backup			
-2350 6	6290	None	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguishers			
4650				(outside stairwell					
				at each landing)					
	r		<b>-</b>						
		negligible	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not				
		700	Unsprinklered combustible	ombustible load limit, MJ/m2 function, impact of design basis fire on safe shutdo					
					Complete burnout of all equipm				
			quipment, impact of fire upor	1:	this Fire Area affects no safety-r				
	peration:				divisional equipment; all safety divisions and both				
		None, no radiological m			redundant trains A and B are op	oerable.			
			EXITs meet NFPA 101						
		Access via exterior and	interior doors						
Prope	erty loss:	Negligible							

#### ESBWR

Table 9A.5-5	
Radwaste Building (cont.)	

				8( )		
	Fire Area:	F6301	Description:	HVAC Equipment		
	Building:	Radwaste			9; NFPA 10, 14, 72, 90A, 101, 804	
		DCD Fig:	_	Bui	lding code occupancy classification:	
		9A.2-22			Electrical classification:	
		9A.2-23			ated divisional equipment or cables:	
					indant trains or equipment or cables:	none
			Surrounded b	by fire barriers rated at:		
				Except:	elevator doors (1.5 hr rated)	
<u> </u>	of the followin		Fire Detect	tion	Fire Suppres	sion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
4650	6380	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	ABC fire extinguisher
		Cable insulation		(outside stairwells		
10650	6480	Filter media		at each landing)		
	6490	None				
		< 700	Anticipated combustible load,		Assuming automatic & manual FP	
		700	Unsprinklered combustible loa	id limit, MJ/m2	function, impact of design basis fire	
		( 11 1 C ( · · · 1 ·			Complete burnout of all equipme	
			uipment, impact of fire upon:	1	this Fire Area affects no safety-re	
			ed before handling radwaste		divisional equipment; all safety d	
Kadiol		None, no radiological ma			redundant trains A and B are op	erable.
Massa		Travel distance limits to	EALLS MEET NFPA IUL			
Manu		Access via stairwells				
	Property loss:	winor		J		

### **Table 9A.5-6**

## **Electrical Building**

	Fire Area:	1 3100					
		Electrical	Description: Corridors Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
	Bunang.	DCD Fig:			code occupancy classification:		
		9A.2-25			Electrical classification:		
		9A.2-26		Safety-related d	ivisional equipment or cables:	none	
		9A.2-28	Nonsafet		trains or equipment or cables:		
		9A.2-30		fire barriers rated at			
		9A.2-32	5		: basemat (non-rated); roof	(non-rated)	
				1			
Consisting of t	the following	g Rooms:	Fire Detec	tion	Fire Sup	pression	
EL		Potential Combustibles	Primary	Backup	Primary	Backup	
l l							
4650 5	5100, 5101,	Cable insulation	Area-wide ionization	Manual pulls	Area hose racks	Area ABC fire	
	5189			(at exits)		extinguishers	
7650	5196						
9080	5200						
18000	5300						
27000	5400						
		< 700	Anticipated combustible loa	d MI/m2	Assuming automatic & manu	al FP equipment does not	
		700	Unsprinklered combustible	· · · · · · · · · · · · · · · · · · ·	function, impact of design ba	1 1	
		700	onsprinklered combustible	10au 111111, 1113/1112	Complete burnout of all eq		
Assuming one	eration of ins	talled fire extinguishing	equipment, impact of fire up	oon:	this Fire Area affects no sat	-	
	nt operation:				shutdown divisional equipn		
		None, no radiological	materials present		snutuo (in urvisional equipi	icht.	
	Life safety:	Travel distance limits	to EXITs meet NFPA 101				
		Access via doors					
	roperty loss:						
	1			I			

	Fire Area	· F5104	Description:	Fire Protection Equipm	nent			
		: Electrical		Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 13, 14, 15, 16, 72, 101, 804</b>				
	Dunung	DCD Fig:	Applicable codes.	Building code occupancy classification: F-1				
		9A.2-25	7		Electrical classification:			
				Safety-r	elated divisional equipment or cables:	none		
					dundant trains or equipment or cables:			
			Surround	led by fire barriers rated a				
				Excep	ot: basemat (non-rated)			
				_				
Consisting	of the following	ng Rooms:	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5104	Cable insulation	Area-wide ionization	Manual pulls	Area Hose racks	Area ABC fire		
		Class IIIB lubricants		(at exits)		extinguishers		
		< 700	Anticipated combustible lo	ad MI/m2	Assuming automatic & manual FP e	equipment does not		
		700	Unsprinklered combustible		function, impact of design basis fire on safe shutdown:			
				· · · · · · · · · · · · · · · · · · ·	Complete burnout of all equipment			
Assuming	operation of in	stalled fire extinguishing e	quipment, impact of fire upor	1:	Fire Area affects no safety-related			
	Plant operation				divisional equipment.			
Radio	logical release	None, no radiological m	aterials present					
	Life safety	Travel distance limits to						
Manu		: Access via door						
	Property loss	Minor						
1				-				

### ESBWR

	Fire Area		Description: B				
	Building	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		В	suilding code occupancy classification		
		9A.2-25			Electrical classification		
					related divisional equipment or cables		
					dundant trains or equipment or cables	: A	
			Surroundee	by fire barriers rated			
			J	Exce	pt: basemat (non-rated)		
Consisting	of the following	ng Rooms:	Fire Dete	ction	Fire Suppres	ssion	
<u></u>		Potential Combustibles	1				
EL	Room #	and Hazards	Primary	Backup	Primary	Backup	
4650	5102	3,420 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		Battery cell cases		(at exits)	(outside room)	(outside room)	
		Cable insulation					
	5103	13,680 L of battery acid					
		Battery cell cases					
		Cable insulation					
	5151	11,040 L of battery acid					
		Battery cell cases					
		Cable insulation					
		< 1400	Anticipated combustible load	MI/m2	Assuming automatic & manual FP	equipment does not	
		1400	Unsprinklered combustible lo		function, impact of design basis fin	1 1	
				,	Complete burnout of all equipme		
ssuming o	operation of in	stalled fire extinguishing equ	uipment, impact of fire upon:		Fire Area affects only redundant		
P	Plant operation	: None			and related equipment and no Sa		
		: None, no radiological ma	terials present		All redundant train B on-site po		
	Life safety	Travel distance limits to	EXITs meet NFPA 101		equipment is operable.		
Mana	al firefighting	: Access via doors					
Manu	0 0						

	Fire Area	: F5153	Description:	Stand-by Diesel Gener	ator A				
	Building	: Electrical		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804					
		DCD Fig:		В	Building code occupancy classification:				
		9A.2-25			Electrical classification:				
		9A.2-26			related divisional equipment or cables:				
					edundant trains or equipment or cables:	A			
			Surround	ed by fire barriers rated					
				Exce	pt: basemat (non-rated)				
Consisting	of the fellowin	na Dooma:	Fire De	taation	Eiro Supprog	ion			
EL	EL         Room #         Potential Combustibles			Backup	Fire Suppress Primary				
EL	Köölil #	Fotential Combustibles	Primary	Баскир	Filliary	Backup			
4650	5153	Cable insulation	Cross-zoned	Suppression	Preaction foam sprinkler	Hydrants			
9800	5155	Class IIIB lubricants	Ultraviolet/Infrared	flowswitch	10.2 L/min per m2	iryurants			
2000		Class II fuel oil	and spot heat	nowswitten	over entire area				
			and spot neat		over entire area				
	•		· · · · ·						
		> 700	Anticipated combustible loa	nd, MJ/m2	Assuming automatic & manual FP e	equipment does not			
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire	on safe shutdown:			
					Complete burnout of all equipment				
			uipment, impact of fire upon		Fire Area affects only redundant	-			
Plant operation: None					and related equipment and no Sat				
	Radiological release: None, no radiological ma				All redundant train B on-site pow	ver and related			
Radio	Life safety	: Travel distance limits to	EXITs meet NFPA 101		equipment is operable.				
Radio	Life safety al firefighting		EXITs meet NFPA 101		equipment is operable.				

Table 9A.5-6
<b>Electrical Building (Cont.)</b>

Fire Area:       FS154       Description:       Cable Chase Train A         Building:       Electrical       DCD Fig:       Building:       Building:       F-1         9A.2-25       9A.2-26       Safety-related divisional equipment or cables:       none         Surrounded by fire barriers rated at:       3hours       Electrical classification:       F-1         Surrounded by fire barriers rated at:       3hours       Amplicable codes:       Nonsafety-related redundant trains or equipment or cables:       Amplicable codes:         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe (outside s							
DCD Fig:       Building code occupancy classification:       F-1         Bound in the second of the sec	Building: Electrical						
9A.2-25       9A.2-26       Electrical classification: none         9A.2-26       Nonsafety-related redundant trains or equipment or cables: A         Surrounded by fire barriers rated at: Except       Backup         Consisting of the following Rooms:       Fire Detection         EL       Room #       Potential Combustibles and Hazards         Primary       Backup         4650       5154         Cable insulation       Area-wide ionization         Manual fire gating:       Anticipated combustible load, MJ/m2         Anticipated combustible load, MJ/m2       Assuming automatic & manual FP equipment and cables withit Fire Area affects only redundant train A on-site power and related equipment and no Safety Related equipment and cables withit Fire Area affects only redundant train B on-site power and related equipment is operable.	Danang. Electrical	Applicable codes:					
9A.2-26       Safety-related divisional equipment or cables: A         Nonsafety-related redundant trains or equipment or cables: A         Surrounded by fire barriers rated at: B       3 hours         Consisting of the following Rooms:       Fire Detection         EL       Room #         Potential Combustibles and Hazards       Primary         Backup       Primary         4650       5154         Cable insulation       Area-wide ionization         Manual pulls       CO2 fire extinguishers         (outside stairwe         700       Anticipated combustible load, MJ/m2         Assuming operation of installed fire extinguishing equipment, impact of fire upon:         Plant operation: None, no radiological materials present         National related         Nanual firefighting:         Arces via doors	0		Bu	ilding code occupancy classification:	F-1		
Nonsafety-related redundant trains or equipment or cables: A         Surrounded by fire barriers rated at: 3 hours         Surrounded by fire barriers rated at: 3 hours         Except:       basemat (non-rated)         Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe (outside stairwe function, impact of design basis fire on safe shutdown:           Complete burnout of all equipment and cables withit Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equipment and no Safety Related equipment is operable.       Complete burnout of all equipment and no Safety Related equipment is operable.	9A.2-25			Electrical classification:	none		
Surrounded by fire barriers rated at Except       3 hours basemat (non-rated)         Consisting of the following Rooms:       Fire Detection       Fire Suppression         Consisting of the following Rooms:       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         EL       Room #       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe (outside stairwe         9800         Anticipated combustible load, MJ/m2 Unsprinklered combustible load, MJ/m2       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:           Complete burnout of all equipment and cables withit Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equip All redundant train B on-site power and related equipment is operable.       All redundant train B on-site power and related equipment is operable.	9A.2-26		Safety-re	elated divisional equipment or cables:	none		
Except: basemat (non-rated)         Consisting of the following Rooms:       Potential Combustibles and Hazards       Fire Detection       Fire Suppression         EL       Room #       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800					Α		
Consisting of the following Rooms:       Fire Detection       Fire Suppression         EL       Room #       and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800		Surroun	ded by fire barriers rated at	:: 3 hours			
EL       Room #       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe                                                                                              <			Except	:: basemat (non-rated)			
EL       Potential Combustibles and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe							
EL       Room #       and Hazards       Primary       Backup       Primary       Backup         4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800			etection	Fire Suppres	sion		
4650       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe         9800       5154       Cable insulation       Area-wide ionization       Manual pulls (at exits)       CO2 fire extinguishers       Hose racks (outside stairwe <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>							
9800       (at exits)       (outside stairwe         9800       (at exits)       (outside stairwe         (outside stairwe       (outside stairwe         (outside stairwe       (outside stairwe         (outside stairwe       (outside stairwe         (at exits)       (outside stairwe         (outside stairwe       (outside stairwe         (	EL Room # and Hazards	Primary	Backup	Primary	Backup		
9800       (at exits)       (outside stairwe         9800       (at exits)       (outside stairwe         (outside stairwe       (outside stairwe         (outside stairwe       (outside stairwe         (outside stairwe       (outside stairwe         (at exits)       (outside stairwe         (outside stairwe       (outside stairwe         (							
< 700		tion Area-wide ionization	-	CO2 fire extinguishers			
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release:function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equipm All redundant train B on-site power and related equipment is operable.	9800		(at exits)		(outside stairwell)		
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release:function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equipm All redundant train B on-site power and related equipment is operable.							
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release:function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equipm All redundant train B on-site power and related equipment is operable.							
700Unsprinklered combustible load limit, MJ/m2function, impact of design basis fire on safe shutdown:Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release:function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within Fire Area affects only redundant train A on-site pow and related equipment and no Safety Related equipm All redundant train B on-site power and related equipment is operable.							
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None Radiological release: None, no radiological materials present Life safety: Travel distance limits to EXITs meet NFPA 101 Manual firefighting: Access via doors Complete burnout of all equipment and cables within Fire Area affects only redundant train A on-site power and related equipment and no Safety Related equipment All redundant train B on-site power and related equipment is operable.	< 7						
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None Radiological release: None, no radiological materials present Life safety: Manual firefighting: Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: None Radiological release: None, no radiological materials present Life safety: Access via doors Plant operation: None, no radiological materials present Life safety: Access via doors Plant operation: Plant operation: None, no radiological materials present Life safety: Access via doors Plant operation: Plant operati		JU Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	e on safe shufdown.		
Plant operation:       None         Radiological release:       None, no radiological materials present         Life safety:       Travel distance limits to EXITs meet NFPA 101         Manual firefighting:       Access via doors	70						
Radiological release:       None, no radiological materials present         Life safety:       Travel distance limits to EXITs meet NFPA 101         Manual firefighting:       Access via doors				Complete burnout of all equipme	nt and cables within th		
Life safety:       Travel distance limits to EXITs meet NFPA 101       equipment is operable.         Manual firefighting:       Access via doors	Assuming operation of installed fire exti	nguishing equipment, impact of fire upo	n: T	Complete burnout of all equipme Fire Area affects only redundant	nt and cables within th train A on-site power		
Manual firefighting: Access via doors	Assuming operation of installed fire extractions Plant operation: None		n:	Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa	nt and cables within th train A on-site power fety Related equipment		
	Assuming operation of installed fire extinent Plant operation: None Radiological release: None, no rad	liological materials present	n: -	Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa All redundant train B on-site pov	nt and cables within th train A on-site power fety Related equipment		
	Assuming operation of installed fire extinent Plant operation: None Radiological release: None, no rac Life safety: Travel dista	diological materials present nce limits to EXITs meet NFPA 101	n: 	Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa All redundant train B on-site pov	nt and cables within th train A on-site power fety Related equipment		
	Assuming operation of installed fire ext Plant operation: <b>None</b> Radiological release: <b>None, no rac</b> Life safety: <b>Travel dista</b> Manual firefighting: <b>Access via d</b>	diological materials present nce limits to EXITs meet NFPA 101	n: 	Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa All redundant train B on-site pov	nt and cables within thi train A on-site power fety Related equipment		

				3 ( )				
	Fire Area		description:					
	Building	: Electrical	applicable codes:	applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 75, 101, 804				
		DCD Fig:	,	bu	ilding code occupancy classification			
		9A.2-25			electrical classification			
		9A.2-32			elated divisional equipment or cable			
					undant trains or equipment or cables	s: <b>B</b>		
			surround	led by fire barriers rated at				
			J	except	t: basemat (non-rated)			
o o maiatin o	of the followin	a Dooma	Fire De	stastion	Eine Comme			
consisting		Potential Combustibles	File De	election	Fire Suppre	ssion		
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
4650	5105	13,680 L of battery acid	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Battery cell cases		(outside stairwell)	5	(in nearby stairwell)		
		Cable insulation				, ,		
	5106	3,420 L of battery acid						
		Battery cell cases						
		Cable insulation						
	5161	11,040 L of battery acid						
		Battery cell cases						
		Cable insulation						
		< 1400	Anticipated combustible lo		Assuming automatic & manual FI			
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi			
					Complete burnout of all equipm			
		stalled fire extinguishing eq	uipment, impact of fire upor	1: I	Fire Area affects only redundan			
	Plant operation				and related equipment and no S			
Radio	logical release	None, no radiological ma	terials present		All redundant train A on-site po	ower and related		
		: Travel distance limits to	EXITs meet NFPA 101		equipment is operable.			
Manu		: Access via doors						
	Property loss	• Moderate						

	Fire Area	<b>F5163</b>		Stand-by Diesel Genera					
	Building	: Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804					
		DCD Fig:	Building code occupancy classification: F-1 Electrical classification: none						
		9A.2-25							
		9A.2-26			related divisional equipment or cables:				
		9A.2-32			dundant trains or equipment or cables:	B			
			Surround	led by fire barriers rated a					
				Excep	ot: basemat (non-rated)				
Consisting	of the followi	ng Pooms:	Fire De	atection	Fire Suppress	ion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
LL	Room #	I otentiai Combustibles	1 Tilliar y	Баскар	1 mildry	Баскар			
650 9800	5163	Cable insulation	Cross-zoned	Suppression	Preaction foam sprinkler	Hydrants			
18000		Class IIIB lubricants	Ultraviolet/Infrared	flowswitch	10.2 L/min per m2				
		Class II fuel oil	and spot heat		over entire area				
			*						
		> 700	<b>1 A a d i b a a d b b b b b b b b b b</b>	- 1 MI/					
		> 700 700	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP e function, impact of design basis fire				
		/00	Onsprinklered combustible	ioad iiiiit, wij/iii2	Complete burnout of all equipmen				
Accuming of	neration of ir	stalled fire extinguishing ea	quipment, impact of fire upor		Fire Area affects only redundant				
	ant operation		fuipment, impact of file upor	1.					
		: None, no radiological m	aterials present		and related equipment and no Safety Related equipmer All redundant train A on-site power and related				
ruulon		Travel distance limits to			equipment is operable.				
	Life Surety				equipment is operable.				
Manua	al firefighting	E Access via doors							
	al firefighting Property loss	S: Significant							

	Fire Area	F5164	Description:	Cable Chase Train B				
		Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
	C	DCD Fig:	Building code occupancy classification: F-1					
		9A.2-25	Electrical classification: none					
					elated divisional equipment or cables:			
					dundant trains or equipment or cables:	В		
			Surround	led by fire barriers rated a				
				Excep	ot: basemat (non-rated)			
Consisting	of the followir		Fire De	etection	Fire Suppress	sion		
		Potential Combustibles				_ /		
EL	Room #	and Hazards	Primary	Backup	Primary	Backup		
4650	5164	Cable insulation	Area-wide ionization	Manual pulls	Area CO2 fire extinguishers	Area hose racks		
				(at exits)				
1		< 700	Antioinstad sombustible la	ad MI/m2	A agrimina automotia & manual ED	a aviena ant da as est		
		700	Anticipated combustible lo		Assuming automatic & manual FP			
		/00	Unsprinklered combustible	Ioad IIIIII, WIJ/III2	function, impact of design basis fire			
Agaiming	noration of in	stallad fire artinguishing as	winmant impact of fire upor		Complete burnout of all equipme			
	Plant operation		uipment, impact of fire upor	1.	Fire Area affects only redundant	-		
		None, no radiological ma	ntarials prosant		and related equipment and no Sa			
Kaulo		Travel distance limits to			All redundant train A on-site pov	ver and related		
Manu	-	Access via doors			equipment is operable.			
Ividitu	Property loss							
	r toperty 1055							

Table 9A.5-6Electrical Building (Cont.)

