APPENDIX 9A - FIRE PROTECTION EVALUATION REPORT

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9A.7.1 Appendix A to BTP APCSP 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants docketed prior to July 1, 1976
9A.7.2 BTP CMEB 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants", Rev. 2, dated July ,1981
9A.7.3 Appendix R to 10 CFR 50 “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979”
9A.7.4 NUREG-0991, LGS SER, August 30, 1983.
9A.7.5 NUREG-0991, Supplement 2, October 1984.
9A.7.6 NUREG-0991, Supplement 8, June 1989.
9A.7.7 NUREG-0991, Supplement 9, August 1989.
9A.7.8 Letter from Eugene J. Bradley (PECO) to Dr. Thomas E. Murley (USNRC) dated April 5, 1988 (Revision 10 to FPER).
9A.7.9 Engineering Analysis LEAF-0001 “Smoke Detector Engr Analysis For Fire Areas 1, 2 & 7”.
9A.7.10 Engineering Analysis LEAF-0002 “Suppression System Evaluation”.
9A.7.11 Engineering Analysis LEAF-0009 “Galvanized Steel Cable Tray Covers In CFZ-5”.
9A.7.12 Engineering Analysis LEAF-0010, “Switchgear Room Bus Duct Penetrations”.

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# APPENDIX 9A - FIRE PROTECTION EVALUATION REPORT

## 9A.1 INTRODUCTION

On September 30, 1976, the Director of the Division of Project Management, of the Office of Nuclear Reactor Regulation, requested a re-evaluation of the fire protection program for the LGS. Attached to that document was Appendix A to BTP ASB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants Docketed Prior to July 1, 1976". The following report was prepared in response to that request and discusses the fire protection program as it relates to nuclear safety and addresses our conformance to BTP CMEB 9.5-1 (which superseded BTP ASB 9.5-1).

It is the licensee's philosophy that fire protection be provided for all company facilities to minimize the effects of a fire. Therefore, proper fire protection was an original design objective for LGS. Responsibility for the fire protection program is vested in licensee managerial personnel in the same manner as other operating and design responsibilities. To support these responsibilities, the licensee employs qualified fire protection personnel to ensure an adequate fire protection program is provided.

Bechtel Power Corporation provided the fire protection engineers and consultants to develop the design concept, prepare specifications, and select experienced fire protection contractors. Bechtel has designed the fire protection systems for several operating nuclear plants and has a specialized staff that monitors the latest in fire protection methods.

The term "fire protection system" refers to the integrated complex of components and equipment provided for detection and suppression of fires. In addition to this system, the "fire protection program" includes the concepts of design and layout implemented to prevent or mitigate fires, administrative controls and procedures, and personnel training. The fire protection program uses a defense-in-depth approach aimed at preventing fires, minimizing the effect of any fires that occur, providing appropriate fire detection and suppression equipment, and training personnel in fire prevention and fire fighting.

LGS has been evaluated with regard to fire protection to verify that the total fire protection program provides reasonable assurance that a fire will not prevent the performance of necessary safe shutdown functions and will not cause an undue risk to the health and safety of the public.

Section 9A.2 of this report provides a general description of the fire detection and suppression systems provided for LGS. Section 9A.3 presents point-by-point comparisons of the LGS fire protection program with the guidelines set forth in BTP CMEB 9.5-1 and 10CFR50, Appendix R. Section 9A.4 provides an evaluation of the combustible loadings in the plant and the ability of specific fire barriers to withstand postulated fires. Section 9A.5 provides an evaluation of the ability to safely shut the plant down in the event of a fire in any fire area. Section 9A.6 discusses special topics. Section 9A.7 provide a listing of references associated with this document.

## 9A.2 FIRE PROTECTION SYSTEM DESCRIPTION

This chapter provides a description of the fire suppression and fire detection systems. The specific guidelines contained in BTP CMEB 9.5-1 are addressed in Section 9A.3.

Figure 9A-1 shows the legend and symbols for P&IDs. The P&ID for the fire protection system is shown in Figure 9A-2.

### 9A.2.1 FIRE PROTECTION WATER SUPPLY SYSTEMS

#### 9A.2.1.1 Water Source

The source of water for the fire protection system is two cooling tower basins which have a capacity of 7,200,000 gallons each, for a total capacity of 14,400,000 gallons. For a system pumping capacity of 5000 gpm, this allows continuous operation of both fire pumps for 48 hours. If one cooling tower basin or supply line is not available, the remaining water source provides both fire pumps with a 24 hour supply of water. Water for the fire pumps is taken from either Unit 1 or Unit 2 cooling tower water basins through connections to the circulating water lines. Check valves are installed at the pump discharges to prevent water from one source from being pumped into the other source.

#### 9A.2.1.2 Pumps

There are two (2) horizontal centrifugal-type fire pumps, each capable of 2500 gpm at a system head of 125 psig. The 100% capacity lead pump is electric motor-driven and the 100% capacity lag pump is diesel engine-driven. The pumps and their controllers are UL-listed.

The fire water system is capable of delivering 100 gpm per hose station at no less than 65 psig to any hose station, considering the operation of two hose stations simultaneously with the largest water demand flowing from any automatic suppression system in the vicinity of the hose stations. In addition to the 100 gpm per hose station, 300 gpm is assumed at the nearest outside fire hydrant to support manual fire fighting activities. This meets BTP section C.6.b.(11) requirement of 500 gpm for manual hose streams in addition to the largest suppression system design. When the fire pumps are not running, the standpipes are maintained full of water by a 2 inch connection to the service water system which is capable of replenishing 50 gpm for leakage. When a portion of the fire water system is activated, a low pressure switch set at 100 psig provides a signal to start the motor-driven pump automatically. If the motor-driven pump fails to start, the diesel-driven pump receives a start signal at a lower pressure signal setpoint of 95 psig to start the diesel-driven pump automatically. Both pumps are stopped manually.