			210001100112	unung (cont.)		
	Fire Area:			Technical Support Cen		
Building: Electrical			Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 90A, 101, 804; 28 CFR 36			
DCD Fig: <b>9A.2-25</b>				B	uilding code occupancy classification:	
					Electrical classification:	
					elated divisional equipment or cables:	
				2	dundant trains or equipment or cables:	none
			Surrounde	ed by fire barriers rated a		
				Excep	ot: basemat (non-rated)	
		_			_	
Consisting of the following Rooms:			Fire De		Fire Suppress	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
4650	5180, 5181A,	Computer equipment	Suppression flowswitch	Manual pulls	Wet-pipe sprinkler	Hose racks
	5181B, 5181C,			(at exits)	<b>4.1 L/min per m2</b>	(outside stairwell)
		Cable insulation			over most remote 140 m2	
	5182B, 5183A,	Class A combustibles				
	5183B, 5184,	Transient combustibles				
	5185, 5186,					
	5187A, 5187B,					
	5187C, 5188,					
7650	5195					
	above ceiling	Insulation	Area-wide ionization		Area ABC fire extinguishers	
		< 700	Anticipated combustible loa	ad MI/m2	Assuming automatic & manual FP	auinment does not
		700	Unsprinklered combustible	-	function, impact of design basis fire	
		/00	Onsprinklered combustible	ioau mint, MJ/m2	Complete burnout of all equipment	
Assuming	peration of instal	lled fire extinguishing equip	ment, impact of fire upon		Fire Area affects no safety-related	
	Plant operation:		inclut, impact of file upon.		divisional equipment.	
Rad		None, no radiological ma	terials present			
1.44		Travel distance limits to				
Ma		Access via doors				
	Property loss:					

				j,				
	Fire Area:			Description: Elevator (Freight)				
			Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804; ASME A17.1				
		DCD Fig:	_	Bui	lding code occupancy classification:			
		9A.2-25			Electrical classification:			
		9A.2-26			ated divisional equipment or cables:			
		9A.2-28			indant trains or equipment or cables:	none		
		9A.2-30	Surround	led by fire barriers rated at:				
		9A.2-31		Except:	basemat (non-rated); elevator do	ors (1.5 hr rated)		
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5190	Class IIIB lubricants	Area-wide ionization	Manual pulls	Area ABC fire extinguishers	Hose racks		
9800		Cable insulation		(outside elevator	(outside elevator	(in nearby stairwell)		
18000				at each elevation)	at each elevation)			
27000								
31500	5501	Class IIIB lubricants						
		Cable insulation						
		Electrical equipment						
	•	< 700	Antioinstad sambustible la	ad MI/m2	A source of a subsection of the second and the second seco	avinment dess not		
		700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:			
		/00	Unsprinklered combustible	Toad IImit, MJ/m2				
Assuming	peration of in	stalled fire extinguishing eq	uipment, impact of fire upor	ı.	Complete burnout of all equipme			
			upment, impact of me upor	ı. 	Fire Area affects no safety-related	i or sale shutdown		
	Plant operation: None Radiological release: None, no radiological materials present				divisional equipment.			
Life safety: Travel distance limits to EXITs meet NFPA 101								
Manu		Access via stairwells and						
Iviallu	Property loss:		1 11015111ay 110015					
	110perty 1035.	1 105 mg ion						
1								

			Electrical	Building (Cont.)			
	Fire Area:	F5191	Description:	Description: Elevator (Personnel)			
	Building:	Electrical	Applicable codes:	IBC; Reg Guide 1.189; N	IFPA 10, 14, 72, 101, 804; ASME A	17.1	
		DCD Fig:		Bui	lding code occupancy classification:	F-1	
		9A.2-25			Electrical classification:	none	
		9A.2-26		Safety-rel	lated divisional equipment or cables:	none	
		9A.2-28		Nonsafety-related redu	Indant trains or equipment or cables:	none	
		9A.2-30	Surround	led by fire barriers rated at:	3 hours		
		9A.2-31		Except:	basemat (non-rated); elevator do	oors (1.5 hr rated)	
Consisting	of the followin	g Rooms:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5191	Class IIIB lubricants	Area-wide ionization	Manual pulls	Area ABC fire extinguishers	Hose racks	
7650		Cable insulation		(outside elevator	(outside elevator	(in nearby stairwell)	
9800	1			at each elevation)	at each elevation)		
18000				,	,		
27000							
31500	5502, 5503	Class IIIB lubricants					
		Cable insulation					
		Electrical Equipment					
		< 700	A	- 1 )(1/2	A	 :	
		< 700	Anticipated combustible lo	-	Assuming automatic & manual FP		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire		
Assuming	paration of inc	talled fire extinguishing ag	uipment, impact of fire upor	<b>.</b>	Complete burnout of all equipme		
	Plant operation:		upment, impact of fife upor	1. 	Fire Area affects no safety-related	u or sale snutdown	
		None, no radiological ma	tarials present		divisional equipment.		
Radio		Travel distance limits to					
Manu		Access via stairwells and					
	Property loss:						
	110perty 1055.	Businie		l			
í							

Table 9A.5-6Electrical Building (Cont.)

<b>Table 9A.5-6</b>
<b>Electrical Building (Cont.)</b>

	Fire Area	F5192	Description:	Stairwell A				
				des: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
	_	DCD Fig:		Bu	ilding code occupancy classification	on: <b>F-1</b>		
		9A.2-25			Electrical classification			
		9A.2-26		Safety-re	elated divisional equipment or cabl	es: none		
		9A.2-28			undant trains or equipment or cabl	es: none		
		9A.2-30	Surround	ed by fire barriers rated at	t: 3 hours			
		9A.2-31	J	Except	t: basemat (non-rated)			
		_						
	consisting of the following Rooms:		Fire De		Fire Supp			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650 9800	5192	None	Area-wide ionization	Manual pulls (outside stairwell	Area hose racks	Area ABC fire extinguishers		
18000           27000           31500				at each elevation)				
		negligible 700	Anticipated combustible log		Assuming automatic & manual F function, impact of design basis			
			1	,				
			uipment, impact of fire upon	1:	Complete burnout of all equip Fire Area affects no safety-rela divisional equipment			
Р	Plant operation	None						
Р	Plant operation	None None, no radiological ma	aterials present	I:	Fire Area affects no safety-rela			
P Radio	Plant operation logical release Life safety	None	aterials present EXITs meet NFPA 101	1:	Fire Area affects no safety-rela			

<b>Table 9A.5-6</b>
<b>Electrical Building (Cont.)</b>

Electrical Dunuing (Cont.)								
	Fire Area: F5193 Description: Stairwell B							
	Building:	Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		Bui	lding code occupancy classification:	F-1		
		9A.2-25			Electrical classification:	none		
		9A.2-26			ated divisional equipment or cables:			
		9A.2-28			indant trains or equipment or cables:	none		
		9A.2-30	Surround	ed by fire barriers rated at:				
		9A.2-31	J	Except:	basemat (non-rated)			
Consisting of	of the following	g Rooms:	Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5193	None	Area-wide ionization	Manual pulls	Area hose racks	Area ABC fire		
7650				(outside stairwell		extinguishers		
9800				at each elevation)		5		
13900				,				
18000								
27000								
31500								
		negligible	Anticipated combustible lo	ad MI/m?	Assuming automatic & manual FD	equipment does not		
		700	Unsprinklered combustible			1 1		
		700	Chispinikiered combustible	Iodd IIIInt, WIJ/III2	Complete burnout of all equipme			
Assuming	peration of ins	talled fire extinguishing equ	uipment, impact of fire upor	ı.	Fire Area affects no safety-related			
	lant operation:		alphient, impuet of the upor	.,	divisional equipment.	u or sait shutuowil		
		None, no radiological ma	terials present		arrisional equipment.			
	Life safety: Travel distance limits to EXITs							
Manua		Access via exterior and in						
	Property loss:							
1	r - 5 5000							

				Dunung (cont.)				
	Fire Area:	F5194	Description:	Stairwell C				
	Building:	Electrical	Applicable Codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804					
		DCD Fig:		Bu	ilding code occupancy classification	n: <b>F-1</b>		
		9A.2-25	7		Electrical classification	n: none		
		9A.2-32		Safety-re	lated divisional equipment or cables	3: none		
				Nonsafety-related redu	undant trains or equipment or cables	3: none		
			Surround	ed by fire barriers rated at	: 3 hours			
				Except	: basemat (non-rated)			
Consisting of	of the followin		Fire De	etection	Fire Suppre	ssion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
-2000	5194	None	Area-wide ionization	Manual pulls	Area hose racks	Area ABC fire		
4650				(outside stairwell)		extinguishers		
			<b>A</b>	- 1 MI/	A			
		negligible 700	Anticipated combustible lo					
		/00	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fi			
		4-11-1 C			Complete burnout of all equipm			
			quipment, impact of fire upor	1: 	this Fire Area affects no safety-	related or safe shutdown		
Plant operation: None					divisional equipment.			
Radiological release: None, no radiological materials present Life safety: Travel distance limits to EXITs meet NFPA 101								
Marrie								
		Access via exterior and	interior doors					
	Property loss:	Negligible						

### ESBWR

	Fire Area:	F5201	Description:	Switchgeer Lower Ceb	a & Battory Chargor I			
		Electrical		Description: Switchgear, Lower Cable & Battery Charger I Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
	2 411411.8	DCD Fig:	rippireacte course.		ilding code occupancy classification:	F-1		
		9A.2-26	1		Electrical classification:			
				Safety-re	lated divisional equipment or cables:	none		
					undant trains or equipment or cables:	A		
			Surround	ed by fire barriers rated at	: 3 hours			
			J	Except	none			
	of the followin		Fire De		Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
9800	5201	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Cable insulation		(outside stairwell)		(outside each room)		
		> 1400	<b>1 A4</b> <sup>1</sup> <b>A4 A4</b> <sup>1</sup> <b>A4</b> <sup>1</sup> <b>B B A4</b> <sup>1</sup> <b>B B B B B B B B B B</b>	- 1 MI/		:		
		> 1400	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:			
		1400	Unsprinklered combustible	e load limit, MJ/m2				
A aggregation of a	monotion of in	stallad fina antinaniahina aa	winnent immed of fine wood		Complete burnout of all equipme			
	lant operation:		uipment, impact of fire upor	1.	this Fire Area affects only redun			
			tonials progent		off-site power and related equipr			
Radiological release: None, no radiological materials presen Life safety: Travel distance limits to EXITs meet N					train B on-site and off-site power	r and related equipment		
Manu		Access via doors	EATTS meet NFFA 101		is operable.			
	Property loss:	Moderate			L			

			Electricari	Building (Cont.)				
	Fire Area:	F5202	Description:					
	Building:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804						
		DCD Fig:		В	uilding code occupancy classification	: F-1 per IBC 307.9.11		
		9A.2-26			Electrical classification			
				Safety-1	related divisional equipment or cables	s: none		
					dundant trains or equipment or cables	S: C		
			Surrounde	ed by fire barriers rated a	at: <b>3 hours</b>			
				Excep	pt: none			
- ,-	C (1 C 11 )	D	E. D.					
	of the followin		Fire De		Fire Suppre	-		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
9800	5202	5520 L of battery acid Battery cell cases Cable insulation	Area-wide ionization	Manual pulls (at exits)	CO2 fire extinguishers	Area hose racks		
		<1400 1400	Anticipated combustible loa Unsprinklered combustible		Assuming automatic & manual FF function, impact of design basis fi Complete burnout of all equipm	re on safe shutdown:		
Assuming operation of installed fire extinguishing equipment, impact of fire upon: Plant operation: Radiological release: Life safety: Manual firefighting: Access via doors			:	Fire Area affects no safety-relat divisional equipment. Both redu are operable.	ed or safe shutdown			
Manu	al firefighting: Property loss:							

Table 9A.5-6Electrical Building (Cont.)

#### ESBWR

Property loss: Moderate

			Electrical	Building (Cont.)		
Fire Area: F5203 Description: L				Load Center & Battery	Charger III	
	Building	Electrical	Applicable codes:	IBC; Reg Guide 1.189;	NFPA 10, 14, 72, 101, 804	
		DCD Fig:		Bu	ilding code occupancy classification	: <b>F-1</b>
		9A.2-26			Electrical classification	: none
					elated divisional equipment or cables	
					undant trains or equipment or cables	: C
			Surround	ed by fire barriers rated a	t: <mark>3 hours</mark>	
				Excep	t: none	
Consisting of the following Rooms:			Fire De	Fire Detection Fire Suppressio		ssion
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup
9800	5203	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks
		Cable insulation		(outside stairwell)		(outside stairwell)
		< 1400 1400	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipm	e on safe shutdown:
Assuming o	operation of in	stalled fire extinguishing ec	uipment, impact of fire upor	1:	Fire Area affects no safety-relate	
	lant operation:				divisional equipment. Both redu	ndant trains A and B
Radio		None, no radiological ma			are operable.	
		Travel distance limits to	EXITs meet NFPA 101			
Manu	al firefighting	Access via doors				

				8( )				
Fire Area: F5204 De				Switchgear, Lower Cab				
Building: Electrical Applie				Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804				
		DCD Fig:	•	Bu	ilding code occupancy classification:			
		9A.2-26			Electrical classification:			
		9A.2-32			lated divisional equipment or cables:			
					undant trains or equipment or cables:	B		
			Surround	led by fire barriers rated at				
				Except	none			
	of the followin		Fire De		Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
9800	5204	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Cable insulation		(outside stairwell)		(outside stairwell)		
		. 1400	<b>1</b>					
		> 1400	Anticipated combustible lo		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:			
		1400	Unsprinklered combustible	e load limit, MJ/m2				
Agguming	anaration of in	stallad fire autinguishing ag	uipment, impact of fire upor	<b></b>	Complete burnout of all equipme			
	Plant operation		urpment, impact of fife upor	1.	this Fire Area affects only redun			
		None, no radiological ma	tarials present		off-site power and related equips			
Radio	-				train A on-site and off-site power	r and related equipment		
Life safety: Travel distance limits to EXITs meet Manual firefighting: Access via doors			EATTS INCLUST A TOT		is operable.			
Access via doors								
	Property loss	Moderate						
				1	L			

	Fire Area:	F5205		Description: Electronic Equipment				
	Building:	Electrical	Applicable codes:	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		Bui	lding code occupancy classification:	F-1		
		9A.2-26	1		Electrical classification:	none		
		9A.2-32		Safety-rel	ated divisional equipment or cables:	none		
					indant trains or equipment or cables:			
			Surround	ed by fire barriers rated at:				
				Except:				
			-	ĩ				
Consisting (	of the followin	g Rooms:	Fire De	tection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
9800	5205	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
		Cable insulation		(outside stairwell)	č	(outside stairwell)		
		< 1400	Anticipated combustible loa	ad, MJ/m2	Assuming automatic & manual FP e	equipment does not		
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
					Complete burnout of all equipme			
Assuming o	peration of ins	stalled fire extinguishing eq	uipment, impact of fire upon	:	Fire Area affects no safety-related			
	ant operation:				divisional equipment.			
		None, no radiological ma	terials present					
Life safety: <b>Travel distance limits to E</b>								
Manu		Access via doors						
	Property loss:							
	1 2							

	Fire Area:	F5250	Description:	Stand-by Diesel Genera	ator Day Tank A		
		Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 15, 16, 24, 30, 37, 72, 101, 804				
	C C	DCD Fig:			suilding code occupancy classification:		
		9A.2-26			Electrical classification:		
		9A.2-28			related divisional equipment or cables:		
					dundant trains or equipment or cables:		
			Surround	ed by fire barriers rated	at: 3 hours, roof and roof grating 1.5	5 hours	
				Excep	pt:		
		_					
Ũ	of the followin		Fire De		Fire Suppres	1	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
12000	5250	Cable insulation	Cross-zoned	Suppression	Preaction foam deluge	Hydrants	
12000		Class IIIB lubricants 20,000L Class II fuel oil	Ultraviolet/Infrared and spot heat	flowswitch	16.3 L/min per m2		
			Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fir	e on safe shutdown:	
	operation of ins Plant operation:	stalled fire extinguishing equ	ipment, impact of fire upon	1:	Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa	train A on-site power	
Radiological release: None, no radiological materials present				All redundant train B on-site pow	• • • •		
Life safety: Confined space entry					equipment is operable.	ter anu relateu	
		Access via roof hatch			equipment is operable.		
Manu	al firefighting:	Access via roor natch					

	Fire Area:	F5251	Description:	Stand-by Diesel Generat	tor Electrical & Control Equipmer	nt Room A		
Building: Electrical				Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804				
		DCD Fig:			ilding code occupancy classification			
		9A.2-26			Electrical classification			
					elated divisional equipment or cables			
					undant trains or equipment or cables	: <b>A</b>		
			Surround	ed by fire barriers rated at				
			J	Except	t: basemat (non-rated)			
Consisting	of the followin	a Rooms.	Fire De	tection	Fire Suppres	sion		
EL		Potential Combustibles	Primary	Backup	Primary	Backup		
	1000111		1 1 1 1 1 J	Durnup		Durnup		
9800	5206, 5251	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks		
13900	5252	Cable insulation		(outside stairwell)	5	(inside vestibule 4)		
			1					
		> 1400	Anticipated combustible lo		Assuming automatic & manual FP equipment does not			
		1400	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:			
A			······		Complete burnout of all equipme			
			uipment, impact of fire upon	1:	Fire Area affects only redundant	-		
	lant operation:				and related equipment and no Sa			
Radiological release: None, no radiological materials present					All redundant train B on-site pov	wer and related		
Life safety: Travel distance limits to EXITs meet			EXII's meet NFPA 101		equipment is operable.			
Manu		Access via doors						
	Property loss:	Significant						
1								

### ESBWR

	Fire Area	· F5260	Description.	Stand-by Diesel Gener	ator Day Tank B		
		Electrical	Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 13, 15, 16, 24, 30, 37, 72, 101, 804</b>				
	U	DCD Fig:	11		Building code occupancy classification:		
		9A.2-26			Electrical classification:		
		9A.2-32		Safety-	related divisional equipment or cables:	none	
					dundant trains or equipment or cables:	В	
			Surround	led by fire barriers rated			
				Exce	pt: none		
a		2					
	of the followin		Fire De		Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
12000	5260	Cable insulation	Cross-zoned	Suppression	Preaction foam deluge	Hydrants	
12000	5200	Class IIIB lubricants	Ultraviolet/Infrared	flowswitch	16.3 L/min per m2	iiyui anto	
		20,000L Class II fuel oil	and spot heat				
		> 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP e	equipment does not	
		700	Unsprinklered combustible		function, impact of design basis fire		
					Complete burnout of all equipment	nt and cables within this	
Assuming of	operation of in	stalled fire extinguishing equ	ipment, impact of fire upon	1:	Fire Area affects only redundant	train B on-site power	
	lant operation				and related equipment and no Safety Related equipmer		
Radio	Radiological release: None, no radiological mat		iterials present		All redundant train A on-site power and related		
		: Confined space entry			equipment is operable.		
Manu		: Access via roof hatch					
	Property loss	: Moderate					
L							

Table 9A.5-6
Electrical Building (Cont.)