A third Fire pump is provided as a backup to the two primary pumps. This pump is diesel engine driven and is placed in service as stated in the technical requirements manual bases 3/4 7.6 to satisfy the requirement of providing an alternate pump.

The electric power for the motor-driven fire pump is taken from a load center that is supplied from the non-Class 1E, 13 kV switchgear. The primary power source for the switchgear is the unit auxiliary transformer, and the secondary power source is the offsite power supplies. If the primary power source fails, the switchgear is automatically transferred to one of the two offsite power supplies. Switching from one offsite power supply to the other can be performed manually from the control room.

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9A.2.1.3 Yard Piping

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9A.2.3 PREACTION SPRINKLER SYSTEMS

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Security Related Information
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9A.2.4 DELUGE SYSTEMS

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Charcoal filters in the ventilation systems of the plant are provided with water deluge application systems for fire protection. The water is supplied to the filters by means of a fixed piping system.

An indicating gate valve is manually opened when a thermal sensor actuates a local alarm system and registers an alarm condition on the fire protection panels in the control room. The operation is terminated manually by shutting the gate valve.

### 9A.2.6 WET STANDPIPES AND HOSE STATIONS

Wet standpipes are designed for Class II service in accordance with NFPA 14. All areas in the power block are within reach of at least one effective hose stream. Each hose station has nominally 100 feet of NFPA compliant fire hose. Hose stations are located outside entrances to normally unoccupied areas, and outside both entrances of the control room. Most areas of the plant have adjustable fog nozzles that can be adjusted down to a straight stream. In areas with electrical hazards, there are adjustable fog nozzles (intrinsically safe) that will not go down below a 30 degree fog pattern.

### 9A.2.7 FOAM EXTINGUISHING SYSTEM

A foam system is provided for the protection of the fuel oil transfer structure and one outdoor fuel oil storage tank, and is designed in accordance with NFPA 11. The foam is educted from a foam solution tank by water from the main fire water header. Contacts are provided to annunciate operation of the system in the control room.

The one storage tank is provided with a fixed foam maker at the tank. Foam making is initiated manually from a local station after a high temperature condition at the tank has been alarmed locally and annunciated on the fire protection panels in the control room. Fire protection inside the fuel oil transfer structure is provided by a foam play pipe with hose rack. When the play pipe is removed from its holder, an electric switch located in the holder actuates a control valve to allow foam solution to enter the hose. A squeeze-type play pipe valve enables the operator to control the flow of foam.

### 9A.2.8 LOW PRESSURE CARBON DIOXIDE SYSTEM

The low pressure $CO_2$ system is designed in accordance with NFPA 12. In addition to the total flooding $CO_2$ system provided for the cable spreading rooms a manually actuated, fixed $CO_2$ local application system is provided for Units 1 and 2 turbine generator exciter bearings 11 and 12. $CO_2$ fire protection is also provided by $CO_2$ hose reels in the 13.2 kV switchgear compartment, outside both entrances to the control room, and along the north side of the turbine enclosure operating deck.

The design discharge rate of the total flooding $CO_2$ system for the cable spreading rooms is based on reaching a 50% concentration within 7 minutes. The carbon dioxide storage tank has sufficient capacity to maintain a 50% concentration in both cable spreading rooms simultaneously with Unit 1 for a period of 15 minutes and Unit 2 for a period of 20 minutes, while leaving a reserve in the tank for hose reel operation. A Generic Letter 86-10 evaluation was performed for a NFPA code deviation with respect to the Unit 1 cable spreading room since the $CO_2$ system performance concentration met 50% for 15 minutes versus 20, as was the case for Unit 2.

The total flooding $CO_2$ system provided for the cable spreading rooms is actuated manually, using individual pushbutton stations for the Unit 1 and Unit 2 portions of the system. Manual actuation for Unit 1 and/or Unit 2 is accomplished at separate pushbutton stations located in Stairwell 7 adjacent to the cable spreading room. Unit 2 may also be manually actuated by a pushbutton station at the doorway between the Unit 1 and Unit 2 cable spreading rooms. Predischarge alarms are provided to sound locally in the cable spreading rooms and remotely in the control room. In addition to the audible alarms, rotating red alarm beacons are provided in the Unit 1 and Unit 2 static inverter rooms to alert personnel who may be in those rooms when a $CO_2$ discharge occurs. The static inverter rooms are located adjacent to the cable spreading rooms and therefore are potentially subject to $CO_2$ flooding due to leakage, primarily through doorways. A discharge of $CO_2$ into one of the cable spreading rooms will be accompanied by actuation of the predischarge alarms in both cable spreading rooms as well as the rotating alarm beacons in both static inverter rooms. HVAC system penetrations into the area are sealed off by steam isolation dampers which close automatically when the $CO_2$ system is actuated.

The low pressure CO2 system was changed from automatically actuated to manually actuated following a pre-licensing NRC audit of fire protection features (4/9-12/1984). The change was based on the fact that the NRC no longer required automatic actuation due to the installation of an automatic sprinkler system in the cable spreading rooms. This change was deemed necessary in order to achieve a fire protection design that would be acceptable to the NRC. Wet pipe sprinkler system WP-75 serves both cable spreading rooms (fire zones 22 and 23) and is maintained and tested pursuant to Technical Requirements Manual requirements for Spray and/or Sprinkler Systems.

The fixed $CO_2$ local application system for the Unit 1 and 2 turbine generator exciter bearings 11 and 12 within the exciter enclosure is manually actuated by two remote push-buttons located in the vicinity of the exciter housing. One push-button station actuates a timed discharge and a second push-button station actuates a spurt discharge. The timed discharge is set to permit two discharges with the simultaneous operation of two $CO_2$ hose reels on el 269'0" of the turbine building. Operation of either push-button will actuate a rotating beacon and klaxon inside and outside the exciter housing to alert personnel when a $CO_2$ discharge occurs.

$CO_2$ hose reels are activated by removing a play pipe from its holder. An electric switch, located in the play pipe holder, actuates a control valve to allow $CO_2$ into the hose. A squeeze-type play pipe valve enables the operator to control the flow of the $CO_2$ discharge.