Fire Area: F5261 Building: Electrical DCD Fig: 9A.2-26			Description: Stand-by Diesel Generator Electrical & Control Equipment Room B Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804 Building code occupancy classification: F-1 Electrical classification: none Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: B Surrounded by fire barriers rated at: 3 hours				
				Except	:: basemat (non-rated)		
	Consisting of the following Rooms:		Fire De		Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
9800 13900	5261 5262	Electrical equipment Cable insulation	Area-wide ionization	Manual pulls (outside stairwell)	CO2 fire extinguishers	Hose racks (inside vestibule 4)	
> 1400       Anticipated combustible log         1400       Unsprinklered combustible         Assuming operation of installed fire extinguishing equipment, impact of fire upon         Plant operation:         None         Radiological release:         Life safety:         Travel distance limits to EXITs meet NFPA 101         Manual firefighting:         Property loss:         Significant				load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipme Fire Area affects only redundant and related equipment and no Sa All redundant train A on-site po equipment is operable.	re on safe shutdown: ent and cables within this t train B on-site power afety Related equipment.	

Table 9A.5-6
<b>Electrical Building (Cont.)</b>

				0 ( )			
	Fire Area:	F5350	Description:	Electrical Equipment A			
	Building:	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:		Bui	lding code occupancy classification:	F-1	
		9A.2-28			Electrical classification:	none	
				Safety-rel	lated divisional equipment or cables:	none	
				Nonsafety-related redu	indant trains or equipment or cables:	Α	
			Surround	led by fire barriers rated at:	3 hours		
				Except:	none		
Consisting	of the followin		Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
18000	5350	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		Cable insulation		(outside stairwell)		(outside stairwell)	
			•				
		< 1400	Anticipated combustible load, MJ/m2		Assuming automatic & manual FP equipment does not		
		1400	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:		
					Complete burnout of all equipme		
			uipment, impact of fire upor	1:	Fire Area affects only redundant		
	lant operation:				site power and related equipment	•	
Radiological release: None, no radiological materials present				equipment. All redundant train	B on-site and off-site		
	Life safety: Travel distance limits to EXITs meet NFPA 101				power and related equipment is o	perable.	
Manu		Access via doors					
	Property loss:	Significant					

	Fire Area	F5360	Description:	<b>Electrical Equipment B</b>			
	Building	Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804				
		DCD Fig:	-	Bu	ilding code occupancy classification	: <b>F-1</b>	
		9A.2-28			Electrical classification		
		9A.2-32			lated divisional equipment or cables		
					undant trains or equipment or cables	: <b>B</b>	
			Surround	led by fire barriers rated at			
				Except	none		
a i i	0.1 0.11	D	<b>D</b> : <b>D</b>	:	E: 0		
	of the followin		Fire De		Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
10000	=2.40						
18000	5360	Electrical equipment	Area-wide ionization	Manual pulls	CO2 fire extinguishers	Hose racks	
		Cable insulation		(outside stairwell)		(outside stairwell)	
		< 1400	Anticipated combustible los	ad MI/m?	Assuming automatic & manual FP	equipment does not	
		1400	Unsprinklered combustible		function, impact of design basis fir		
		1100	enspiniklered comoustione	10 <b>uu</b> 111111, 1110/1112	Complete burnout of all equipme		
Assuming o	operation of in	stalled fire extinguishing eq	uipment, impact of fire upon	ı.	Fire Area affects only redundant		
	Plant operation				site power and related equipmen		
Radiological release: None, no radiological materials present			terials present		equipment. All redundant train	•	
Life safety: Travel distance limits to EXITs					power and related equipment is		
Manu		Access via doors			porter and related equipment is	operasie	
	Property loss						
	1 5	0					

Table 9A.5-6
<b>Electrical Building (Cont.)</b>

	Fire Area:	F5450	Description: HVAC TSC & EER Equipment A					
		Electrical		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 15, 72, 90A, 101, 804				
	-	DCD Fig:		Bı	uilding code occupancy classification:	F-1		
		9A.2-25			Electrical classification:	none		
		9A.2-26			elated divisional equipment or cables:			
		9A.2-28			lundant trains or equipment or cables:	Α		
		9A.2-30	Surround	led by fire barriers rated a	t: 3 hours			
				Excep	t: none			
			-					
- U	of the followin		Fire De	etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	5150, 5152	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	Area ABC fire		
7650		Cable insulation		(outside stairwell	(outside stairwell at each	extinguishers		
9800	5401, 5450	Filter media		at each elevation)	elevation)			
18000	5150	Insulation						
27000	5152							
		< 700	Antipingtod combustible lo	ad MI/m2	A comming automatic & manual ED	a animumant da an mat		
		700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not			
		/00	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown: Complete burnout of all equipment and cables within th			
A ssuming	operation of in	talled fire extinguishing eq	uipment, impact of fire upor	ŋ.	Fire Area results in loss of only re			
	Plant operation:			·.	equipment. All redundant train			
		None, no radiological ma	aterials present		operable.	b relateu equipilient is		
Life safety: <b>Travel distance limits to EXIT</b>								
Manu		Access via interior doors						
	Property loss:		-					
				I	L			

	Fire Area:	F5460	Description:	HVAC TSC & EER Eq	uipment B		
		Electrical	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 15, 72, 90A, 101, 804				
	C	DCD Fig:			uilding code occupancy classification:	F-1	
		9A.2-25	7		Electrical classification:		
		9A.2-26		Safety-re	elated divisional equipment or cables:	none	
		9A.2-28		Nonsafety-related rec	lundant trains or equipment or cables:	В	
		9A.2-30	Surround	ed by fire barriers rated a	t: <b>3 hours</b>		
		9A.2-32		Excep	t: none		
U	of the followin	0	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	5160, 5162	Class IIIB lubricants	Area-wide ionization	Manual pulls	Hose racks	Area ABC fire	
7650		Cable insulation		(outside stairwell	(outside stairwell at each	extinguishers	
9800	5402, 5460	Filter media		at each elevation)	elevation)		
18000	5160	Insulation					
27000	5162						
		< 700	Anticipated combustible lo		Assuming automatic & manual FP		
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:		
					Complete burnout of all equipme		
			uipment, impact of fire upon	1:	Fire Area results in loss of only re		
	Plant operation: None				equipment. All redundant train A related equipment is		
Radio		None, no radiological ma			operable.		
	•	Travel distance limits to					
Manu		Access via interior doors	6				
	Property loss:	Moderate					
4							

### **Table 9A.5-7**

Yard

	Fire Area	: <b>F4201</b>	Description:	Lube Oil Storage				
	Building	: Yard		Applicable codes: IBC; Reg Guide 1.189; NFPA 13, 15, 16, 24, 30, 804				
		DCD Fig:	_	В	uilding code occupancy classification:	U per IBC 312.1		
		9A.2-33			Electrical classification:			
					elated divisional equipment or cables:			
					dundant trains or equipment or cables:	none		
			Surround	ded by fire barriers rated a				
				Excep	none			
<u>a : /:</u>	64 611 .	D		:		•		
	EL       Room #       Potential Combustibles			etection	Fire Suppres			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Lube Oil	191,000L Class IIIB	Suppression	Lube Oil system	Dry-pilot foam deluge	Hydrants		
	Storage	lubricating oil	flowswitch	instrumentation	12.2 L/min per m2			
	I	>700 N/A	Anticipated combustible lo Unsprinklered combustible		Assuming automatic & manual FP function, impact of design basis fire <b>Complete burnout of all equipme</b>	e on safe shutdown:		
Assuming a	operation of in	stalled fire extinguishing eq	uipment, impact of fire upor	n	Fire Area affects no safety-related			
			ed before Lube Oil outage		divisional equipment; all safety d			
		None, no radiological ma			redundant trains A and B are op			
ituulo	Life safety				recumulant trains A and D are opt			
Manu		Access from open north	side					
	Property loss							
	1 ,	L		4				

	Fire Area	: <b>F4202</b>	Description:	Hydrogen Storage				
	Building	: Yard		Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 50A, 72, 497, 804				
	-	DCD Fig:	Building code occupancy classification: U per IBC 312.1					
		9A.2-33			Electrical classification	Class I Div 2 Group B		
				Safety-re	lated divisional equipment or cables	s: none		
						s: none		
			Surrounded b	by fire barriers rated at				
				Except	: none			
	of the followin		Fire Detect		ing code occupancy classification: U per IBC 312.1 Electrical classification: Class I Div 2 Group ed divisional equipment or cables: none lant trains or equipment or cables: none			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Hydrogen	860 m3 hydrogen	H2 system	Manual pull	Hydrant			
	Storage		instrumentation	(outside hazard)		extinguishers		
		> 700	A atisingted combustible load	MI/m 2	A gauning automatic & manual ED	) agging and daga not		
		> /00 N/A	Anticipated combustible load, Unsprinklered combustible loa					
		IN/A	Onsprinklered combustible loa	ia minit, MJ/m2				
Accumina	onarction of in	stallad fire artinguishing ag	uipment, impact of fire upon:					
				1	-			
Plant operation: <b>Turbine power reduction (due to loss of H2 makeup)</b> Radiological release: <b>None, no radiological materials present</b>			4					
Kaulo	Life safety			4	recundant trains A and B are o	perable.		
Man		: Access all around		1				
Ividii	Property loss			4				
	roperty loss			1				

			1 4 4	(Cont.)			
	Fire Area:	F4271	Description:	Phase A Main Transfor	mer		
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:	- · · ·	Bu	uilding code occupancy classification:	U	
		9A.2-13			Electrical classification:		
					elated divisional equipment or cables:		
					lundant trains or equipment or cables:	none	
			Surround	ed by fire barriers rated a			
				Excep	t: basemat (non-rated); north side (	open); top (open)	
					•		
-	of the following Ro		Fire De		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Main	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants	
	Transformer A	insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2		
		(~625 MVA)			on all surfaces		
		. 500	1			· , 1 ,	
		> 700	Anticipated combustible loa		Assuming automatic & manual FP e		
	N/A		Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire		
Accumina	oporation of install	ed fire extinguishing equipm	cont impact of fire upon:		Complete burnout of all equipmer		
Assuming (					Fire Area affects no safety-related		
Plant operation: Turbine trip; outage req main transformer with s			divisional equipment; all safety divisions and				
R	adiological release.	None, no radiological ma			redundant trains A and B are ope	rable.	
I.G	Life safety:						
Ν		Access via open north sid	e				
14	Property loss:						
	Toperty 1055.	Significant			L		

	Fire Area:	F4272	Description:	Phase B Main Transform	ner		
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:		Bu	ilding code occupancy classification:		
		9A.2-13			Electrical classification:		
					lated divisional equipment or cables:		
					undant trains or equipment or cables:	none	
			Surround	led by fire barriers rated at			
				basemat (non-rated); north side (	open); top (open)		
Consisting	of the fellowing D		Fire De	taatian	Eine Summeren		
EL	of the following Ro Room #	Potential Combustibles		Backup	Fire Suppress		
EL	KOOIII #	Potential Combustibles	Primary	Баскир	Primary	Backup	
4650	Main	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants	
4050		insulating mineral oil	around transformer	instrumentation	10.2 L/min per m2	Hyurants	
		(~625 MVA)	ai vultu ti alisioi illei	mști unicitation	on all surfaces		
					on an surfaces		
	•				-		
		> 700	Anticipated combustible loa		Assuming automatic & manual FP e	quipment does not	
		N/A	Unsprinklered combustible	load limit, MJ/m2 function, impact of design basis fire on safe shutdow		on safe shutdown:	
					Complete burnout of all equipment		
Assuming of		ed fire extinguishing equipn			Fire Area affects no safety-related		
	Plant operation: Turbine trip; outage req			divisional equipment; all safety divisions and be		visions and both	
	main transformer with s				redundant trains A and B are open	rable.	
R	Radiological release: None, no radiological ma		terials present				
_	Life safety: N/A						
N	Manual firefighting: Access via open north sid		e				
	Property loss:	Significant					

	Fire Area:		Description: Phase C Main Transformer				
Building: Yard			Applicable codes:	IBC; Reg Guide 1.189;			
		DCD Fig:	_	B	uilding code occupancy classification:		
		9A.2-13			Electrical classification:		
					elated divisional equipment or cables:		
					dundant trains or equipment or cables:	none	
			Surrounde	ed by fire barriers rated a			
				Excep	ot: basemat (non-rated); north side	(open); top (open)	
=	of the following Ro		Fire Det		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Main	>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants	
		insulating mineral oil (~625 MVA)	around transformer	instrumentation	10.2 L/min per m2 on all surfaces		
		> 700 N/A	Anticipated combustible load Unsprinklered combustible l		Assuming automatic & manual FP of function, impact of design basis fire <b>Complete burnout of all equipme</b>	e on safe shutdown:	
R	Plant operation: adiological release: Life safety:	None, no radiological ma N/A	uired to replace MT w/ ST aterials present		this Fire Area affects no safety-re divisional equipment; all safety d redundant trains A and B are ope	elated or safe shutdow ivisions and both	
	vianual firefighting:	Access via open north sid	ie				
ľ	Property loss:	Significant					

Fire Area: F4274			Description: Spare Main Transformer				
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:		Bui	lding code occupancy classification:	U	
		9A.2-13			Electrical classification:		
					ated divisional equipment or cables:		
					indant trains or equipment or cables:	none	
			Surround		3 hours only on east side		
				Except	none		
Consisting	of the following Ro	ooms:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Spare Main Transformer	>18,900L Class IIIA insulating mineral oil (~625 MVA)	Dry-pilot heat around transformer	Transformer instrumentation	Dry-pilot deluge 10.2 L/min per m2 on all surfaces	Hydrants	
R	Plant operation: adiological release: Life safety:	None, no radiological ma N/A Access via all sides Excep	iterials present		Assuming automatic & manual FP e function, impact of design basis fire <b>Complete burnout of all equipmen</b> <b>Fire Area affects no safety-related</b> <b>divisional equipment; all safety di</b> <b>redundant trains A and B are ope</b>	e on safe shutdown: nt and cables within thi d or safe shutdown ivisions and both	

	Fire Area:	F5157	Description: Reserve Auxiliary Transformer A				
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:	_	Bi	uilding code occupancy classification:	U	
		9A.2-25					
						Α	
			Surround	ed by fire barriers rated a			
				Excep	Building code occupancy classification:       U         Electrical classification:       none         y-related divisional equipment or cables:       none         redundant trains or equipment or cables:       A         ad at:       3 hours         basemat (non-rated); north side (open); top (open)         Fire Suppression         Primary       Backup         Dry-pilot deluge       Hydrants         10.2 L/min per m2       on all surfaces         on all surfaces       Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:         Complete burnout of all equipment and cables within this Fire Area affects only redundant train A off-site power and related equipment and no safety-related		
~							
0	of the following Ro		Fire De				
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Reserve	>18,900L Class IIIA	Dry-pilot heat	Transformer	• •	Hydrants	
	Auxiliary	insulating mineral oil	around transformer	instrumentation	-		
	Transformer A	(~105 MVA)			on all surfaces		
		> 700	Anticipated combustible lo	ad MI/m?	Assuming outomatic & manual FD	avinment dees not	
		N/A	Unsprinklered combustible				
				10dd 111111, 1v15/1112			
Assuming	operation of installe	ed fire extinguishing equipr	nent_impact of fire upon:				
1 issuining v	Plant operation:		nont, impact of me apon.		-		
R	Radiological release: None, no radiological ma		aterials present	,		•	
	Life safety: N/A		ter mis present		equipment; all safety divisions, train A on-site power a related equipment, and redundant train B equipment a		
N	Manual firefighting: Access via open north sid		de		operable.	t train D equipment are	
	Property loss:				operable.		
1	11000000 10000.	Summe		L .			