### 9A.2.9 HALON EXTINGUISHING SYSTEMS

Three independent Halon extinguishing systems are provided for the raised flooring at el 289' in the control structure. Two of the systems serve the auxiliary equipment room; one system is designed to discharge simultaneously into all floor sections on the Unit 1 side of the room, and the other system is designed to discharge simultaneously into all floor sections on the Unit 2 side of the room. The third Halon system serves the remote shutdown room.

The flooring in the auxiliary equipment room and the remote shutdown room consists of 1 foot high floor sections resting on the concrete slab at el 289'. The floor sections are of all-steel construction (except for aluminum honeycomb in the floor plates) and are used for the routing of cabling to and from the electrical equipment located in the two rooms. In the auxiliary equipment room, this equipment includes the PGCC equipment, the plant computers, the Samac panels, the river evacuation and PA panel, a tone cabinet, and fault detection equipment. The PGCC for each unit consists of floor sections that are 8 feet wide and 20 feet long, each of which has vertical panels

mounted near the center of the floor section. A termination cabinet is located at one end of each PGCC floor section. Smoke detectors are located in the floor sections and termination cabinets. The equipment located in the remote shutdown room consists of the remote shutdown panels for Unit 1 and Unit 2. Smoke detectors are located within the floor sections in the remote shutdown room.

The Halon extinguishing systems are designed in accordance with NFPA 12A. Each Halon system is designed to achieve a concentration of 20% by volume with the raised flooring that it serves fully installed and secured. Each system includes two banks of Halon cylinders, each of which has sufficient capacity to maintain a 20% concentration for 20 minutes. In addition to having two banks of Halon cylinders, each system consists of distribution piping and nozzles, heat detectors, and a manual selector switch. The heat detectors serve to actuate the Halon system; a predischarge alarm is sounded first, followed by a time-delayed discharge of Halon. The manual selector switch is used to designate which of the two banks of Halon cylinders in each system will discharge automatically. Halon cylinders can be discharged manually at the hand switch location or at the cylinder locations. The unused bank of cylinders can be used to provide a supplemental discharge of Halon by manually actuating the release.

### 9A.2.10 WATER CURTAIN SYSTEMS

Two types of water curtain suppression systems are provided in the plant: (a) systems that subdivide certain fire areas into two zones, and (b) systems that protect floor slab openings associated with equipment hatchways in the reactor enclosures.

Water curtain systems that serve to subdivide fire areas are provided at el 217', el 253', and el 313' in the reactor enclosures. Each water curtain system consists of an OS&Y gate valve, a deluge valve, a local pull station, piping, and open sprinkler heads. Each water curtain system is actuated manually, using the local pull station to open the deluge valve. The pull station is located inside a stairwell near the location of the water curtain. Actuation of a water curtain system is sounded throughout the plant by a coded alarm. Operation of the system is terminated manually by shutting the OS&Y gate valve, which is located near the stairwell in which the pull station is located.

Each of the water curtain systems is designed to achieve a discharge density of 0.3 gpm/ft$^2$ at floor level. This is accomplished through the use of open sprinkler heads arranged in a linear array across the top of the water curtain location. In addition, sprinkler heads discharging horizontally inward from the sides of the water curtain are provided where necessary to achieve the design discharge density.

Water curtain systems that serve to protect the equipment hatchways in the reactor enclosures are designed similarly to the water curtain systems described above. The equipment hatchways are located in the southeast corner of the Unit 1 reactor enclosure and the southwest corner of the Unit 2 reactor enclosure. Each hatchway consists of openings in the concrete floor slabs at el 253', el 283', and el 313', with the openings arranged above one another. The opening in each slab is protected by an individual water curtain system having its distribution piping located at the underside of the slab and arranged around the perimeter of the opening. Each water curtain system is actuated manually, using a local pull station to open the deluge valve. The pull station is installed inside the stairwell near the location of the water curtain. In addition to the pull station, each water curtain system can be actuated by use of an emergency trip valve located near the system's local control panel.

### 9A.2.11 PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers, using extinguishing agents compatible with the combustible material in the area in which they are located, are provided throughout the plant.

9A.2.12 FIRE AND SMOKE DETECTION SYSTEM

The fire and smoke detection system is in compliance with NFPA 72A (1979). The system also complies with the requirements of NFPA 72D (1975), with the following exceptions and clarifications:

a. No device is provided for permanently recording incoming signals with the date and time of receipt. (The logging of fire events by a device for permanently recording incoming signals is not needed, because plant operating procedures will require the operator on duty in the control room to update the plant log book with the date and time of alarms from the fire detection system and of initiation of any fire suppression system.)

b. Operation and supervision of the system is not the primary function of the operators. (The control room operators are responsible for monitoring and supervision of all plant systems, including the fire detection and fire suppression systems.)

c. The locations of early warning fire and smoke detectors were established under the direction of a registered fire protection engineer. (The locations of fire and smoke detectors are in compliance with the guidance of NFPA 72E, with the clarification that ionization-type detectors in certain areas of the plant are located in accordance with subsections 4-3.1 and 4-3.1.1 of NFPA 72E. These subsections allow detector location to be determined based on engineering judgement considering ceiling shape, ceiling surfaces, ceiling height, configuration of contents, combustible characteristics, and ventilation. In areas where concrete floor slabs are supported by structural steel beams, the diffusion of ionized particles throughout the compartment volume during the incipient stage of the fire will negate the effect of beam depth and result in an appropriate level of detection capability.

d. NFPA 72D (1979) references NFPA 72E (1978) for testing of smoke detectors. NFPA 72E (1978) requires functional testing of smoke detectors semiannually. Functional testing of smoke detectors at Limerick is performed in accordance with the Technical Requirements Manual.

e. In fire area 2, the smoke detection system is upgraded to NFPA 72, 1996, Chapter 5 for detector location and spacing.

f. In fire area 98, the smoke detection system above the ASD System is upgraded to NFPA 72, 2010, Chapter 17 for detector location and spacing.

g. In fire area 25, the locations of in-cabinet and under floor smoke detectors accepted was by the NRC in their review of GE NEDO-10466A Power Generation Control Complex Design Criteria and Safety Evaluation.

h. In fire area 111, the smoke detection system above the ASD System is upgraded to NFPA 72, 2010, Chapter 17 for detector location and spacing.

Fire and smoke monitoring, detection, and alarm are accomplished by installing smoke detectors and/or heat-responsive detectors in areas where fire potential exists. Fire and smoke detection systems for annunciation are separate from fire detection systems for actuation of fire extinguishing systems, except for the 13kV Switchgear Area (Fire Area 2). The smoke detection system in the 13 kV Switchgear Area (Fire Area 2) provides early warning notification while also providing an input signal to the double interlock preaction system that provides localized protection.

Although the fire and smoke detection system is primarily a Class B system, certain portions of it are designed as Class A. The local fire detection panels in safety-related areas of the plant (control structure, reactor enclosures, and diesel generator enclosures) and in the Unit 2 turbine enclosure are Class A. All other local fire detection panels are Class B. The detector systems and local panels for the Halon system in the raised flooring of the auxiliary equipment room and the carbon dioxide system in the cable spreading room are Class A. The heat detector wiring and local panel wiring for all sprinkler systems is Class B. Transmitter circuits from all local panels (both Class A and Class B) back to the fire protection alarm panel near the control room are Class B. Circuits in the fire protection alarm panel (00C926) are Class B.

Both the Class A and Class B portions of the fire and smoke detection system are electrically supervised to detect circuit breaks, ground faults, and power failure. Class A portions of the system have the capability to detect fire and smoke concurrent with a single break or single ground in the detection circuit; Class B portions of the system do not have this capability. Class A detection circuits utilize a four-wire system, whereas Class B detection circuits utilize a two-wire system with end-of-line resistor. Functional testing of the supervised circuits is done annually in accordance with NFPA Standard 72E(1990).

Annunciator circuits from the local fire suppression system panels to fire protection alarm panel 00C926 and from 00C926 to control room fire protection annunciator 0BC850 are not electrically supervised. Detection of smoke or fire is registered visually on a window of control room fire protection annunciator 0AC850 (identifying the location of the fire) and is sounded throughout the plant by a coded alarm. Trouble conditions (circuit breaks, ground faults, and power failures) in the fire and smoke detection system are registered by an audible alarm in the control room and by visual indication on the affected local fire detection panel as well as on a common window of control room fire protection annunciator 00C650. Actuation of any fire suppression system is sounded throughout the plant by a coded alarm. Trouble conditions in any fire suppression system are registered by an audible alarm in the control room and by visual indication on panel 00C926 and a common window of control room fire protection annunciator 0BC850.

## 9A.3 COMPARISON BETWEEN LGS FIRE PROTECTION PROGRAM AND NRC GUIDELINE DOCUMENTS

### 9A.3.1 NRC BRANCH TECHNICAL POSITION CMEB 9.5-1

The purpose of this section is to compare the fire protection provisions of LGS Units 1 and 2 with the guidelines in BTP CMEB 9.5-1.

To identify areas of potential impact and to facilitate comparison, a matrix addressing each guideline of the BTP and relating to the plant systems, equipment, and components, is included as Section 9A.3.1.1. The matrix has extracted all suggested guidelines from the BTP and given each an item number, 1 through 255. Each item has condensed a particular guideline and makes reference to the section in the BTP where that guideline can be found. The general degree of conformance to the guideline is indicated in the COMPARISON column, using codes defined as follows:

C - indicates conformance to the guideline or conformance to its intent. Substantiating statements may be included as part of the matrix or in Section 9A.3.1.2.

AC - indicates conformance to the guidelines by alternate means or methods. The manner of conformance is included in the matrix or discussed in Section 9A.3.1.2.

NC - indicates that the plant is not in conformance and no design changes are planned. The basis for nonconformance to the guideline is included in the matrix or discussed in Section 9A.3.1.2.

NA - indicates that the guideline is not applicable to LGS Units 1 and 2. Substantiating statements are included as part of the matrix in Section 9A.3.1.1.

In the REMARKS column, additional information is provided to explain or expand on the degree of conformance. Alternatively, reference may be made to Section 9A.3.1.2 (or other sections in this report) for a more detailed discussion. The item numbers in Section 9A.3.1.2 correspond to those in Section 9A.3.1.1.

#### 9A.3.1.1 Detailed Comparison to Branch Technical Position CMEB 9.5-1

Specific items in the following table identify compliance to specific National Fire Protection Association (NFPA) codes (or standards) for the design, installation, and maintenance of fire protection systems. The fire protection systems at Limerick

Generating Station were originally designed and installed using the criteria found in the NFPA codes in order to comply with NRC guidance. NFPA codes provide guidance for the requirements for the performance of fire protection systems. This guidance provides reasonable assurance that the fire protection systems installed at Limerick Generating Station will provide timely warning and adequate suppression for the purpose of life safety and property protection.

The Fire Protection Program at Limerick Generating Station is based on a defense-in-depth philosophy with numerous barriers in place to ensure adequate protection of plant structures, systems and components as well as the health and safety of the public in the event of a postulated fire occurring. It is recognized that there are situations in the plant where verbatim compliance with all aspects of the NFPA codes have not been satisfied. When the fire protection systems were initially designed and installed, the NFPA codes were considered guidance documents, not verbatim compliance documents. Through the use of qualified designers, engineers, and installation personnel, alternative plant configurations may have been employed to satisfy the intent of the NFPA requirements.

Deviations that could potentially affect system performance are documented in the design record for the plant. Minor deviations, while considered during initial design and installation, are not necessarily documented in the design record for the plant.