	Fire Area:	F5158	Description:	Unit Auxiliary Transfor	mer A		
	Building:	Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804				
		DCD Fig:		Bu	ilding code occupancy classification:	U	
		9A.2-25			Electrical classification:		
					lated divisional equipment or cables:		
					undant trains or equipment or cables:	Α	
			Surround	ed by fire barriers rated at			
				Except	z basemat (non-rated); north side	(open); top (open)	
Consisting	of the following Ro	Nome:	Eiro D	etection	Fire Suppress	ion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
LL		Totential Combustibles	1 Tilliar y	Баскир	1 milar y	Васкир	
4650	•	>18,900L Class IIIA insulating mineral oil	Dry-pilot heat around transformer	Transformer instrumentation	Dry-pilot deluge 10.2 L/min per m2	Hydrants	
		(~105 MVA)			on all surfaces		
Assuming	operation of installe	> 700 N/A ed fire extinguishing equipr	Anticipated combustible lo Unsprinklered combustible nent, impact of fire upon:		Assuming automatic & manual FP e function, impact of design basis fire <b>Complete burnout of all equipme</b> <b>this Fire Area affects only reduce</b>	nt and cables within	
U	Plant operation:				power and related equipment and		
Radiological release: None, no radiological ma		aterials present		equipment; all safety divisions, train A on-site power a			
Life safety: N/A		<u>^</u>		related equipment, and redundant train B equipment			
1	Manual firefighting:	Access via open north si	de		operable.		
		Significant					

## Table 9A.5-7

## Yard (Cont.)

		155150	Density					
	Fire Area:			Fuel Oil Storage A				
	Building:		Applicable codes: IBC; Reg Guide 1.189; NFPA 11, 16, 24, 30, 72, 804					
		DCD Fig:	Building code occupancy classification:					
		9A.2-33	Electrical classification: none					
			Safety-related divisional equipment or cables: none					
			Nonsafety-related redundant trains or equipment or cables: A					
			Surround	ded by fire barriers rated at:				
				Except:				
			1	h.	none			
Consisting	of the followin	a Rooms.	Fire D	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary			
EL	K00111 #		Filliary	Баскир	Filliary	Backup		
		<b>↓</b>						
4650	Fuel Oil	~908,500L Class II	Spot heat inside tank	Ultraviolet/Infrared fire		Hydrants		
	Tank A	fuel oil		detection	zoned deluge			
				inside tank	6.5 L/min per m2			
				·	<b>-</b>			
		> 700	Anticipated combustible lo	oad, MJ/m2	Assuming automatic & manual FP e	equipment does not		
		N/A	Unsprinklered combustible		function, impact of design basis fire			
		1922	]		Complete burnout of all equipme			
Assuming	operation of in	stalled fire extinguishing eq	uipment, impact of fire upor		this Fire Area affects only redund			
			upment, impact of me upor		•			
	Plant operation:				power and related equipment and	•		
Radio		None, no radiological ma	iterials present		equipment; all safety divisions an			
	Life safety:				site power and related equipment	t are operable.		
Manu	ual firefighting:	Access all around						
	Property loss:	Moderate		1				
	1 10perty 1000.							

	Fire Area: Building:		Description: Reserve Auxiliary Transformer B Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804 Building code occupancy classification: U Electrical classification: none Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: B Surrounded by fire barriers rated at: 3 hours Except: basemat (non-rated); north side (open); top (open)				
Consisting	of the following Ro	ooms:	- Fire De		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	Reserve Auxiliary Transformer B	>18,900L Class IIIA insulating mineral oil (~105 MVA)	Dry-pilot heat around transformer	Transformer instrumentation	Dry-pilot deluge 10.2 L/min per m2 on all surfaces	Hydrants	
R	Plant operation: adiological release: Life safety:	None, no radiological ma N/A Access via open north sic	nterials present		Assuming automatic & manual FP e function, impact of design basis fire Complete burnout of all equipmen this Fire Area affects only redund power and related equipment and equipment; all safety divisions, tra related equipment, and redundant operable.	on safe shutdown: nt and cables within ant train B off-site no safety-related ain B on-site power and	

F5168	Description: Unit Auxiliary Transformer B					
Yard	Applicable codes: IBC; Reg Guide 1.189; NFPA 15, 24, 804					
DCD Fig:	Building code occupancy classification: U					
9A.2-25			Electrical classification:	none		
9A.2-32		Safety-r	elated divisional equipment or cables:	none		
		Nonsafety-related rec	dundant trains or equipment or cables:	В		
	Surround	-				
		Excep	ot: basemat (non-rated); north side (	open); top (open)		
	Eiro Do	tastian	Eine Summersei			
Potential Compustibles	Primary	Баскир	Plillary	Backup		
>18,900L Class IIIA	Dry-pilot heat	Transformer	Dry-pilot deluge	Hydrants		
insulating mineral oil (~105 MVA)	around transformer	instrumentation	10.2 L/min per m2 on all surfaces			
None	Unsprinklered combustible ment, impact of fire upon:		Assuming automatic & manual FP er function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund power and related equipment and equipment; all safety divisions, tra	on safe shutdown: at and cables within ant train B off-site no safety-related		
	Yard DCD Fig: 9A.2-25 9A.2-32 oms: Potential Combustibles >18,900L Class IIIA insulating mineral oil (~105 MVA) > 700 N/A d fire extinguishing equipt None	Yard       Applicable codes:         DCD Fig:       9A.2-25         9A.2-32       Surround         oms:       Fire De         Potential Combustibles       Primary         >18,900L Class IIIA       Dry-pilot heat         insulating mineral oil       around transformer         (~105 MVA)       Anticipated combustible lo         >700       Anticipated combustible lo         N/A       Unsprinklered combustible lo	Yard       Applicable codes:       IBC; Reg Guide 1.189;         DCD Fig:       B         9A.2-25       Safety-r         9A.2-32       Safety-related red         Surrounded by fire barriers rated a Exception       Surrounded by fire barriers rated a Exception         oms:       Fire Detection         Potential Combustibles       Primary         >18,900L Class IIIA       Dry-pilot heat         insulating mineral oil       around transformer         (~105 MVA)       Anticipated combustible load, MJ/m2         >700       Anticipated combustible load limit, MJ/m2         d fire extinguishing equipment, impact of fire upon:       None	Yard       Applicable codes:       IBC; Reg Guide 1.189; NFPA 15, 24, 804         DCD Fig:       Building code occupancy classification: Electrical classification: Safety-related divisional equipment or cables: Nonsafety-related redundant trains or equipment or cables: Surrounded by fire barriers rated at: Surrounded by fire barriers rated at: Transformer       3 hours         oms:       Fire Detection       Fire Suppress         Potential Combustibles       Primary       Backup         >18,900L Class IIIA insulating mineral oil (~105 MVA)       Dry-pilot heat around transformer       Transformer instrumentation       Dry-pilot deluge 10.2 L/min per m2 on all surfaces         >700       Anticipated combustible load, MJ/m2       Assuming automatic & manual FP e function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund power and related equipment and		

	E. V	E51(0						
	Fire Area:			Fuel Oil Storage B				
	Building:		Applicable codes:		FPA 11, 16, 24, 30, 72, 804			
		DCD Fig:	Building code occupancy classification:					
		9A.2-33		Electrical classification: none				
				Safety-rel	lated divisional equipment or cables:	none		
			Nonsafety-related redundant trains or equipment or cables: <b>B</b>					
			Surrounded by fire barriers rated at: none					
				Except:				
				x				
Consisting of the following Rooms:			Fire De	etection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Fuel Oil	908,500L Class II	Spot heat inside tank	UV/IR fire detection	Automatic foam surface cross-	Hydrants		
	Tank B	fuel oil	-	inside tank	zoned deluge	·		
					6.5 L/min per m2			
					• • •			
			-					
		> 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not		
		N/A	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire	e on safe shutdown:		
					Complete burnout of all equipme	nt and cables within this		
Assuming of	operation of ins	stalled fire extinguishing ec	uipment, impact of fire upor	1:	Fire Area affects only redundant			
	lant operation:				and related equipment and no saf	-		
		None, no radiological ma	aterials present		all safety divisions and redundant	•		
	Life safety:				and related equipment are operal	-		
Manu	2	Access all around				ur.		
ivianu	Property loss:							
	1 toperty 1055.	mourian		1				

			1 aru	(Cont.)					
	Fire Area:	F7100	Description:	Pump House					
	Building:	Pump House	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804						
	-	DCD Fig:	Building code occupancy classification: F-1						
		9A.2-33			Electrical classification:	none			
				Safety-rela	ted divisional equipment or cables:	none			
			Nonsafety-related redundant trains or equipment or cables: none						
			Surrounded	by fire barriers rated at	t: to be determined during detaile	d design			
				Except	t: to be determined during detaile	d design			
Consisting of	onsisting of the following Rooms:		Fire De	tection	Fire Suppres	sion			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup			
to be determined during detailed design	to be determined during detailed design	Class IIIB lubricants Cable Insulation	Area wide ionization	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers			
		< 700 700 ed fire extinguishing equi <b>Turbine trip</b>	Anticipated combustible Unsprinklered combustib pment, impact of fire upor	ble load limit, MJ/m2	Assuming automatic & manual Fl function, impact of design basis f Complete burnout of all equipn this Fire Area affects no safety- shutdown divisional equipment	ire on safe shutdown: nent and cables withi related or safe			

	Fire Area:	Site Specific		Secondary Nonseismic D				
	Building:	Yard	Applicable codes:	IBC; Reg Guide 1.189; N	NFPA 10, 13, 20, 24, 30, 37, 72, 101,	, 804		
		DCD Fig:	_	Building code occupancy classification: F-1 per IBC 307.9.5				
		9A.2-33			Electrical classification:	none		
		Site Specific			lated divisional equipment or cables:			
					undant trains or equipment or cables:	none		
			Surround	ed by fire barriers rated at				
				Except	: Site Specific			
Consisting of the following Rooms:			Fire D	Detection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Site Specific	Site Specific	Site Specific	Site Specific	Site Specific	Hydrant		
			-					
		> 700	Anticipated combustible	·	Assuming automatic & manual FP			
		700	Unsprinklered combustit	ole load limit, MJ/m2	function, impact of design basis fire			
					Complete burnout of all equipme	nt and cables within this		
		talled fire extinguishing eq	uipment, impact of fire up	oon:	Fire Area results in loss of only th	ie nonseismic diesel-		
	lant operation:				driven fire pump; remaining seco	ondary motor-driven		
Radiol		None, no radiological ma	aterials present		fire pump is unaffected by fire an	d is operable. All safe		
		Site Specific			shutdown equipment and both A	and B on-site power		
Manu	al firefighting:	Site Specific			sources are unaffected by fire and	l are operable.		
	Property loss:	Minor				-		

	Fire Area:	Site Specific	Description:	Secondary Nonseismic	e Motor-driven Fire Pump			
	Building:	Yard	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 13, 20, 24, 30, 37, 72, 101	1, 804		
		DCD Fig:	Building code occupancy classification: F-1 per IBC 307.9.5					
		9A.2-33			Electrical classification:	none		
		Site Specific		Safety-r	elated divisional equipment or cables:	none		
					lundant trains or equipment or cables:			
			Surrounde	d by fire barriers rated a	t: Site Specific			
				•	t: Site Specific			
			•	1				
Consisting of the following Rooms:			Fire De	etection	Fire Suppress	ion		
EL		Potential Combustibles	Primary	Backup	Primary	Backup		
4650	Site Specific	Site Specific	Site Specific	Site Specific	Site Specific	Hydrant		
	-	-	-	-	-	•		
			_					
		> 700	Anticipated combustible load, MJ/m2 Assuming automatic & manual FP equipment do			equipment does not		
		700	Unsprinklered combustib	ole load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
			•		Complete burnout of all equipme	nt and cables within		
Assuming of	peration of ins	stalled fire extinguishing eq	uipment, impact of fire up	oon:	this Fire Area results in loss of on			
	lant operation:				motor driven fire pump; remaini	•		
	1	None, no radiological ma	terials present		fire pump is unaffected by fire an	• •		
		Site Specific	*		shutdown equipment and both A	-		
Manu	al firefighting:	<u> </u>			sources are unaffected by fire and	-		
	Property loss:	÷			sources are analieeted by fire and	and operasies		
	r j cool							

	Fire Area:	Site Specific	Description:	Guard House			
	Building:	Guard House	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 24, 72, 90A, 101, 804		
		DCD Fig:	-	Build	ling code occupancy classification:	В	
		9A.2-33	Electrical classification: none				
				Safety-relat	ted divisional equipment or cables:	none	
			]	Nonsafety-related redun	dant trains or equipment or cables:	none	
			Surrounded	d design			
				d design			
			_				
Consisting of the	he following R	looms:	Fire De	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be	to be	Class A combustibles	Area-wide ionization	Manual pulls at	ABC fire extinguishers	Hydrant	
determined	determined	Cable insulation		EXITs	_	-	
during	during						
detailed	detailed						
design	design						
		< 700	Anticipated combustible	,	Assuming automatic & manual FI		
		700	Unsprinklered combustit	ole load limit, MJ/m2	function, impact of design basis fi		
					Complete burnout of all equipm		
		ed fire extinguishing equi	pment, impact of fire upor	n:	this Fire Area affects no safety-		
	lant operation:				shutdown divisional equipment	-	
Radiol		None, no radiological m			and both redundant trains A an	d B are operable.	
		to be determined during					
		to be determined during					
	Property loss:	to be determined during	g detailed design				

	Fire Area:	F7200	Description: Hot Machine Shop & Storage				
	Building:	Hot Machine Shop	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
	-	DCD Fig:	Building code occupancy classification: F-1				
		9A.2-33			Electrical classification:		
				Safety-relat	ed divisional equipment or cables:	none	
					lant trains or equipment or cables:		
			Surrounded by		to be determined during detaile		
				Except:	to be determined during detaile	ed design	
~							
	onsisting of the following Rooms:		Fire Detection		Fire Suppres		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be	to be	Class A combustibles	Area wide linear heat	Manual nulls (at	Hose racks	ABC fire	
		Cable insulation	Area wide linear lieat	Manual pulls (at EXITs)	Hose racks	extinguishers	
	ueter mineu	Transient combustibles		EATTS		extinguishers	
during detailed	during detailed	Transferit combustibles				Class D fire	
design	design	Class IIIB lubricants				extinguishers	
uesign	uesign	Chass fill habilitaties				extinguishers	
				•		-	
		< 700	Anticipated combustible load,		Assuming automatic & manual Fl	1 1	
		< 700 700	Anticipated combustible load, Unsprinklered combustible loa		function, impact of design basis f	ire on safe shutdown:	
		700	Unsprinklered combustible loa		function, impact of design basis f Complete burnout of all equipm	ire on safe shutdown: nent and cables within	
		700 ed fire extinguishing equi	1		function, impact of design basis f	ire on safe shutdown: nent and cables within	
Pla	ant operation:	700 ed fire extinguishing equij None	Unsprinklered combustible loa		function, impact of design basis f Complete burnout of all equipm	ire on safe shutdown: nent and cables within related or safe	
Pla	ant operation: ogical release:	700 ed fire extinguishing equij None Contained within buildi	Unsprinklered combustible loa oment, impact of fire upon:		function, impact of design basis f Complete burnout of all equipm this Fire Area affects no safety-	ire on safe shutdown: ment and cables within related or safe ; all safety divisions	
Pla Radiolo	ant operation: ogical release: Life safety:	700 ed fire extinguishing equij None Contained within buildi to be determined during	Unsprinklered combustible loa oment, impact of fire upon: ng detailed design	d limit, MJ/m2	function, impact of design basis f Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment	ire on safe shutdown: ment and cables within related or safe ; all safety divisions	
Pla Radiolo Manua	ant operation: ogical release: Life safety: al firefighting:	700 ed fire extinguishing equij None Contained within buildi to be determined during	Unsprinklered combustible loa oment, impact of fire upon: ng g detailed design n every 15 m of exterior wall	d limit, MJ/m2	function, impact of design basis f Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment	ire on safe shutdown: ment and cables within related or safe ; all safety divisions	

ESBWR

	Fire Area:	F7300	Description:	Service Water / W	Vater Treatment Building		
		Service Water	Applicable codes: <b>IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804</b>				
	Dunumg.	DCD Fig:	Building code occupancy classification: to be determined during detailed design				
		9A.2-33	]		Electrical classification:		
				Safety-relate	ed divisional equipment or cables		
			Non		lant trains or equipment or cables		
					to be determined during detaile		
			2		to be determined during detail		
				Ĩ	<u> </u>	0	
Consisting of t	he following R	looms:	Fire Detection	n	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be determined during detailed design	to be determined during detailed design	Class IIIB lubricants Cable insulation Electrical equipment	Area wide spot heat	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers	
P Radiol	lant operation: ogical release: Life safety: al firefighting:	None, but may affect m None, no radiological m to be determined during	aterials present g detailed design in every 15 m of exterior wall		Assuming automatic & manual F function, impact of design basis f Complete burnout of all equipt this Fire Area affects no safety shutdown divisional equipment redundant train A and B nonsa equipment; all safety divisions off-site power supplies A and B and are operable.	ire on safe shutdown: nent and cables within -related or safe , but could affect ifety-related and both on-site and	

	<b>T</b> : 4	100	5				
	Fire Area:			Cold Machine Sho		00.4	
	Building:	Cold Machine Shop	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 14, 72, 90A, 101, 804				
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-33		~ ~	Electrical classification:		
				•	ed divisional equipment or cables:		
			Nonsafety-related redundant trains or equipment or cables: none				
			Surrounded by f		to be determined during detaile		
			]	Except:	to be determined during detaile	d design	
Consisting of t	he following R	ooms:	Fire Detection	n	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
	iteoin #		1 minut y	Buckup	11111111	Buokup	
to be	to be	Class IIIB lubricants	Area wide linear heat	Manual pulls (at	Hose racks	ABC fire	
determined	determined	Cable insulation		EXITs)	11050 1 4015	extinguishers	
during	during			2.1115)		extinguishers	
detailed	detailed						
design	design						
ucsien	utsiz n						
					•		
		< 700	Anticipated combustible load,	MJ/m2	Assuming automatic & manual FI	P equipment does not	
		700	Unsprinklered combustible loa	d limit, MJ/m2	function, impact of design basis f	ire on safe shutdown:	
			_		Complete burnout of all equipn	ent and cables within	
Assuming oper	ration of instal	led fire extinguishing equi	pment, impact of fire upon:		this Fire Area affects no safety-	related or safe	
	lant operation:				shutdown divisional equipment	; all safety divisions	
Radiol		None, no radiological m			and both redundant trains A an	d B are operable.	
	•	to be determined during				-	
Manu	al firefighting:	1.9 m2 access required i	in every 15 m of exterior wall				
	Property loss:	to be determined during	g detailed design				
l				-			

	Fire Area:	F7500	Description:	Warehouse			
	Building:	Warehouse	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 72, 90A, 101, 804				
		DCD Fig:	Building code occupancy classification: S-2				
		9A.2-33			Electrical classification:		
					ted divisional equipment or cables:		
					dant trains or equipment or cables:		
			Surrounded		to be determined during detailed		
				Except	t: to be determined during detailed	d design	
~ · · ^ .							
Consisting of th			Fire De		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be determined during detailed design	to be determined during detailed design	Class A combustibles Cable insulation Class IIIB lubricants	Suppression flowswitch	Manual pulls at EXITs	Dry-pipe sprinkler 8.2 L/min per m2 over most remote 302 m2 (rack protection to be determined during detailed design)	ABC fire extinguishers	
Pla Radiolo Manua	ant operation: ogical release: Life safety: al firefighting:	> 700 700 ed fire extinguishing equip None None, no radiological m to be determined during to be determined during to be determined during	aterials present g detailed design g detailed design	ble load limit, MJ/m2	Assuming automatic & manual FF function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment; and both redundant trains A an	re on safe shutdown: nent and cables withir related or safe ; all safety divisions	