CMEB 9.5-1

| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Fire Protection Program | | | |
| 1. | The fire protection program should be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff personnel knowledgeable in both fire protection and nuclear safety. | C.1.a(1) | C | |
| 2. | The fire protection program should extend the concept of defense-in-depth to fire protection in fire areas important to safety, with the following objectives:<br>• to prevent fires from starting;<br>• to detect rapidly, control, and extinguish promptly those fires that do occur;<br>• to provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant. | C.1.a(2) | C | |
| 3. | Responsibility for the overall fire protection program should be assigned to a person who has management control over all organizations involved in fire protection activities. Formulation and assurance of program implementation may be delegated to a staff composed of personnel prepared by training and experience in fire protection and personnel prepared by training and experience in nuclear plant safety to provide a balanced approach in directing the fire protection program for the nuclear power plant. | C.1.a(3) | C | |
| 4. | The staff should be responsible for:<br>(a) Fire protection program requirements, including consideration of potential hazards associated with postulated fires, with knowledge of building layout and systems design.<br>(b) Post-fire shutdown capability.<br>(c) Design, maintenance, surveillance, and quality assurance of all fire protection features (e.g., detection systems, suppression systems, barriers, dampers, doors, penetration seals, and fire brigade equipment).<br>(d) Fire prevention activities (administrative controls and training).<br>(e) Fire brigade organization and training.<br>(f) Prefire planning. | C.1.a(3) | C | |
| 5. | The organizational responsibilities and lines of communication pertaining to fire protection should be defined through the use of organizational charts and functional description. | C.1.a(4) | C | |

CMEB 9.5-1

| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 6. | Personnel qualification requirements for fire protection engineer reporting to the position responsible for formulation and implementation of the fire protection program. | C.1.a(5) | C | See Section 3.1.2 |
| 7. | The fire brigade members' qualifications should include a physical examination for performing strenuous activity, and the training described in Position C.3.d. | C.1.a(5)(b) | C | |
| 8. | The personnel responsible for the maintenance and testing of the fire protection systems should be qualified by training and experience for such work. | C.1.a(5)(c) | C | |
| 9. | The personnel responsible for the training of the fire brigade should be qualified by training and experience for such work. | C.1.a(5)(d) | C | |
| 10. | The following NFPA publications should be used for guidance to develop the fire protection program; No. 4, No. 4A, No. 6, No. 7, No. 8, No. 27. | C.1.a(6) | C | |
| 11. | On sites where there is an operating reactor and construction of modification of other units is underway, the superintendent of the operating plant should have a lead responsibility for site fire protection. | C.1.a(7) | C | |
| | Fire Hazards Analysis | | | |
| 12. | The fire hazards analysis should demonstrate that the plant will maintain the ability to perform safe shutdown functions and minimize radioactive releases to the environment in the event of a fire. | C.1.b | C | See Sections 9A.4 and 9A.5. |
| 13. | The fire hazards analysis should be performed by fire protection and reactor systems engineers to (1) consider potential in situ and transient fire hazards: (2) determine the consequences of a fire in any location in the plant; and (3) specify measures for fire prevention, detection, suppression, and containment. | C.1.b | C | |
| 14. | Fires involving facilities shared between units should be considered. | C.1.b | C | Fires are postulated to occur in structures such as the control structure and the spray pond pump structure that are common to both reactor units. |
| 15. | Fires due to man-made site-related events that have a reasonable probability of occurring and affecting more than one reactor unit should be considered. | C.1.b | C | See Section 9A.3.1.2. |

CMEB 9.5-1

| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 16. | Establishment of three levels of fire damage limits according to safety function (hot shutdown; cold shutdown; design basis accidents.) | C.1.b | C | |
| 17. | The fire hazards analysis should separately identify hazards and provide appropriate protection in locations where safety-related losses can occur. | C.1.b | C | |
| | Fire Suppression System Design Basis | | | |
| 18. | Total reliance should not be placed on a single fire suppression system. Backup fire suppression capability should be provided. | C.1.c(1) | C | All automatic fire suppression systems are backed up by two methods of manual extinguishment (hose stations and portable extinguishers). |
| 19. | A single active failure or a crack in a moderate energy line in the fire suppression system should not impair both the primary and backup fire suppression capability. | C.1.c(2) | C | See Section 9A.3.1.2. |
| 20. | The fire suppression system should be capable of delivering water to manual hose stations located within hose reach of areas containing equipment required for safe shutdown following an SSE. | C.1.c(3) | NC | See item 155. |
| 21. | The fire protection systems should retain their original design capability for natural phenomena of less severity and greater frequency than the most severe natural phenomena. | C.1.c(4) | C | See Section 9A.3.1.2 |
| 22. | The fire protection systems should retain their original design capability for potential man-made site-related events that have a reasonable probability of occurring at a specific plant site. | C.1.c(4) | NC | See Section 9A.3.1.2 |
| 23. | The effects of lightning strikes should be included in the overall plant fire protection program. | C.1.c(4) | C | Lightning protection is provided per NFPA No. 78 |
| 24. | The consequences of inadvertent operation or of a crack in a moderate energy line in the fire suppression system should meet the guidelines specified for moderate energy systems outside containment in SRP section 3.6.1. | C.1.c(5) | C | See Section 9A.3.1.2. |
| | Alternative or Dedicated Shutdown | | | |
| 25. | Alternative or dedicated shutdown capability should be provided where the protection of systems whose functions are required for a safe shutdown is not provided by established fire suppression methods or by Position C.5.b. | C.1.d | C | See item 20 of Section 9A.3.2.2. |

CMEB 9.5-1

| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Implementation of Fire Protection Programs | | | |
| 26. | The fire protection program for buildings storing new reactor fuel and for adjacent fire areas that could affect the fuel storage area should be fully operational before fuel is received at the site. | C.1.e(1) | C | The fire protection program for the new fuel area will be completed and fully operational before fuel is received at the Site. |
| 27. | The fire protection program for an entire reactor unit should be fully operational prior to initial fuel loading in that reactor unit. | C.1.e(2) | C | |
| 28. | Special considerations for the fire protection program on reactor sites where there is an operating reactor and construction or modification of other units is under way. | C.1.e(3) | C | See Section 9A.3.1.2. |
| | Administrative Controls | | | |
| 29. | Establishment of administrative controls to maintain the performance of the fire protection system and personnel. | C.2 | C | |
| | Fire Brigade | | | |
| 30. | The guidance in Regulatory Guide 1.101 should be followed as applicable. | C.3.a | C | |
| 31. | Establishment of site brigade: minimum number of fire brigade members on each shift; qualification of fire brigade members; competence of brigade leader. | C.3.b | C | |
| 32. | The minimum equipment provided for the brigade should consists of turnout coats, boots, gloves, hard hats, emergency communications equipment, portable ventilation equipment, and portable extinguishers. | C.3.c | C | |
| 33. | Self-contained breathing apparatus using full-face positive-pressure masks approved by NIOSH (National Institute for Occupational Safety and Health—approval formerly given by the U.S. Bureau of Mines) should be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self contained units. | C.3.c | C | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
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| | At least two extra air bottles should be located onsite for each self contained breathing unit. In addition, an onsite 6-hour supply of reserve air should be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used; compressors shall be operable assuming a loss of offsite power. Special care must be taken to locate the compressor in areas free of dust and contaminants. | | | |
| 34. | Recommendations for the fire brigade training program. | C.3.d | AC | See Section 9A.3.1.2. |
| | Quality Assurance Program | | | |
| 35. | Establishment of quality assurance programs for the fire protection systems for safety-related areas; identification of specific criteria for QA programs. | C.4 | AC | See Section 9A.3.1.2. |
| | Building Design | | | |
| 36. | Fire barriers with a minimum rating of 3 hours should be provided to separate safety-related systems from any potential fires in nonsafety-related areas. | C.5.a(1)(a) | C | Structures housing safety-related systems are separated from nonsafety-related structures by 3 hour rated fire walls. |
| 37. | Fire barriers with a minimum rating of 3 hours should be provided to separate redundant divisions of safety-related systems from each other. | C.5.a(1)(b) | AC | See Section 9A.3.1.2. |
| 38. | Fire barriers with a minimum rating of 3 hours should be provided to separate individual units on a multiunit site. | C.5.a(1)(c) | C | Fire barriers rated for 3 hours are provided to separate Unit 1 structures from Unit 2 structures. Those structures that are common to both reactor units (such as the control structure and the central portion of the turbine enclosure) are separated form the adjacent structures of both reactor enclosures by 3 hour fire barriers. |
| 39. | Fire barriers should be provided within a single safety division to separate components or cabling that present a fire hazard to other safety-related components. | C.5.a(2) | AC | See Section 9A.3.1.2. |
| 40. | Openings through fire barriers for pipe, conduit, and cable trays which separate fire areas should be sealed or closed to provide a fire resistance rating equal to that required of the barrier. | C.5.a(3) | AC | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 41. | Recommendations for internal sealing of conduits penetrating fire barriers. | C.5.a(3) | AC | See Section 9A.3.1.2 |
| 42. | Fire barrier penetrations that must maintain environmental isolation or pressure differentials should be qualified by test. | C.5.a(3) | C | Fire-rated penetration seals that are also required to perform other barrier functions (such as maintaining a pressure differential) are qualified by test for all the intended functions. The fire barrier function of a penetration seal is not required to be performed simultaneously with other barrier functions. |
| 43. | Penetration designs should utilize only noncombustible materials. | C.5.a(3) | AC | See Section 9A.3.1.2. |
| 44. | The penetration qualification tests should use the time-temperature exposure curve specified by ASTM E-119. | C.5.a(3) | C | The time-temperature exposure curve used in qualification tests for penetration seals is a specified by ASTM E-119-73. |
| 45. | Acceptance criteria for penetration qualification tests. | C.5.a(3) | AC | See Section 9A.3.1.2. |
| 46. | Penetration openings for ventilation systems should be protected by fire dampers having a rating equivalent to that required of the barrier. | C.5.a(4) | AC | See Section 9A.3.1.2. |
| 47. | Flexible air duct couplings in ventilation and filter systems should be noncombustible. | C.5.a(4) | C | |
| 48. | Door openings in fire barriers should be protected with equivalently rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory. | C.5.a(5) | AC | See Section 9A.3.1.2. |
| 49. | Fire doors should be self-closing or provided with closing mechanisms. | C.5.a(5) | AC | See Item 40 of Section 9A.3.2.2. |
| 50. | Fire doors should be inspected semiannually to verify that automatic hold open, release, and closing mechanisms and latches are operable. | C.5.a(5) | AC | See Item 41 of Section 9A.3.2.1. |
| 51. | Alternative means for ensuring that fire doors protect the door opening as required in case of fire. | C.5.a(5) | C | See Item 42 of Section 9A.3.2.2. |
| 52. | The fire brigade leader should have ready access to keys for any locked fire doors. | C.5.a(5) | C | |
| 53. | Areas protected by automatic total flooding gas suppression systems should have electrically supervised self-closing fire doors or should satisfy option (a) above. | C.5.a(5) | C | See Item 44 of Section 9A.3.2.1. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 54. | Personnel access routes and escape routes should be provided for each fire area. | C.5.a(6) | C | All fire areas are provided with personnel access routes and escape routes. |
| 55. | Stairwells serving as escape routes, access routes for fire fighting, or access routes to areas containing equipment necessary for safe shutdown should be enclosed in masonry or concrete towers with a minimum fire rating of 2 hours and self-closing Class B fire doors. | C.5.a(6) | C | Stairwells of the type described in the guideline are each enclosed by a 2 hour rated envelope consisting or either reinforced concrete or concrete unit masonry walls with a minimum thickness of 8 inches. Each door opening that is a part of this envelope is provided with a UL Class B fire door. All penetrations through the walls of the envelope are sealed using penetration seal details that are qualified for use in 3 hour rated fire barriers. |
| 56. | Fire exit routes should be clearly marked. | C.5.a(7) | C | |
| 57. | Each cable spreading room should contain only one redundant safety division. | C.5.a(8) | NC | The cable spreading room for each reactor unit contains all four divisions of safety-related cabling. Raceways containing the different divisions of cabling are separated from each other in accordance with Regulatory Guide 1.75. Cabling associated with the remote shutdown panel is not routed through the cable spreading room. |
| 58. | Cable spreading rooms should be separated from each other and from other areas of the plant by barriers having a minimum fire resistance of 3 hours. | C.5.a(8) | C | See Section 9A.3.1.2. |
| 59. | Interior wall and structural components, thermal insulation materials, radiation shielding materials, and soundproofing should be noncombustible. | C.5.a(9) | AC | See Section 9A.3.1.2. |
| 60. | Interior finishes should be noncombustible. | C.5.a(9) | AC | See Section 9A.3.1.2. |
| 61 | Metal deck roof construction should be non-combustible and listed as “acceptable for fire” in the UL Building Materials Directory, or listed as Class 1 in the Factory Mutual Approval Guide. | C.5.a(10) | C | See Section 9A.3.1.2. |
| 62. | Suspended ceilings and their supports should be of noncombustible construction. | C.5.a(11) | C | See Section 9A.3.1.2. |
| 63. | Concealed spaces should be devoid of combustibles except as noted in Position C.6.b. | C.5.a(11) | AC | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
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| 64. | Transformers installed inside fire areas containing safety-related systems should be of the dry-type or insulated and cooled with noncombustible liquid. | C.5.a(12) | C | All indoor transformers are either air cooled, dry-type, or cooled by noncombustible gases. |
| 65. | Outdoor oil-filled transformers should have oil spill confinement features or drainage away from the buildings. | C.5.a(13) | C | See Section 9A.3.1.2. |
| 66. | Outdoor oil-filled transformers should be located at least 50 feet distant from the building, or building walls within 50 feet of oil-filled transformers should be without openings and have a 3 hour fire resistance rating. | C.5.a(13) | AC | See Section 9A.3.1.2. |
| 67. | Floor drains sized to remove expected fire fighting water flow without flooding safety-related equipment should be provided in areas where fixed water fire suppression systems are installed. | C.5.a(14) | AC | See Section 9A.3.1.2 |
| 68. | Floor drains should be provided in areas where hand hose lines may be used if such fire fighting water could cause unacceptable damage to safety-related equipment. | C.5.a(14) | AC | See Section 9A.3.1.2. |
| 69. | Where gas suppression systems are installed, the drains should be provided with adequate seals, or the gas suppression system should be sized to compensate for the loss of the suppression agent through the drains. | C.5.a(14) | C | The capacity of the carbon dioxide storage tank is sufficient to compensate for losses through the floor drains in the cable spreading rooms. |
| 70. | Drains in areas containing combustible liquids should have provisions for preventing the backflow of combustible liquids to safety-related areas through the interconnected drain systems. | C.5.a(14) | C | See Section 9A.3.1.2. |
| 71. | Water drainage from areas that may contain radioactivity should be collected, sampled, and analyzed before discharge to the environment. | C.5.a(14) | C | Potentially radioactive liquid wastes are collected and monitored prior to discharge. |
| | Safe Shutdown Capability | | | |
| 72. | Fire damage should be limited so that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station is free of fire damage. | C.5.b(1) | C | |
| 73. | Fire damage should be limited so that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station can be repaired within 72 hours. | C.5.b(1) | C | |