	_	F7600 Training Center DCD Fig: 9A.2-33	Description:       Training Center         Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 13, 72, 75, 90A, 101, 804         Building code occupancy classification:       B         Electrical classification:       none         Safety-related divisional equipment or cables:       none				
			Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: none Surrounded by fire barriers rated at: to be determined during detailed design Except: to be determined during detailed design				
	he following R		Fire De		Fire Suppress		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
to be determined during detailed design	to be determined during detailed design	Class A combustibles Cable insulation Computer equipment	Suppression flowswitch	Manual pulls at EXITs	Preaction sprinkler 4.1 L/min per m2 over most remote 182 m2	CO2 fire extinguishers ABC fire extinguishers	
P Radio	lant operation: ogical release: Life safety: al firefighting:	> 700 700 ed fire extinguishing equip None None, no radiological m to be determined during to be determined during to be determined during	aterials present g detailed design g detailed design	ole load limit, MJ/m2	Assuming automatic & manual FF function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety shutdown divisional equipment; and both redundant trains A an	re on safe shutdown: eent and cables within related or safe all safety divisions	

			1414 (00				
	Fire Area:	F7700	Description:	Service Building			
	Building:	Service	Applicable codes:	IBC; Reg Guide 1.	.189; NFPA 10, 13, 72, 90A, 101,	804; 28 CFR 36	
		DCD Fig:	Building code occupancy classification: <b>B</b>				
		9A.2-33	Electrical classification: none				
			Safety-related divisional equipment or cables: none				
					dant trains or equipment or cables:		
			Surrounded by f		to be determined during detaile		
			]	Except:	to be determined during detaile	d design	
Consisting of	the fellowing D	aame:	Fire Detection	212	Eiro Sumprog	ion	
EL	the following R Room #	Potential Combustibles	Primary	1	Fire Suppress Primary		
EL	K00111 #	rotential Combustibles	Fillinary	Backup	Filmary	Backup	
to be	to be	Class A combustibles	Suppression flowswitch	Manual pulls at	Wet-pipe sprinkler	ABC fire	
determined during detailed design	determined during detailed design	Cable insulation		EXITs	4.1 L/min per m2 over most remote 140 m2	extinguishers	
P Radio	lant operation: logical release: Life safety: al firefighting:		g detailed design g detailed design		Assuming automatic & manual FF function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment; and both redundant trains A an	re on safe shutdown: nent and cables within related or safe ; all safety divisions	

	Fire Area:	F7800	Description:	<b>Auxiliary Boiler B</b>	uilding		
	Building:	Auxiliary Boiler	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 24, 72, 101, 804				
		DCD Fig:	Building code occupancy classification: to be determined during detailed design				
		9A.2-33	Electrical classification: to be determined during detailed design				
					ed divisional equipment or cables:		
					lant trains or equipment or cables:		
			Surrounded by f		to be determined during detaile		
				Except:	to be determined during detaile	d design	
	e fellessine D		Fire Detection		Eine Gemanne		
Consisting of th EL	Room #	Potential Combustibles	Primary		Fire Suppress Primary		
EL	KOOIII #	rotential Compustibles	Filinary	Backup	Filliary	Backup	
to be	to be	Class IIIB lubricants	Area wide spot heat	Manual pulls (at	ABC fire extinguishers	Hydrants	
	determined	Cable insulation	Area while spot heat	EXITs)	ADC III CALIIguisiters	iiyui ants	
during	during	Electrical equipment		EXITS			
detailed	detailed	Electrical equipment					
design	design						
ucon	ucongin						
		•			-		
L							
L		< 700	Anticipated combustible load,		Assuming automatic & manual FF	1 1	
		< 700 700	Anticipated combustible load, Unsprinklered combustible loa		function, impact of design basis fi	re on safe shutdown:	
<u>.</u>		700	Unsprinklered combustible loa		function, impact of design basis fi Complete burnout of all equipm	re on safe shutdown: nent and cables with	
Assuming opera	tion of instal	700 ed fire extinguishing equi	Unsprinklered combustible loa		function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety-	re on safe shutdown: ment and cables with related or safe	
Pla	ant operation:	700 ed fire extinguishing equi None; restoration requi	Unsprinklered combustible loa pment, impact of fire upon: red before outage		function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment;	re on safe shutdown: nent and cables with related or safe ; all safety divisions	
Pla	ant operation: gical release:	700 ed fire extinguishing equi None; restoration requi None, no radiological m	Unsprinklered combustible loa pment, impact of fire upon: red before outage aterials present		function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment; and both on-site and off-site pow	re on safe shutdown: nent and cables with related or safe ; all safety divisions wer supplies A and I	
Pla Radiolo	ant operation: gical release: Life safety:	700 ed fire extinguishing equi None; restoration requi None, no radiological m to be determined during	Unsprinklered combustible loa pment, impact of fire upon: red before outage aterials present g detailed design		function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment;	re on safe shutdown: nent and cables with related or safe ; all safety divisions wer supplies A and I	
Pla Radiolo Manua	ant operation: gical release: Life safety: l firefighting:	700 ed fire extinguishing equi None; restoration requi None, no radiological m to be determined during	Unsprinklered combustible loa pment, impact of fire upon: red before outage aterials present g detailed design n every 15 m of exterior wall		function, impact of design basis fi Complete burnout of all equipm this Fire Area affects no safety- shutdown divisional equipment; and both on-site and off-site pow	re on safe shutdown: nent and cables with related or safe ; all safety divisions wer supplies A and I	

	Fire Area:		-	Administration Buildi	<u> </u>			
	Building:	Administration	Applicable codes:	IBC; Reg Guide 1.189	; NFPA 10, 13, 72, 90A, 101, 804;	28 CFR 36		
		DCD Fig:		Buile	ding code occupancy classification:	В		
		9A.2-33	Electrical classification: none					
				Safety-rela	ted divisional equipment or cables:	none		
			]	Nonsafety-related redur	ndant trains or equipment or cables:	none		
			Surrounded by fire barriers rated at: to be determined during detailed design					
				Except	to be determined during detaile	d design		
Consisting of the	Consisting of the following Rooms:		Fire De	tection	Fire Suppress	sion		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
to be	to be	Class A combustibles	Suppression	Manual pulls at	Wet-pipe sprinkler	ABC fire		
determined	determined	Cable insulation	flowswitch	EXITs	4.1 L/min per m2	extinguishers		
during	during				over most remote 140 m2	0		
detailed	detailed							
design	design							
	0							
		. 700	L	1 1 1 1 1 2				
		> 700	Anticipated combustible	-	Assuming automatic & manual FI			
г	Du a u a uta a 1 a a a a	700	Unsprinklered combustib	ble load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
	Property loss:				Complete burnout of all equipm			
		ed fire extinguishing equip	pment, impact of fire upoi	1:	this Fire Area affects no safety-			
	ant operation:				shutdown divisional equipment;	•		
Radiolo		None, no radiological m				d B are operable.		
		to be determined during	ž č					
		to be determined during						
I	Property loss:	to be determined during	detailed design					

	Fire Area:	F9101	Description:	Uncontrolled Access			
	Building:				NFPA 10, 14, 72, 101, 804		
	U	DCD Fig:	Building code occupancy classification: F-1				
		9A.2-3	Electrical classification: none				
		9A.2-11		Safety-	related divisional equipment or cable	s: none	
				Nonsafety-related re	dundant trains or equipment or cable	s: none	
			Surrounded by fire barriers rated at: <b>3 hours</b>				
				Exce	pt: basemat (non-rated)		
Consisting	of the followin		Fire Det		Fire Suppre	ession	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
-2000	9101	Cable insulation Class IIIB lubricants Class A combustibles Transient combustibles	Area-wide ionization	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers	
4650							
		< 700	Anticipated combustible loa	ud, MJ/m2	Assuming automatic & manual Fl	P equipment does not	
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis f		
			upment, impact of fire upon	:	Complete burnout of all equipn Fire Area affects no safe shutdo		
		None; will impede access			all safety-related equipment and	l both redundant trains A	
Radio		None, no radiological ma			and B are operable.		
		Travel distance limits to	EXITs meet NFPA 101				
Manu	al firefighting: Property loss:	Access via stairwells					

				~ /			
	Fire Area:	F9150	Description: Cable Tunnel A				
	Building:	Tunnel	Applicable codes:	IBC; Reg Guide 1.189; N	FPA 10, 13, 14, 72, 101, 804		
		DCD Fig:	Building code occupancy classification: F-1				
		9A.2-3	1		Electrical classification:	none	
		9A.2-4		Safety-rel	ated divisional equipment or cables:	none	
		9A.2-11		Nonsafety-related redu	ndant trains or equipment or cables:	Α	
			Surround	ded by fire barriers rated at:	3 hours		
			_	Except:	none		
Consisting	of the followin	ig Rooms:	Fire De	etection	Fire Suppress	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
1300	9150	Cable insulation	Area-wide ionization	Suppression flowswitch	Wet-pipe sprinkler	Hose racks	
					12.2 L/min per m2	(in nearby stairwells)	
					over most remote 235 m2		
						ABC fire extinguishers	
						_	
4650							
		> 1400	Anticipated combustible lo		Assuming automatic & manual FP		
		1400	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire on safe shutdown:		
					Complete burnout of all equipme	ent and cables within this	
			uipment, impact of fire upor	n:	Fire Area results in loss of only re	edundant train A on-site	
	lant operation:				power source and related equipm	ent; all safety divisions	
Radio		None, no radiological ma			and train B on-site power source	and related equipment	
		Travel distance limits to	EXITs meet NFPA 101		are unaffected by fire and are op		
Manu	al firefighting:	Access via stairwells		ļ			
	Property loss:			]			
1				-			

	Fire Area Building	Tunnel DCD Fig: 9A.2-3	Description:       Cable Tunnel B         Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 13, 14, 72, 101, 804         Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none         Nonsafety-related redundant trains or equipment or cables:       B         Surrounded by fire barriers rated at:       3 hours         Except:       none				
		9A.2-4					
Consisting	of the followir	ng Rooms:	Fire D	etection	Fire Suppres	sion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
1300 4650	9160	Cable insulation	Area-wide ionization	Suppression flowswitch	Wet-pipe sprinkler 12.2 L/min per m2 over most remote 235 m2	Hose racks (in nearby stairwells) ABC fire extinguisher	
P Radiol	Plant operation logical release Life safety	None None, no radiological ma Travel distance limits to Access via stairwells		e load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fir Complete burnout of all equipme Fire Area results in loss of only r power source and related equipm and train A on-site power source are unaffected by fire and are op	e on safe shutdown: ent and cables within th redundant train B on-sit nent; all safety divisions and related equipment	

	Fire Area Building	: F9190 : Tunnel DCD Fig: 9A.2-3 9A.2-4 9A.2-11	Description:       Controlled Access         Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 14, 72, 101, 804         Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none         Nonsafety-related redundant trains or equipment or cables:       none         Surrounded by fire barriers rated at:       3 hours         Except:       basemat (non-rated); elevator doors (1.5 hr rated)			
Consisting EL	of the followin Room #	ng Rooms: Potential Combustibles	Fire Det Primary	tection Backup	Fire Suppres Primary	ssion Backup
1300	9201	none	Area-wide ionization	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers
Assuming o F Radio	lant operation logical release Life safety	None; will impede access None, no radiological ma Travel distance limits to Access via exterior and i	aterials present EXITs meet NFPA 101	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fin Complete burnout of all equipme Fire Area affects no safe shutdov all safety-related equipment and and B are operable.	re on safe shutdown: ent and cables within this wn equipment or circuits:

	Fire Area Building	: F9201 Tunnel DCD Fig: 9A.2-4 9A.2-11	Applicable codes:	B Safety-	<b>SNFPA 10, 14, 72, 101, 804</b> Building code occupancy classification Electrical classification related divisional equipment or cable edundant trains or equipment or cable at: <b>3 hours</b>	n: none s: none
Consisting EL	of the followir Room #	ng Rooms: Potential Combustibles	Except Fire Detection Primary Backup		pt: <b>basemat (non-rated); elevator o</b> Fire Suppre Primary	
1300	9201	Cable insulation Class IIIB lubricants Class A combustibles Transient combustibles	Area-wide ionization	Manual pulls (at EXITs)	Hose racks	ABC fire extinguishers
Assuming o F Radio	Plant operation logical release Life safety	<700 700 stalled fire extinguishing equ None; will impede access None, no radiological ma Travel distance limits to Access via stairwells Minor	into RB and FB terials present	load limit, MJ/m2	Assuming automatic & manual Fl function, impact of design basis f Complete burnout of all equipm Fire Area affects no safe shutdo all safety-related equipment and and B are operable.	ire on safe shutdown: ment and cables within this own equipment or circuits;

	Fire Area:	F19101	Description:	Electric Motor Drive	en G21 Pump		
		Fire Pump Enclosure			9; NFPA 10, 20, 24, 72, 101, 804		
	Dunung.	DCD Fig:	rippilouolo oouoo.		ilding code occupancy classification:	F-1	
		9A.2-33	Electrical classification: <b>none</b>				
				Safety-re	lated divisional equipment or cables:	none	
					undant trains or equipment or cables:		
			Surrounded	by fire barriers rated at			
				Except	t: exterior walls (non-rated), roof (1	non-rated)	
		<u></u>	-				
Consisting	of the followin	ig Rooms:	Fire Dete	ection	Fire Suppress	ion	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	19101	Class IIIB lubricants	Area-wide ionization	Manual pull	CO2 fire extinguisher	Hydrant	
		Cable insulation		_		-	
		< 700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not		
		700	Unsprinklered combustible	e load limit, MJ/m2	function, impact of design basis fire		
					Complete burnout of all equipme		
			uipment, impact of fire upor	1: I	this Fire Area affects no safety-re		
	lant operation:				shutdown divisional equipment; :	•	
Radio		None, no radiological ma			both redundant trains A and B a	re operable.	
Man		Travel distance limits to	EALLS meet NFPA 101				
Manu		Access via door					
	Property loss:	winor					
					L		
L							

	Fire Area:	F19150	Description:	Primary Electric Mo	otor Driven Fire Pump		
		Fire Pump Enclosure			89; NFPA 10, 11, 13, 20, 24, 72, 101,	804	
	O	DCD Fig:	FF		uilding code occupancy classification:		
		9A.2-33	Electrical classification: <b>none</b>				
			Safety-related divisional equipment or cables: <b>none</b>				
				Nonsafety-related rec	dundant trains or equipment or cables:	A	
			Surrounded	by fire barriers rated a			
				Excep	t: exterior walls (non-rated), roof (no	on-rated)	
Consisting (	of the followin	g Rooms:	Fire Dete	ection	Fire Suppression	on	
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	19150	Class IIIB lubricants	Suppression Flowswitch	Manual pull	Dry Pilot foam Water Sprinklers	Hydrant	
		Cable insulation			12.2 L/min per m2 over entire		
					area		
		< 700	<b>1 A4 i a a a a a b a a i b 1 a b a a b a a i b 1 a b a a b a a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b a b <b>a b a b a b <b>a b a b a b a b a b a b a b a b a b a b a </b></b></b>	- 1 MI/	A		
		< 700 700	Anticipated combustible los		Assuming automatic & manual FP equipment does not function, impact of design basis fire on safe shutdown:		
		/00	Unsprinklered combustible	Ioad IIIIII, MJ/III2			
Assuming o	noration of inc	tallad fire extinguishing or	uipment, impact of fire upon		Complete burnout of all equipment		
	lant operation:		upment, impact of fife upon		this Fire Area results in loss of onl	•	
		None, no radiological ma	torials present		driven fire pump; remaining dies		
Kauloi					(Seismic Category I), and all safe		
Manu		Access via door	EXITs meet NFPA 101 are unaffected by fire and are operable. Both A and are unaffected by fire and are operable.				
	Property loss:				on-site power sources are unaffect	ed by fire and are	
	Froperty loss.	IVIIII0I			operable.		

	Fire Area:	F10160	Description:	Primary Diesel Drive	n Fire Dumn			
		Fire Pump Enclosure			9; NFPA 10, 11, 13, 20, 24, 30, 37, 7	2 101 804		
	Dunung.	DCD Fig:	Applicable codes.		ilding code occupancy classification:			
		9A.2-33	Electrical classification: <b>none</b>					
		<i>J</i> <b>11.2</b> 00	Safety-related divisional equipment or cables: none					
				-	undant trains or equipment or cables:			
			Surrounded by fire barriers rated at: <b>3 hours</b>					
			Sunounded	•	t: exterior walls (non-rated), roof (no	on-rated)		
			4	2•p				
Consisting	of the followin	g Rooms:	Fire Dete	ection	Fire Suppressi	on		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
				•		<b>^</b>		
4650	19160	Class IIIB lubricants	Suppression Flowswitch	Manual pull	Dry Pilot foam Water Sprinklers	Hydrant		
		Cable insulation		•	12.2 L/min per m2 over entire	·		
		Class II fuel oil			area			
		> 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP equipment does not			
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire on safe shutdown:			
					Complete burnout of all equipmer	nt and cables within		
			uipment, impact of fire upor	n:	this Fire Area results in loss of onl	y the diesel-driven		
	Plant operation:				fire pump; remaining electric mo	tor driven fire pump,		
Radio		None, no radiological ma			(Seismic Cat II) is available and al	ll safe shutdown		
		Travel distance limits to	EXITs meet NFPA 101		equipment are unaffected by fire a	and are operable.		
Manu		Access via door			Both A and B on-site power source	es are unaffected by		
	Property loss:	Minor			fire and are operable.	·		
					-			

		Fire Pump Enclosure DCD Fig: 9A.2-33		IBC; Reg Guide 1.18		72, 101, 804				
						Description: Primary Diesel Fire Pump Fuel Oil Storage Tank Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 11, 13, 20, 24, 30, 37, 72, 101, 804				
		0 4 2 33	Building code occupancy classification: F-1 per IBC 307.9.5 Electrical classification: none Safety-related divisional equipment or cables: none Nonsafety-related redundant trains or equipment or cables: B							
		9A.2-33								
			Surrounded b	by fire barriers rated a	t: 3 hours					
				Excep	t: none					
	0.11	D								
Consisting of the			Fire Dete		Fire Suppression					
EL R	Room #	Potential Combustibles	Primary	Backup	Primary	Backup				
4650	19161	Class IIIB lubricants	Suppression Flowswitch	Manual pull	Foam Water Deluge	Hydrant				
1000		Cable insulation	Suppression 1 to ws witch	Tunun pun	I out water Deluge	11 y ut utit				
		Class II fuel oil								
•			•			•				
		> 700	Anticipated combustible loa	ld, MJ/m2	Assuming automatic & manual FP	equipment does not				
		700	Unsprinklered combustible	load limit, MJ/m2	function, impact of design basis fire	e on safe shutdown:				
	-		_		Complete burnout of all equipme	nt and cables within				
			uipment, impact of fire upon:	:	this Fire Area results in loss of on	ly the diesel-driven				
	operation:				fire pump; remaining electric motor driven fire pu					
	Radiological release: None, no radiological ma				(Seismic Cat II) is available and all safe shutdown					
Life safety: Travel distance limits to		EXITs meet NFPA 101		equipment are unaffected by fire and are operable.						
	Manual firefighting: Access via door		Both A and B on-site power source		ces are unaffected by					
Proj	perty loss:	Minor			fire and are operable.					

**Design Control Document/Tier 2** 

#### ESBWR

	Fire Area:	F39151	Description: Ancilliary Diesel Generator A/Fuel Oil Storage					
	Building:	Yard - ADB	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 15, 16, 24, 30, 37, 72, 101, 804					
		DCD Fig:		Building code occupancy classification: <b>F-1</b>				
		9A.2-33	Electrical classification: none					
				Safety-related divisional equipment or cables: none				
					undant trains or equipment or cables	S: A		
			Surrounded by	fire barriers rated at				
				Except	none			
	of the followin		Fire Dete		Fire Suppression			
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup		
4650	39151	Cable insulation	Cross-zoned	Suppression	Preaction foam deluge	Hydrants and ABC		
		Class IIIB lubricants	Ultraviolet/Infrared	flowswitch	16.3 L/min per m2	fire extinguishers		
		20,000L Class II fuel oil	and spot heat					
		> 700	Anticipated combustible lo		Assuming automatic & manual FP equipment does not			
		700	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:			
					Complete burnout of all equipm			
			quipment, impact of fire upon:		this Fire Area affects only redundant train A onsite			
	Plant operation: None				power and related equipment and no safety-related			
Radio	Radiological release: None, no radiological mat				equipment. All redundant train B onsite power			
	Life safety: <b>Travel distance limits to E</b>		EXITS meet NFPA 101		related equipment is operable.			
Manu	Manual firefighting: Access via doors							
	Property loss:	Moderate		J				

**Design Control Document/Tier 2** 

	Fire Area:	F39161	Description: Ancilliary Diesel Generator B/Fuel Oil Storage						
	Building:	Yard - ADB	Applicable codes: IBC; Reg Guide 1.189; NFPA 10, 13, 15, 16, 24, 30, 37, 72, 101, 804						
		DCD Fig:		Building code occupancy classification: F-1					
		9A.2-33	Electrical classification: none						
						d divisional equipment or cables: <b>none</b>			
					indant trains or equipment or cables	: <b>B</b>			
			Surrounded by	fire barriers rated at:					
				Except:	none				
Consisting	- <b>£</b> 4h - <b>£</b> - 11	a Daamar	Eine Data		Eine Comment				
EL	of the followin Room #	g Rooms: Potential Combustibles	Fire Detec		Fire Suppression				
EL	Koom #	Potential Combustibles	Primary	Backup	Primary	Backup			
4650	39161	Cable insulation	Cross-zoned UV/IR	Suppression	Preaction foam deluge	Hydrants and ABC			
4030	57101	Class IIIB lubricants	and spot heat	flowswitch	16.3 L/min per m2	fire extinguishers			
		20,000L Class II fuel oil	and spot neat	nowswitten	10.5 L/mm per mz	In c extinguishers			
	•					•			
		> 700	Anticipated combustible lo	ad, MJ/m2	Assuming automatic & manual FP	equipment does not			
		700	Unsprinklered combustible load limit, MJ/m2		function, impact of design basis fire on safe shutdown:				
					Complete burnout of all equipme	ent and cables within			
			uipment, impact of fire upon: this Fire Area affects		this Fire Area affects only redun				
	Plant operation:				power and related equipment an	t and no safety-related			
Radio	Radiological release: None, no radiological mat				equipment. All redundant train	A onsite power and			
	•	Travel distance limits to	EXITs meet NFPA 101		related equipment is operable.				
Manu	Manual firefighting: Access via doors								
	Property loss:	Moderate							

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#### **Design Control Document/Tier 2**

	Fire Area: Building:	F39252 Yard - ADB DCD Fig: 9A.2-33	Description:       Ancilliary Diesel Generator A         Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 101, 804         Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none         Nonsafety-related redundant trains or equipment or cables:       A         Surrounded by fire barriers rated at:       3 hours         Except:       basemat (non-rated)				
Consisting	of the followin	g Rooms:	Fire Detec	etion	Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	39252	Cable insulation Class IIIB lubricants Class II fuel oil	Cross-zoned UV/IR and spot heat	Suppression flowswitch	Preaction foam sprinkler 10.2 L/min per m2 over entire area	Hydrants and ABC fire extinguishers	
P Radio	lant operation: ogical release: Life safety:	None None, no radiological ma Travel distance limits to Access via doors		load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund power and related equipment and equipment. All redundant train I related equipment is operable.	e on safe shutdown: ent and cables within dant train A onsite d no safety-related	

**Design Control Document/Tier 2** 

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DCD Fig:Building code occupancy classification:9A.2-33Electrical classification:					
9A.2-33 Electrical classification:					
	Electrical classification: <b>none</b>				
	Safety-related divisional equipment or cables: <b>none</b>				
	Nonsafety-related redundant trains or equipment or cables: A				
Surrounded by fire barriers rated at: <b>3 hours</b>	1				
Except: basemat (non-rated)					
Consisting of the following Rooms: Fire Detection Fire Suppression	on				
EL   Room #   Potential Combustibles   Primary   Backup   Primary	Backup				
	<u>^</u>				
465039253Electrical Equipment and Cable insulationArea wide ionizationManual pullsCO2 fire extinguishers	Hydrants and ABC fire extinguishers				
> 1400       Anticipated combustible load, MJ/m2       Assuming automatic & manual FP e         1400       Unsprinklered combustible load limit, MJ/m2       function, impact of design basis fire					
Complete burnout of all equipment					
Assuming operation of installed fire extinguishing equipment, impact of fire upon: this Fire Area affects only redund					
	power and related equipment and no safety-related				
	equipment. All redundant train B onsite power and				
Life safety: Travel distance limits to EXITs meet NFPA 101 related equipment is operable.	s on site power and				
Manual firefighting: Access via doors					
Property loss: Significant					

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#### **Design Control Document/Tier 2**

	Fire Area: Building:	F39262 Yard - ADB DCD Fig: 9A.2-33	Ancilliary Diesel Generator B         IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 101, 804         Building code occupancy classification:         F-1         Electrical classification:         Safety-related divisional equipment or cables:         Nonsafety-related redundant trains or equipment or cables:         B         Surrounded by fire barriers rated at:       3 hours         Except:       basemat (non-rated)				
Consisting	of the followin	0	Fire Detec	ction	Fire Suppression		
EL	Room #	Potential Combustibles	Primary	Backup	Primary	Backup	
4650	39262	Cable insulation Class IIIB lubricants Class II fuel oil	Cross-zoned UV/IR and spot heat	Suppression flowswitch	Preaction foam sprinkler 10.2 L/min per m2 over entire area	Hydrants and ABC fire extinguishers	
P Radio	> 700         700         700         Radiological release:         None, no radiological ma         Life safety:         Manual firefighting:         Access via doors         Property loss:		terials present	load limit, MJ/m2	Assuming automatic & manual FP function, impact of design basis fire Complete burnout of all equipment this Fire Area affects only redund power and related equipment and equipment. All redundant train a related equipment is operable.	e on safe shutdown: ent and cables within dant train B onsite d no safety-related	

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#### **Design Control Document/Tier 2**

	-	F39263 Yard - ADB DCD Fig: 9A.2-33	Description:       ADG Electrical & Control Equipment room B         Applicable codes:       IBC; Reg Guide 1.189; NFPA 10, 13, 16, 24, 37, 72, 101, 804         Building code occupancy classification:       F-1         Electrical classification:       none         Safety-related divisional equipment or cables:       none         Nonsafety-related redundant trains or equipment or cables:       B         Surrounded by fire barriers rated at:       3 hours         Except:       basemat (non-rated)				
Consisting	of the followin	g Rooms:	Fire Detec	etion	Fire Suppression		
EL			Primary	Backup	Primary	Backup	
4650	39263	Electric equipment and Cable insulation	Area-wide ionization	Manual pulls	CO <sub>2</sub> fire extinguishers	Hydrants and ABC fire extinguishers	
P Radio	Assuming operation of installed fire extinguishing eq Plant operation: Radiological release: Life safety: Manual firefighting: Property loss: Significant		terials present	load limit, MJ/m2	Assuming automatic & manual FI function, impact of design basis fi Complete burnout of all equipm this Fire Area affects only reduc power and related equipment an equipment. All redundant train related equipment is operable.	ire on safe shutdown: ment and cables within ndant train B onsite nd no safety-related	

#### 9A.6 SPECIAL CASES

#### 9A.6.1 Piping Penetrations, Reactor Building

Piping penetrations through the drywell wall have unique design considerations. The stress and containment requirements along with the temperature inputs to the concrete walls leave little design latitude. Some of these high-energy piping penetrations may not contain a 3-hr fire-resistive barrier as provided throughout the other ESBWR buildings. All penetrations in 3-hour fire barriers are provided with an approved penetration seal design in accordance with the guidelines of Regulatory Guide 1.189.

#### 9A.6.2 Fire Door Deviations

The design of the nuclear facility must meet many criteria, including fire resistance. Fire doors are an example of compromise with other overriding design criteria that must also be met. Some doors, such as the airlock doors in the Reactor Building, form part of a pressure boundary and are of special construction. These doors generally have a backup fire door.

#### 9A.6.3 Pipe Break Analyses

Per the criteria in Section 3.6, the high-pressure firewater systems require analysis for moderate energy lines.

#### 9A.6.4 Fire Separation for Divisional Electrical Systems

There are cases where cables of more than one division are in relatively close proximity and require special justification. These areas are listed below and justification for each is provided.

#### 9A.6.4.1 RPS Scram Circuits

Wiring to each of the four groups of scram solenoids is run in separate rigid, grounded steel conduits to prevent the possibility of exposing the scram solenoid circuits to a "hot" short (i.e., two energized switch legs of different group circuits shorted together that could inhibit the scram command to more than one group of control rods). No other wiring is contained within the conduits. Overheated conductors that are shorted to the conduits cannot cause an unsafe failure because the solenoids are de-energized by shorts to ground and thus create a safe condition. Separate grounded steel conduits are also provided for both the "A" and "B" solenoid circuits of the same scram group.

The air operated Scram Solenoid valves are part of the HCU assemblies (two solenoids per valve). They are safety-related and receive their divisional power (Division 1 or 2) from the Reactor Protection System (RPS) via the Scram Solenoid Fuse Panels. Separate fuse panels are provided for each scram group. Fuses associated with "A" and "B" solenoids of a single scram group are installed in separate panels or with appropriate separation within the same panel. Fire that causes a hot short on the cables feeding power to the scram solenoids can cause the associated fuses in the scram solenoid fuse panel to blow. The fault is limited to the loss of power to the associated solenoids and causes a half-scram or scram condition (a fail-safe condition).

The backup scram valves act as a diverse backup to the scram logic and the solenoids are safetyrelated. Separate divisions of 250 VDC power energize the two backup scram valves. Power supply wiring to each solenoid is individually circuit-protected and run in separate steel conduit.

## 9A.6.4.2 MSIV Closure Circuits

Sensors used for the main steam isolation valve (MSIV) closure (via the leak detection system) are located in the Turbine Building and in the main steamline (MSL) tunnels. These sensors are classified as Class 1E devices and use fire-retardant cabling to connect to the Main Control Room.

The safety-related devices and associated cabling are normally protected from flying objects and are physically separated. Because of the design and construction of the Turbine Building (not a Seismic Category I or a safety-related area) it is possible for these sensors and their leads to be damaged during seismic or fire events in the Turbine Building. However, a fire in the Turbine Building is sensed by the Leak Detection and Isolation System (LD&IS) temperature monitors, which causes MSIV closure before the fire burns out the equipment. No fire can propagate along the fire-retardant cabling to the control room to cause damage to power sources.

The MSIV sensors and type are:

- MSIV Condenser Vacuum Pressure transmitter located in the Turbine Building;
- MSL Turbine Inlet Pressure transmitter located in the Turbine Building;
- Main Steamline Tunnel Area Ambient Temperature element located in the MSL Tunnel; and
- Main Steamline Tunnel Area Ambient Temperature element located in the Turbine Building.

Backup trips for MSIV isolation, either directly or indirectly through the RPS, are caused by the turbine trip. Tripping of the MSIVs as a result of a fire in the Turbine Building is acceptable.

For the pressure transmitters and temperature elements, the signals are low-level analog current signals that are transmitted over a shielded, twisted pair of conductors for each transmitter. The cables are routed in separate grounded conduits on a divisional basis. Shorting together, shorting to ground, or opening a conductor in a current loop cable only affects the instrument associated with the cable. No damage occurs or propagates as a result of these potential failures.

In summary, failure of the MSIV sensors in the Turbine Building and their cables is considered acceptable because a fire results in automatic closure of the MSIVs.

#### 9A.6.4.3 Main Steamline Tunnel Area Temperature and Radiation Monitoring

These divisional detectors are physically located in the MSL tunnel area.

By design, this area has no exposed combustibles. The conduits and the detectors have some physical protection from the steamlines and hangers in the area making it improbable that a fire from below could damage the redundant sensors or cables.

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Each radiation monitor has a downscale trip such that a low reading from the detectors provides a trip. This trip is in addition to the normal upscale trip so that a failure in either direction results in a trip.

Leak detection temperature detectors of the MSL LD&IS measure ambient temperature around the MSL and provide a MSIV isolation signal at fire-induced temperatures below the threshold of damage to the radiation monitoring cable. A common failure of the radiation monitor divisional cables only affects the radiation monitors and not the remainder of the divisional equipment.

## 9A.6.4.4 Main Steamline ADS Relief Valves

The main steamline ADS relief valves each have three solenoid valve pilots in close proximity at the valve operator. Each solenoid is powered from a different division with all four divisions utilized for the ten valves. If either solenoid is energized, the associated relief valve opens.

The divisional signal cables are run in separate conduits from their location on the valve to the appropriate divisional penetration and via divisional raceways to their multiplex interfaces.

These valves are located in a low fire loading area and are inaccessible during plant operation such that transient fire loading is not introduced. The containment is also inerted during operation.

The conduit is arranged so that the divisional cables exit the relief valve area in diverse directions.

The solenoid valve coils are located inside metallic enclosures on each valve so that a fire inside the coil compartment of one pilot does not influence the coil or cable of the redundant pilot.

The ADS valves are arranged in two groups of four valves each with adequate spatial separation to ensure that disturbances (i.e., fire, pipe rupture phenomena, falling objects) affecting one group do not affect the other group. For line breaks requiring ADS for depressurization, the design ensures that at least four of the eight valves are available. During operation, a sustained fire is not possible in the inerted containment (drywell) area.

Electrically, the ADS logic system load drivers isolate the divisional signals from other components in their respective division, so that damage to the cable at the valves is limited to that particular cable. Electrical arcing damage to a cable or solenoid coil cannot result in inadvertent opening of the main valve because shorts, opens, or grounds at the solenoid cannot cause the solenoid to be energized. Short circuits at this location cannot jeopardize 1E power supplies because circuit resistance is sufficient to permit appropriate circuit protection coordination.

With this degree of redundancy, attention to design, electrical isolation, and containment inerting, plant safety is not compromised by having the divisional cables in close proximity at the ADS valves.

## 9A.6.4.5 Main Steamline Isolation Valve Control and Limit Switch Interfaces

There are eight MSIVs for isolating the MSLs, two in each MSL. The outboard MSIV on each MSL is located outside the primary containment in the main steam tunnel to the Turbine Building. The inboard MSIV on each MSL is located inside the inerted drywell.

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The MSLs are arranged so that none of the valves are located vertically above any other MSIV.

The MSIVs are designed to "fail-safe" in that loss of power to both solenoids causes closure isolation. For both the inboard and outboard valves, Division 2 power actuates Solenoid 2 and Division 1 power actuates Solenoid 3. Solenoid 1 is the test solenoid and is powered by Division 1 (outboard) and Division 2 (inboard).

The appropriate division of power is connected to limit switches that open when the MSIV closes to initiate a reactor scram trip signal to the divisional scram logic, and to stop MSIV closure during MSIV exerciser tests.

The MSIVs and the 90% open (10% closure test) contacts and the 92% open (scram) contacts are classified as safety-related components and comply with the separation and isolation requirements of IEEE 603. The 10% open limit switch contact of each MSIV provides position indication to the plant computer and to indicator lights.

The inboard MSIVs are contained within the inerted environment. This feature prevents failure of this MSIV and its control and interlocking circuits from a postulated fire outside the containment providing at least one of the MSIVs in each line.

The closure of one MSIV does not result in a reactor scram. Because the outboard valve scram signals are redundant to the inboard valves on each line, a fire outside the containment does not affect the redundant capability to cause scram.

## 9A.6.4.6 Under the Reactor Vessel

This area contains the following electrical cables: Rod Control and Information System (RC&IS) cabling, Fine Motion Control Rod Drive (FMCRD) separation switch cables, neutron monitor system cabling, and other cables, as required. During reactor operation, the area cannot sustain fire because it is in an inerted atmosphere. All cables from the lower drywell are routed to the upper drywell via interconnecting risers. Both rigid and flexible conduit is used within the risers.

## **RC&IS** Cables

The RC&IS cables are routed under the vessel through pull boxes inside the pedestal, then through cable boxes and raceways to electrical containment penetrations. RC&IS hard-wired cables are routed from these containment penetrations to the RC&IS Reactor Building panels located in clean areas of the Reactor Building.

All RC&IS cables under the vessel (i.e., resolver cables, FMCRD brake and motor cables, reed switch rod position status cables) are contained in flexible metallic conduit arranged in the pull boxes mounted just above the CRD restraint structure. All of these RC&IS cables are classified as nonsafety-related.

#### **FMCRD** Separation Switch Cables

The FMCRD cables for the Class 1E separation switches are classified as safety-related and separated into two groups (A and B) for routing out of the under-vessel area to two separate divisions of the safety-related multiplexing system. The cables are routed under the vessel through pull boxes inside the pedestal, then through cable boxes and raceways to electrical containment penetrations. The separation switch cables are then routed from the containment penetrations to safety-related multiplexing system panels in the Reactor Building. The

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installation of these Class 1E cables is arranged so that A and B cables travel in opposite directions from under the vessel and pass through penetrations on the opposite side of the Reactor Building.