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|---|---|---|---|---|
| 74. | Alternative means of ensuring that one train of systems necessary to achieve and maintain hot shutdown is free of fire damage. | C.5.b(2) | AC | See Item 18 of Section 9A.3.2.2. |
| 75. | Provision of alternative or dedicated shutdown capability in certain fire areas. | C.5.b(3) | C | See Item 20 of Section 9A.3.2.2 |
| 76. | Alternative or Dedication Shutdown Capability | C.5.c | C | See Items 25 through 36 of Section 9A.3.2. |
| | Control of Combustibles | | | |
| 77. | Safety-related systems should be separated from combustible materials where possible; where not possible, special protection should be provided to prevent a fire from defeating safety system function. | C.5.d(1) | C | To the maximum extent possible, significant concentrations of combustible materials are located outside structures containing safety-related components. In those cases for which this is not possible, such as the standby diesel generator fuel oil day tanks, special fire protection consisting of automatic fire suppression systems and/or construction capable of withstanding a fire is provided. |
| 78. | Bulk gas storage (compressed or cryogenic) should not be permitted inside structures housing safety-related equipment. Flammable gases should be stored outdoors or in separate detached buildings. | C.5.d(2) | NC | See Section 9A.3.1.2. |
| 79. | High pressure gas storage containers should be located with the long axis parallel to building walls. | C.5.d(2) | NC | See Section 9A.3.1.2. |
| 80. | Use of compressed gases inside buildings should be controlled. | C.5.d(2) | C | See Section 9A.3.1.2. |
| 81. | The use of plastic materials should be minimized. Halogenated plastics such as PVC and neoprene should be used only when substitute noncombustible materials are not available. | C.5.d(3) | C | See Section 9A.3.1.2. |
| 82. | Storage of flammable liquids should comply with NFPA 30. | C.5.d(4) | C | Liquid fuels are stored either in aboveground tanks that have been provided with suitable fire barriers or in underground tanks. |
| 83. | Hydrogen lines in safety-related areas should be either designed to seismic Class I requirements, or sleeved, or equipped with excess flow valves. | C.5.d(5) | C | Hydrogen lines in safety-related areas are designed to seismic Class I requirements. |