The cables receive low-voltage (48 volts) power from the safety-related multiplexing system power supplies. This provides natural circuit protection in the event of shorts or grounds on the system. Such events do not jeopardize the integrity or independence of the higher voltage divisional power buses upstream of the power supplies.

## Local Power Range Monitor (LPRM) Cables

The LPRM cables are individually contained in flexible metallic conduit under the vessel. These cables are divided into four divisions of cabling, corresponding to the four divisions of the neutron monitoring system.

The cabling is also supported on the control rod drive housing flanges. The cabling is routed along particular rows of housing flanges. The Division 1 and 3 cables are routed under the vessel to the 0° to 180° half of the core, whereas Division 2 and 4 cables are routed under the vessel to the 180° to 360° half of the core. The cabling is then routed through the pedestal and drywell in enclosed solid bottom cable tray in a manner that brings: Division 1LPRM cables into the 0° to 90° quadrant of the lower drywell; Division 2 into the 180° to 270° quadrant; Division 3 into 90° to 180° quadrant; and Division 4 into the 270° and 360° quadrant. Once in the upper drywell, the cables continue in separated divisional cable raceways and penetrations.

## Startup Range Neutron Monitor (SRNM) Cables

The cables for the SRNM detectors are individually contained in flexible metallic conduit. These cables are routed along with and pass through the same divisional penetrations as the LPRM cables.

#### Other Cables

All other cables under the pedestal are classified as non-divisional. These cables are routed in rigid or flexible metallic conduit through non-divisional conduit openings in the pedestal wall to non-divisional cable raceways in the containment.

#### **Fire Damage Analysis**

The containment is inerted during operation, so a fire is extremely unlikely. Additionally, the following tend to reduce the risk from a fire:

- A fire within a conduit is contained in the individual conduit without damage to the surrounding conduit;
- The non-divisional cabling in the conduit is low voltage, fault-protected cable and not likely to be involved in an electrically-generated fire internal to the conduit;
- The space under the reactor vessel is devoid of combustible material except for the cable insulation inside the various conduits; and
- Administrative procedures to control combustible materials are provided. (These procedures prohibit combustibles from being stored in areas with divisional cable within electrical equipment areas.)

Maintenance during reactor shutdown can involve welding in the area under the vessel. Administrative procedures require special fire protection during welding or other maintenance operations and housekeeping procedures are provided.

Therefore the design features in the area under the vessel are adequate for protecting the redundant trains from damage by fire.

#### 9A.6.4.7 Local Instrumentation and Control Equipment

Divisional safety-related panels are generally designed and located to serve a single division. Multi-divisional panels and racks are located in divisional compartments with physical separation between divisions.

The incoming cables for each division are in separate conduit and where possible the conduit is embedded in concrete.

Some areas contain more than one division of instrumentation needed for redundant sets of equipment (e.g., isolation valves, HVAC) or for some other purpose requiring redundancy.

#### 9A.6.4.8 Leak Detection Instrumentation

Temperatures, pressures, radiation levels, and process flows are measured to detect leakage of reactor coolant into or within the containment.

Sensors of redundant divisions are used in the plant areas to detect leakage from the reactor coolant pressure boundary and to generate signals ultimately used to provide isolation closure signals to the containment isolation valves. Sensors are part of each individual system being monitored, whereas the Leak Detection and Isolation System (LD&IS) comprises the interface between these sensors and the Safety System Logic and Control (SSLC) system to identify leakage and initiate containment isolation. Containment isolation is a safety-related function but is not necessary for post-fire safe shutdown.

The divisional sensors are located in separate detector assemblies and the signal lead cables are brought out in separate rigid (or flexible) metal conduit. The sensors are distributed within a room or along parallel piping to provide redundancy. Shorting or grounding of these cables due to postulated fire does not jeopardize the emergency power buses because the low-voltage power supplies that feed the transmitters are current-limited. Loss or spurious actuation of these signals due to a fire does not affect safe shutdown.

## 9A.6.4.9 Standby Liquid Control

The Standby Liquid Control System (SLC) is comprised of two independent loops. Each loop is located entirely in one fire area, and as such, a fire in one division does not damage equipment in the other division. The SLC equipment is divisionally separated except for the squib injection valves which each have two coils powered by separate safety-related DC power divisions. If a fire were to occur and damage both divisional power supplies to the squib injection valves, the effects would be limited to spurious operation or failure of the squib injection valves, and no other divisional equipment would be affected. Spurious operation or failure of the SLC system does not affect safe shutdown.

The control cabling is routed in separate conduit or trays for each division, separated from each other, to meet IEEE 384. Conduit is embedded in concrete where feasible.

Postulated fire damage that causes a hot short to the electrical cables in the SLC area could inadvertently result in injection of boron. Fire could also open the cabling to a squib valve thus preventing opening of the valve on command from the Main Control Room.

## 9A.6.4.10 Reactor Building Operating Deck Radiation Monitors

Radiation monitoring within this area is provided by two independent systems, the area radiation monitoring system and the process radiation monitoring system.

The Area Radiation Monitoring (ARM) system is nonsafety-related and monitors radiation in the fuel storage and handling areas. It has no system actuation function but is used for monitoring of background radiation and radiation resulting from postulated accidental fuel drops. The sensors are mounted on the walls within the fire zone area. These detectors are designed to annunciate local and control room alarms for both high and low radiation conditions. The low condition is an indication of a defective sensor or an inoperative radiation monitor. Loss of these detectors from a fire does not affect plant safety.

The Process Radiation Monitoring (PRM) channels in this area are safety-related and are used to monitor radiation in the air exhaust in the HVAC ducts. However, these sensors are not located directly in the fire area, but are on the main HVAC exhaust duct. Therefore, the sensors would not be exposed directly to an area fire, only to the exhausted smoke.

The PRM channels are designed such that any two-out-of-four signals, based on very high or very low radiation conditions within the HVAC duct, isolate the HVAC ducts in the refueling floor and the Reactor Building safety envelope area and initiate closure of the containment vent and purge ducts. The very low radiation trip assures the safety action is initiated on sensor failure.

The four divisions of PRM sensors are located within close proximity to each other to provide true two-out-of-four actuation logic. The arrangement is justified by the exhaust duct location (i.e., separate from the fire zone), and by the automatic actuation of the system's safety function should two or more sensors fail.

## 9A.6.4.11 Containment Isolation Valves

The primary function of each isolation valve is to isolate containment when isolation is required. In general, outboard isolation valves are assigned to Division 1 and inboard isolation valves to Division 2. In some cases this results in Division 1 outboard isolation valves being located in Division 2 areas. This is acceptable from a functional standpoint because a fire involving the penetration in an area outside of containment is assumed to disable the system, whether or not the outboard isolation valve is disabled. If the valve is open at the time of the fire it could fail in the open position, but the inboard valve is not involved in the fire and closes on demand. It is a requirement that cables for outboard valves located in fire areas of a division different than the division of the valve not be routed through fire areas containing any circuitry associated with the inboard valve of the isolation pair.

#### 9A.6.4.12 Main Control Room Separation

All four divisions are present in the Main Control Room. In the event of a fire, the Main Control Room is evacuated and plant shutdown is controlled from the independent divisionally-separated Remote Shutdown System. Operators can evacuate the Main Control Room after scramming the reactor. The Safety System and Logic Control (SSLC) automatically actuates the safety systems. The postulated fire assumes loss of all component functions within the Main Control Room, and spurious actuations are considered in the analysis. In order to cool the plant down, the operators can control the nonsafety-related systems from either one of two Remote Shutdown System (RSS) panels, located in separate fire areas within the Reactor Building.

#### 9A.6.4.13 Safety-Related Instrumentation in Turbine and Electrical Buildings

Safety-related devices within the Turbine Building and Electrical Building are limited to the instrumentation listed in the Table 9A.6-1.

The safety-related RPS input devices listed in the table provide a monitoring function of the measured parameter. The devices listed in Table 9A.6-1 are provided for Chapter 15, Analysis of Anticipated Operating Occurrences (Section 15.2), and, Chapter 15, Analysis of Infrequent Events (Section 15.3), and do not perform a safe-shutdown function in the event of a fire.

The cables associated with these devices are routed in individual raceways specific to their associated division, and are separated in accordance with IEEE 384 criteria and Subsection 8.3.1.4.1. Since these devices and their associated cables do not perform a safe shutdown function, complete burnout of all of these devices and their associated cables does not affect the ability to achieve and maintain post-fire safe-shutdown, as shown in the Table 9A.6-1.

## 9A.6.5 Comparison to BTP SBLP 9.5-1 and Regulatory Guide 1.189

The ESBWR fire protection design follows the recommendations of BTP SPLB 9.5-1 and Regulatory Guide 1.189 with the following exceptions:

## 9A.6.5.1 No Fire Detection within Electrical Cabinets in Main Control Room Complex

Section 7.1.4 of BTP SPLB 9.5-1 recommends that electrical cabinets should be protected as described in Regulatory Guide 1.189. Section 6.1.2.2 of Regulatory Guide 1.189 states in part:

"Smoke detectors should be provided in the control room, cabinets, and consoles."

Consoles and electrical cabinets do not have fire detectors installed inside them.

**Justification**: The electrical cabinets and consoles contain limited combustibles and are aircooled so that smoke from an interior fire exhausts to the room. Early warning fire detection, primarily consisting of ionization smoke detectors, is provided in all rooms containing consoles or electrical cabinets. A fire in any single cabinet or console does not disable the capability to safely shut down the plant. Except in the Main Control Room Complex, all safety-related electrical cabinets and consoles are located in divisional rooms, and all divisional rooms are separated from each other by 3-hour fire-rated barriers such that a single fire does not affect electrical cabinets or consoles from multiple divisions. The Main Control Room Complex is continuously manned so that any fire is quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire. In the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division 1 or 2 Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enables the operators to bring the reactor to a safe shut down.

#### 9A.6.5.2 No Automatic Fire Suppression in Office Areas of Main Control Room Complex

Section C.8.1.2.c of BTP SPLB 9.5-1 recommends that automatic suppression capability should be provided in the Control Room Complex as described in Regulatory Guide 1.189. Section 6.1.2 of Regulatory Guide 1.189 states in part:

"Peripheral rooms in the control room complex should have automatic water suppression..."

The office spaces contained in the Main Control Room Complex do not have automatic fire suppression systems installed.

**Justification**: The Main Control Room Complex is considered to be a low risk fire area, due to the lack of high- or medium-voltage equipment and cabling. Interior finishing materials within the Main Control Room Complex are noncombustible or have a flame spread and smoke developed rating of 25 or less. The amount of transient combustibles within this fire area is limited. Papers within the Main Control Room Complex are stored in file cabinets, bookcases, or other storage locations except when in use. Ionization or photoelectric smoke detectors are installed throughout the Main Control Room Complex to provide early warning of fire during the incipient stage. The Main Control Room Complex is continuously manned so that any fire is quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire. Should manual fire fighting in the Main Control Room Complex be necessary using either portable fire extinguishers or hand-held fire hoses, accumulation or drainage of firewater will affect the ability to safely shut the reactor down. If the firewater is assumed to transport immediately to the basement of the Control Building, the resulting accumulation of water does not affect safety-related equipment located in the basement. In either case, the fire fighting activities do not prevent the reactor from being safely shut down.

Finally, in the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division 1 or 2 Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enables the operators to bring the reactor to a safe shut down.

#### 9A.6.5.3 No Automatic Fire Suppression Below Raised Floor in Main Control Room Complex

Section C.8.1.2.c of BTP SPLB 9.5-1 recommends cable raceways under raised floors should be reviewed to determine if adequate fire detection and suppression are provided for potential fires in these areas. Section 6.1.2.1 of Regulatory Guide 1.189 states in part:

"...Fully enclosed electrical raceways located in under-floor and ceiling spaces, if over 0.09  $\text{m}^2$  (1 sq ft) in cross-sectional area, should have automatic fire suppression inside."

The Main Control Room Complex has a 0.6 meter (2 foot) deep raised floor over a subfloor volume which is used for routing of cables between the electrical cabinets, control panels, computer equipment, and the divisional electrical rooms. Divisional separation of the subfloor cabling is maintained per the requirements of IEEE 384. The subfloor volume includes full fire detection but does not include any automatic fire suppression system.

Justification: The Main Control Room Complex and subfloor volume is considered to be a low risk fire area, due to the lack of high- or medium-voltage equipment and cabling. The characteristics of the subfloor cables are such that the probability of a fire ignition is very low and any fire that were to occur would tend to be self-extinguishing. No transient combustibles are stored in the subfloor volume during normal activities would increase the severity of a possible fire. Ionization smoke detectors are installed throughout the subfloor volume to provide early warning of fire during the incipient stage. The raised floor consists of noncombustible sectional panels that can be individually removed to provide fire-fighting access to a subfloor fire. Because the Control Room is continuously manned, manual fire suppression activities would be initiated quickly upon discovery of a fire in the subfloor volume. Since fire-resistant cables are required, the amount of water needed to extinguish a fire within the subfloor volume is relatively small. Any water that is introduced into the subfloor volume can be removed by floor drains in the subfloor volume or through the use of temporary portable sump pumps. Accumulation of water in the subfloor volume is limited in depth to less than the raised floor height and does not adversely affect water sensitive safety-related equipment, which is installed above the raised floor. Effectiveness of a permanently installed fire suppression system within the subfloor volume may be somewhat limited due to the relatively small height between raised floor and top of cabling, as well as physical barriers within the subfloor volume to meet IEEE 384 separation criteria. Not including automatic fire suppression within the subfloor volume has the indirect benefit of avoiding the potential for missiles (from gaseous suppression cylinders) or flooding/wetting (from water piping) during maintenance or testing activities to affect safetyrelated equipment within the Main Control Room Complex.

Finally, in the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division 1 or 2 Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the Reactor Building) enables the operators to bring the reactor to a safe shut down.

## 9A.6.5.4 Diesel Day Tank Capacity within Building

Section C.8.1.8.b of BTP SPLB 9.5-1 recommends that diesel day tanks comply with Regulatory Guide 1.189. Section 6.1.8 of Regulatory Guide 1.189 states in part:

"Day tanks with total capacity up to 4164 L (1100 gallons) may be located in the diesel generator area under the following conditions:

a. The day tank is located in a separate enclosure with fire resistance rating of at least 3 hours"

Based on the large size of the nonsafety-related SDGs, the capacity of each of the diesel day tanks exceeds 4164 L (1100 gallons) to allow enough fuel for at least 8 hours of diesel operation at the full load and exceeds BTP-recommended limits.

**Justification**: The ESBWR design includes two independent and physically separated nonsafetyrelated SDGs, either of which is capable of providing the full electrical load for the redundant nonsafety-related electrical buses. Neither diesel generator is necessary to achieve and maintain safe shutdown conditions for the 72-hour period following an accident or fire event. Each day tank is located in the Electrical Building in a dedicated 3-hour fire rated compartment. There is no safety-related equipment located in the same building as the day tank rooms. The day tank rooms are located in individual fire areas adjacent to the standby Diesel Generator (DG) rooms and are positioned such that the 3-hour fire rated walls, ceiling, and floor of the day tank rooms are not common to the other redundant DG.

Each day tank room is protected by a foam-water deluge system that can deliver foam to the room for a minimum of 30 minutes without operator intervention. The day tank is seismically designed and supported. Potential ignition sources inside the day tank rooms that have enough energy to ignite diesel fuel are limited. Furthermore, the supply of fresh air to support combustion is limited. In the event of a fire, the automatic foam-water deluge system is designed to extinguish a fire in this room in 10 minutes. In the unlikely event the day tank were to fail, the entire contents of the day tank plus foam-water can be contained in the sunken volume of the day tank room. Additional foam capacity beyond 10 minutes provides added assurance that a postulated fire is extinguished.

In the event that the fuel oil transfer line from the day tank to the DG were to fail outside of the day tank room, the curbed area within the DG room can accommodate the contents of the day tank plus foam-water applied by the preaction foam-water automatic sprinkler system. This automatic sprinkler system is designed to extinguish a fire within the DG room within 10 minutes. In the unlikely event the fire is still not extinguished, the DG room can be closed off and isolated by closing doors and dampers to allow the fire to burn out on its own without spreading to other fire areas. Alternatively, if the fire brigade is required to fight the fire manually, the curbed area within the DG room can accommodate additional water/foam application from two hand-held foam hose lines before reaching the lowest door opening. The lowest door openings to these rooms are the exterior equipment doors which could be opened if fire fighting activities necessitate that overflow spill outside the building so as not to spread to other parts of the electrical building. Therefore, any overflow from the sump area of the room does not affect adjacent equipment, safe shutdown equipment, or equipment needed for support of safe shutdown equipment.

#### 9A.6.5.5 Ancillary Diesel Fuel Oil Tank Capacity within Building

Section C.8.1.8.b of BTP SPLB 9.5-1 recommends that diesel day tanks comply with Regulatory Guide 1.189. Section 6.1.8 of Regulatory Guide 1.189 states in part:

"Day tanks with total capacity up to 4164 L (1100 gallons) may be located in the diesel generator area under the following conditions:

• The day tank is located in a separate enclosure with fire resistance rating of at least 3 hours."

The capacity of each of the Ancillary Diesel Generator (ADG) day tanks will not exceed 4164 L (1100 gallons); however, the main fuel oil storage tanks for these diesels will exceed this capacity. The main fuel oil storage tanks are located in separate fire areas in the ADB, in close proximity to the ADGs, but separated by 3-hour rated fire barriers.

**Justification:** The ESBWR design includes two independent and physically separated nonsafetyrelated ADGs capable of providing the electrical load as described in Subsection 8.3.1.1.9 and shown in Figure 8.3-3. Neither ADG is necessary to achieve and maintain safe shutdown conditions for the 72-hour period following an accident or fire event. Each fuel oil storage tank is located in the ADB in a dedicated 3-hour fire rated compartment. There is no safety-related equipment located in the same building as the fuel oil tank rooms. Additionally, the fuel oil tank rooms are located in individual fire areas adjacent to the ADG rooms and are positioned such that the 3-hour fire rated walls, ceiling, and floor of the fuel oil storage tank room are not common to the other redundant ADG.

Each fuel oil storage tank room is protected by a foam-water deluge system that can deliver foam to the room for a minimum of 30 minutes without operator intervention. The fuel oil tank is seismically designed and supported. Potential ignition sources, with enough energy to ignite diesel fuel, are limited inside the fuel oil storage tank rooms. Furthermore, the supply of fresh air to support combustion is limited. In the event of a fire, the automatic foam-water deluge system is designed to extinguish a fire in this room in 10 minutes. In the unlikely event the fuel oil storage tank was to fail, the entire contents of the tank plus the foam-water volume can be contained within the fuel oil storage tank room. Additional foam capacity beyond 10 minutes provides added assurance that a storage fire is extinguished.

In the event that the fuel oil transfer line from the fuel oil tank to the ADG were to fail outside of the fuel oil storage tank room, the curbed area within the ADG room can accommodate the contents of the day tank plus the foam-water volume applied by the preaction foam-water automatic sprinkler system. This automatic sprinkler system is designed to extinguish a fire within the ADG room within 10 minutes. In the unlikely event the fire is still not extinguished, the ADG room can be isolated by closing doors and dampers to allow the fire to burn out on its own without spreading to other fire areas. Alternatively, if the fire brigade is required to fight the fire manually, the curbed area within the ADG room can accommodate additional water/foam application from two hand-held foam hose lines before reaching the lowest door opening. The lowest door openings to these rooms are the exterior equipment doors, which could be opened if fire fighting activities necessitate that overflow spill outside the building so as not to spread to other parts of the building. Therefore, any overflow from the sump area of the room does not affect adjacent equipment, safe shutdown equipment, or equipment needed for support of safe shutdown equipment.

## 9A.6.5.6 Allowing Continued Diesel-Generator Operation During a Fire

Section 8.1.8.c of BTP SPLB 9.5-1 recommends that effects of suppression systems on operating generators should be addressed in the fire hazard analysis. Section 6.1.8 of Regulatory Guide 1.189 states in part:

"Automatic fire suppression should be installed to suppress or control any diesel generator or lubricating oil fires. Such systems should be designed for operation when the diesel is running without affecting the diesel."

The automatic sprinkler systems in the standby and ancillary diesel generator rooms are installed to extinguish any fire in those rooms and do not place restrictions on the positioning and direction of the application of the fire suppressant.

**Justification**: The automatic sprinkler systems used in the standby and ancillary diesel generator rooms are designed to prevent inadvertent actuation by utilizing preaction automatic sprinklers. The sprinkler piping and closed-head sprinklers are pneumatically supervised for leakage, and any inadvertent actuation of the deluge valve during testing or maintenance does not result in water release due to the closed sprinkler heads.

Two actuation signals are required to automatically actuate the deluge valve, the first of which annunciates an alarm to alert the operators to any potential problems. Automatic actuation of the sprinkler system to release water requires three independent events: 1) detection of a specific range of infrared wavelengths, consistent with burning oil, by at least one infrared detector; 2) detection of a significant heat release by at least one heat detector; and, 3) opening of at least one fusible-link sprinkler head. Furthermore, each redundant standby and ancillary diesel generator has its own dedicated fire detectors and preaction deluge valve for the control of the fire sprinklers in that room, and loss of power to the deluge valve does not cause actuation.

The ESBWR design includes two independent and physically separated nonsafety-related standby diesel generators, either of which is capable of providing the full electrical load for the redundant nonsafety-related electrical buses. The ESBWR design also includes two independent and physically separated nonsafety-related ancillary diesel generators, either of which is capable of providing redundant post-accident power (Subsection 8.3.1.1.9). None of these diesel generators are necessary to achieve and maintain safe shutdown conditions for the 72-hour period following an accident or fire event. The ESBWR design also includes four independent and physically separated safety-related divisions, any two of which are capable of bringing the plant to a safe shutdown in the event of a fire. For design purposes, it is assumed that a fire anywhere in a fire area results in the immediate loss of function of all equipment associated with that division. Even with this conservative assumption, the remaining independent safety-related divisions are available for full utilization by the operators.

## 9A.6.5.7 No Automatic Fire Suppression in Safety-Related Computer Rooms

Section 8.1.4 of SPLB BTP 9.5-1 recommends protecting computer rooms with fire protection systems as described in Regulatory Guide 1.189. Section 6.1.4 of Regulatory Guide 1.189 states in part:

"Computer rooms for computers performing functions important to safety that are not part of the control room complex should be separated from other areas of the plant by barriers having a minimum fire resistance rating of 3 hours and should be protected by automatic detection and fixed automatic suppression."

Computer rooms containing safety-related equipment do not have fire suppression installed inside them.

**Justification**: Computer rooms are considered to be low-risk fire areas, due to the lack of highor medium-voltage equipment and cabling. Interior finishing materials within computer rooms are noncombustible. The amount of transient combustibles within computer rooms is limited. Papers within computer rooms are stored in file cabinets, bookcases, or other storage locations except when in use.

Ionization smoke detectors are installed throughout computer rooms to provide early warning of fire during the incipient stage. The Main Control Room Complex is continuously manned so that any fire is quickly detected and manual fire suppression activities would be initiated quickly upon discovery of a fire in a computer room. Should manual fire fighting in a computer room be necessary using either portable fire extinguishers or hand-held fire hoses, accumulation or drainage of firewater does not affect the ability to safely shut down the reactor. If the firewater is assumed to transport immediately to the basement of the building, the resulting accumulation

of water does not affect safety-related equipment located in the basement. In either case, the fire fighting activities do not prevent the reactor from being safely shut down.

Except in the Main Control Room Complex, all safety-related computers are located in divisional rooms, and all divisional rooms are separated from each other by 3-hour fire-rated barriers such that a single fire does not affect computer equipment from multiple divisions. In the unlikely event that a fire in the Main Control Room were to require evacuation, use of either the Division 1 or 2 Remote Shutdown System (RSS) panel (located remotely from Main Control Room, in the RB) enables the operators to bring the reactor to a safe shutdown.

## 9A.6.5.8 Exceed Maximum Hose Length to Reach Safety-Related Equipment in Containment

Section 6.4.1 of SPLB BTP 9.5-1 recommends standpipe and hose stations meet the provisions of Regulatory Guide 1.189. Section 3.4.1 of Regulatory Guide 1.189 states in part:

"Interior manual hose installation should be able to reach any location that contains, or could present a fire exposure hazard to, equipment important to safety with at least one effective hose stream. To accomplish this, standpipes with hose connections equipped with a maximum of 30.5 m (100 feet) of 38 mm (1-1/2-inches) woven-jacket, lined fire hose and suitable nozzles should be provided in all buildings on all floors."

Standpipes and hose stations external to containment and portable extinguishers provide protection during refueling and maintenance operations. The 30.5m (100 ft) hose coverage requirement cannot be met in containment for all areas with standpipes located outside containment. ESBWR design provides for equipment in the containment to be reached by two (2) effective hose streams from fire hoses with a maximum length of 61m (200 ft) of fire hose from two (2) different standpipes located outside the containment.

**Justification:** Fire risk and consequences during power operations are reduced because the containment is inerted at power. Although fire damage may result to both Control Rod Drive (CRD) system and Hydraulic Control Unit (HCU) components from a postulated fire within the lower drywell during a plant outage, there would be no effect to plant safe shut down because all control rods would already have been inserted into the reactor vessel at the onset of the outage and prior to removing the inerted environment. Further backup of reactor scram capability and maintenance of safe shutdown can be provided by other systems (such as Standby Liquid Control). Based on the low safety significance and the ability to meet a fire exposure hazard from two (2) standpipes outside the containment using two (2) fire hoses, this exception is acceptable. In addition, portable extinguishers are provided for manual firefighting capability during maintenance activities introducing additional ignition sources or significant quantities of combustibles.

## 9A.6.6 Comparison to International Building Code

The ESBWR fire protection design follows the IBC requirements with the following exceptions. Nonetheless, these "alternative methods" of fire protection for unsprinklered Reactor, Control, and Fuel Buildings as well as unsprinklered portions of the Turbine and Electrical Buildings would require approval from the building code authority during the building permit process as allowed by Section 104.11 of the IBC.

#### 9A.6.6.1 Underground Structures without Sprinkler Protection

Section 405.3 of the International Building Code (IBC) requires automatic sprinkler protection throughout all underground levels where the lowest level is more than 9.144 m (30.0 ft) below grade. The lowest levels of the Reactor and Fuel Buildings are more than 16 m (52.5 ft) below grade, and the lowest level of the Control Building is more than 12 m (39.4 ft) below grade. In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is provided for these levels. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings (this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies);
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<1400 MJ/m<sup>2</sup> [123,280 Btu/ft<sup>2</sup>]) within the underground electrical rooms in the Reactor, Fuel, and Control Buildings;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) within the unsprinklered underground non-electrical rooms in the Reactor, Fuel, and Control Buildings;
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Control Buildings, which exceeds the IBC minimum requirement for similar occupancies (these initiate a fire alarm signal to the constantly manned Control Room);
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Fuel Buildings, which exceeds the IBC minimum requirement for similar occupancies; and
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies.

## 9A.6.6.2 Buildings Containing Large Fire Areas, without Sprinkler Protection

Section 903.2.3.1 of the IBC requires automatic sprinkler protection throughout buildings that contain a single Group F-1 occupancy fire area that exceeds 1115 m<sup>2</sup> (12002 ft<sup>2</sup>). The unsprinklered Reactor Building contains fire area F1600 which exceeds 1115 m<sup>2</sup> (12002 ft<sup>2</sup>); the unsprinklered Fuel Building contains fire area F2100 which exceeds 1115 m<sup>2</sup> (12002 ft<sup>2</sup>); and the partially sprinklered Turbine Building contains fire area F4197 which exceeds 1115 m<sup>2</sup> (12002 ft<sup>2</sup>).

Additionally, section 903.2.3.3 of the IBC requires automatic sprinkler protection throughout buildings where the combined floor area of all Group F-1 occupancy fire areas exceeds 2230 m<sup>2</sup> (24004 ft<sup>2</sup>). The unsprinklered Reactor Building, unsprinklered Fuel Building, and partially

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sprinklered Turbine Building each contain multiple F-1 fire areas that cumulatively exceed 2230  $m^2$  (24004 ft<sup>2</sup>).

In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is provided for these buildings. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings (this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies);
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1 and 9A.5-2, low fire loadings (<700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) within the fire areas F1600 and F2100 in the Reactor and Fuel Buildings;
- As shown in Table 9A.5-4, low fire loadings (<700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) within the unsprinklered portion of the Turbine Building fire area F4197;
- As shown in Table 9A.5-4, automatic fire suppression throughout Turbine Building rooms that contain significant fire hazards (>700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) (these consist of sprinkler, deluge, or carbon dioxide flooding systems that each initiate a fire alarm signal to the constantly manned Control Room);
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Turbine Buildings, which exceeds the IBC minimum requirement for similar occupancies (these initiate a fire alarm signal to the constantly manned Control Room);
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Turbine Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies;
- Sprinklers installed under the very tall ceilings in fire areas F1600, F1601, F2100, and F4197 would be ineffective against a floor level fire (the extreme height would likely prevent sufficient heat from reaching sprinkler heads to actuate them); and
- Subdividing fire areas F1600, F2100, and F4197 into fire areas less than 1115 m<sup>2</sup> (12002 ft<sup>2</sup> in size) size is not feasible due to the large machinery and access requirements in these areas.

# 9A.6.6.3 Building Containing Fire Areas more than Three Stories Above Grade, without Sprinkler Protection

Section 903.2.3.2 of the IBC requires automatic sprinkler protection throughout buildings that contain a single Group F-1 occupancy fire area that is located more than three stories above grade. Elevation 34000 of the unsprinklered Reactor Building is located more than three stories

above grade. Elevations 22000 and 27000 of the partially sprinklered Electrical Building are both located more than three stories above grade.

In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is provided for these levels. This is acceptable for the following reasons:

- Noncombustible Type I-A concrete construction in these buildings;
- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings (this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies);
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1 and 9A.5-6, low fire loadings (<1400 MJ/m<sup>2</sup> [123,280 Btu/ft<sup>2</sup>]) within the unsprinklered electrical rooms in the Reactor and Electrical Buildings;
- As shown in Tables 9A.5-1 and 9A.5-6, low fire loadings (<700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) within the unsprinklered non-electrical rooms in the Reactor and Electrical Buildings;
- As shown in Table 9A.5-6, automatic fire suppression throughout Electrical Building non-electrical rooms that contain significant fire hazards (>700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) (these consist of sprinkler or deluge systems that each initiate a fire alarm signal to the constantly manned Control Room);
- Complete Class A supervised fire detection throughout the Reactor and Electrical Buildings, which exceeds the IBC minimum requirement for similar occupancies (these initiate a fire alarm signal to the constantly manned Control Room);
- Complete coverage from Class III standpipe and hose systems throughout the Reactor and Electrical Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies; and
- Sprinklers installed under the very tall ceiling in Elevation 34000 of the Reactor Building would be ineffective against a floor level fire (the extreme height would likely prevent sufficient heat from reaching sprinkler heads to actuate them).

## 9A.6.6.4 Lack of Fire Fighter Exterior Access Openings, without Sprinkler Protection

Section 903.2.10 of the IBC requires automatic sprinkler protection throughout buildings that do not have  $1.9 \text{ m}^2 (20.5 \text{ ft}^2)$  minimum size openings (doors or windows) within each 15 m (49.2 ft) of exterior wall. These openings are intended for fire fighter access into the building during a fire. The exterior walls of the Reactor, Fuel, and Control Buildings do not contain such openings. In compliance with NFPA 804 and Regulatory Guide 1.189, no sprinkler protection is provided for these buildings. This is acceptable for the following reasons:

• Noncombustible Type I-A concrete construction in these buildings;

- Use of Class A finishes and avoidance of combustible materials where possible;
- Extensive use of 3-hr fire-rated walls and floors which subdivide the buildings (this exceeds the IBC minimum requirement for fire-rated separation of similar occupancies);
- 3-hr fire-rated stairwell enclosures, which exceed both the NFPA 101 and IBC minimum requirements for enclosure of exits and the NFPA 14 minimum requirement for protection of standpipes;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<1400 MJ/m<sup>2</sup> [123,280 Btu/ft<sup>2</sup>]) within the underground electrical rooms in the Reactor, Fuel, and Control Buildings;
- As shown in Tables 9A.5-1, 9A.5-2, and 9A.5-3, low fire loadings (<700 MJ/m<sup>2</sup> [61,640 Btu/ft<sup>2</sup>]) within the unsprinklered underground non-electrical rooms in the Reactor, Fuel, and Control Buildings;
- Complete Class A supervised fire detection throughout the Reactor, Fuel, and Control Buildings, which exceeds the IBC minimum requirement for similar occupancies (these initiate a fire alarm signal to the constantly manned Control Room);
- Complete coverage from Class III standpipe and hose systems, throughout the Reactor, Control, and Fuel Buildings, which exceeds the IBC minimum requirement for similar occupancies;
- Trained industrial fire brigade on-site at all times, which exceeds the IBC minimum requirement for similar occupancies; and
- Adding enough exterior openings to comply with IBC Subsection 90.3.2.10 would impose an unacceptable security risk.

## Table 9A.6-1

# Turbine and Electrical Building Safety-Related Monitoring Devices

Parameter Description	RPS Input or Output	Parameter Measuring or Actuating Device	Building	Room	Divisions	Total Burnout Impact With No Hot Short	Total Burnout Impact With Hot Short
Condenser Vacuum	Input	Transmitter (Analog signal between upper and lower limits)	ТВ	4392	1, 2, 3, 4	Indication to RPS of Loss of Condenser Vacuum; Refer to Subsection 15.2.2.8	Indication to RPS of Loss of Condenser Vacuum; Refer to Subsection 15.2.2.8
Main Steam Line Pressure	Input	Transmitter (Analog signal between upper and lower limits)	TB	4390	1, 2, 3, 4	Indication to RPS of Closure of All Main Steamline Isolation Valves; Refer to Subsection 15.2.2.7	Indication to RPS of Closure of All Main Steamline Isolation Valves; Refer to Subsection 15.2.2.7
Turbine Bypass Valve Position	Input	Position Switch	TB	4391 and 4392	1, 2, 3, 4	Indication to RPS of Turbine Bypass Valves Opening; Refer to Subsection 15.3.3.1	Loss of RPS Ability to Monitor Turbine Bypass Valve Position
Turbine Stop Valve Position	Input	Position Switch	ТВ	4380	1, 2, 3, 4	Indication to RPS of Turbine Stop Valves Closing; Refer to Subsections 15.3.6.1	Loss of RPS Ability to Monitor Turbine Stop Valve Position

## Table 9A.6-1

# Turbine and Electrical Building Safety-Related Monitoring Devices (continued)

Parameter Description	RPS Input or Output	Parameter Measuring or Actuating Device	Building	Room	Divisions	Total Burnout Impact With No Hot Short	Total Burnout Impact With Hot Short
Turbine Control Valve Hydraulic Trip System Oil Pressure	Input	Transmitter (Analog signal between upper and lower limits)	TB	4506 and 4507	1, 2, 3, 4	Indication to RPS of Turbine Control Valves Closing; Refer to Subsection 15.3.4.1	Indication to RPS of Turbine Control Valves Closing; Refer to Subsection 15.3.4.1
Turbine Area Temperatures (Main Steam Leak Detection)	Input	Temperature Elements (Analog signal between upper and lower limits)	ТВ	4390 and 4393	1, 2, 3, 4	Indication to RPS of Main Steamline Leak; Refer to Subsections 9A.6.4.2 and 15.2.2.7	Indication to RPS of Main Steamline Leak; Refer to Subsections 9A.6.4.2 and 15.2.2.7

 Table 9A.6-1

 Turbine and Electrical Building Safety-Related Monitoring Devices (continued)

Parameter Description	RPS Input or Output	Parameter Measuring or Actuating Device	Building	Room	Divisions	Total Burnout Impact With No Hot Short	Total Burnout Impact With Hot Short
13.8 kV Bus Under voltage	Input	Transducer	TB	4500	1, 2, 3, 4	Indication to RPS of 13.8 kV Bus under voltage resulting in a scram; refer to Subsection 15.2.5.2	Indication to RPS of 13.8 kV Bus under voltage resulting in a scram; refer to Subsection 15.2.5.2

Note 1: There are no safety-related monitoring devices located in the Electrical Building

#### 9A.7 COL INFORMATION

#### 9A.7-1-A Yard Fire Zone Drawings

The COL applicant shall include fire zone drawings for those portions of the Yard except for that associated with Turbine and Electrical Building equipment (Subsection 9A.4.7).

## 9A.7-2-A Fire Hazards Analysis for Site Specific Areas

A more detailed evaluation of the Service Water/Water Treatment Building, Service Building and the Yard Area will be added during the COL application for a specific site (Subsection 9A.4.7).