| NO. | CMEB 9.5-1 GUIDELINE | CMEB 9.5-1 ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Electrical Cable Construction, Cable Trays, and Cable Penetrations | | | |
| 84. | Only metal should be used for cable trays. | C.5.e(1) | C | Cable trays are of all-metal construction. |
| 85. | Only metallic tubing should be used for conduit. Thin-wall metallic tubing should not be used. | C.5.e(1) | NC | See Section 9A.3.1.2. |
| 86. | Flexible metallic tubing should only be used in short lengths to connect components to equipment. | C.5.e(1) | C | Flexible metallic tubing used at raceway connections to components is limited to 5 feet in length. |
| 87. | Other raceways should be made of noncombustible materials. | C.5.e(2) | C | Gutter-type raceways are of all-metal construction. |
| 88. | Redundant safety-related cable systems outside the cable spreading room should be separated from each other and from potential fire exposure hazards in nonsafety-related areas by 3 hour fire barriers. | C.5.e(2) | AC | See Section 9A.3.1.2. |
| 89. | These cable trays should be provided with continuous line-type heat detectors. | C.5.e(2) | NC | See Section 9A.3.1.2. |
| 90. | Cables should be designed to allow wetting down with fire suppression water without electrical faulting. | C.5.e(2) | C | Cable insulating systems include proprietary jacketing materials designed for wetting. |
| 91. | Redundant safety-related cable trays outside the cable spreading room should be accessible for manual fire fighting. Manual hose stations and portable hand extinguishers should be provided. | C.5.e(2) | C | |
| 92. | Safety-related cable trays of a single division that are separated from redundant divisions by a 3 hour fire barrier and are accessible for manual fire fighting should be protected from the effects of a potential exposure fire by providing automatic water suppression. | C.5.e(2) | AC | See Section 9A.3.1.2. |
| 93. | Safety-related cable trays that are not accessible for manual fire fighting should be protected by an automatic water systems. | C.5.e(2) | NA | Safety-related cable trays are not routed through areas that are inaccessible for Manual fire fighting. |
| 94. | Safety-related cable trays that are not separated from redundant divisions by 3 hour fire barriers should be protected by automatic water suppression systems. | C.5.e(2) | AC | See Section 9A.3.1.2 and Item 92 above. |
| 95. | The capability to achieve safe shutdown considering the effects of a fire involving fixed and transient combustibles should be evaluated with and without actuation of the automatic suppression system. | C.5.e(2) | C | See Section 9A.5. |

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| 96. | Electric cable construction should pass the flame test in IEEE 383. | C.5.e(3) | AC | See Section 9A.3.1.2. |
| 97. | Cable raceways should be used only for cables. | C.5.e(4) | C | |
| 98. | Miscellaneous storage and piping for combustible liquids or gases should not create a potential exposure hazard to safety-related systems. | C.5.e(5) | C | See Section 9A.3.1.2. |
| | Ventilation | | | |
| 99. | Smoke and corrosive gases should be discharged directly outside to an area that will not affect safety-related plant areas. | C.5.f(1) | AC | See Section 9A.3.1.2. |
| 100. | To facilitate manual fire fighting, separate smoke and heat vents should be provided in certain areas. | C.5.f(1) | NC | See Section 9A.3.1.2. |
| 101. | Release of smoke and gases containing radioactive materials to the environment should be monitored. | C.5.f(2) | C | See Section 9A.3.1.2. |
| 102. | Any ventilation system designed to exhaust potentially radioactive smoke or gases should be evaluated to ensure that inadvertent operation or single failures will not violate the radiologically controlled areas of the plant. | C.5.f(2) | AC | See Section 9A.3.1.2. |
| 103. | The power supply and controls for mechanical ventilation systems should be run outside the fire areas served by the system. | C.5.f(3) | AC | See Section 9A.3.1.2. |
| 104. | Engineered safety feature filters should be protected in accordance with the guidelines of Regulatory Guide 1.52. | C.5.f(4) | C | See Section 9A.3.1.2. |
| 105. | Air intakes for ventilation systems serving areas containing safety-related equipment should be located remote from the exhaust air outlets and smoke vents of other fire areas. | C.5.f(5) | C | Air intakes serving areas which contain safety-related equipment are remote from exhaust and smoke outlets of other fire areas. |
| 106. | Stairwells should be designed to minimize smoke infiltration during a fire. | C.5.f(6) | C | Stair towers are provided with self-closing doors, which will minimize smoke infiltration during a fire. |
| 107. | Where total flooding gas extinguishing systems are used, ventilation dampers, should be controlled in accordance with NFPA 12 and NFPA 12A. | C.5.f(7) | C | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
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| | Lighting and Communication | | | |
| 108. | Fixed self-contained lighting units with individual 8 hour battery power supplies should be provided in areas that must be manned for safe shutdown and for access and egress routes to and from all fire areas. | C.5.g(1) | AC | See Item 108 of Section 9A.3.1.2, and Item 23 of Section 9A.3.2.2. |
| 109. | Sealed beam battery-powered portable hand lights should be provided for emergency use. | C.5.g(2) | C | Portable lights are provided |
| 110. | Fixed emergency communications independent of the normal plant communication system should be installed at preselected stations. | C.5.g(3) | AC | See Section 9A.3.1.2. |
| 111. | A portable radio communications system should be provided for use by the fire brigade and other operations personnel required to achieve safe plant shutdown. | C.5.g(4) | AC | See Section 9A.3.1.2. |
| | Fire Detection | | | |
| 112. | Detection systems should be provided for all areas that contain or present a fire exposure to safety-related equipment. | C.6.a(1) | AC | See Section 9A.3.1.2. |
| 113. | Fire detection systems should comply with the requirements of Class A systems as defined in NFPA 72D and Class I circuits as defined in NFPA 70. | C.6.a(2) | AC | The fire and smoke detection system is partially Class A and partially Class B, as described in Section 9A.2.12. (Class A and Class B systems are defined in the 1975 edition of NFPA 72D.) |
| 114. | Fire detectors should be selected and installed in accordance with NFPA 72E. | C.6.a(3) | C | See Section 9A.2.12. |
| 115. | Testing of pulsed line-type heat detectors should demonstrate that the frequencies used will not affect the actuation of protective relays in other plant systems. | C.6.a(3) | NA | Pulsed line-type detectors are not used in the plant. |
| 116. | Fire detection systems should give audible and visual alarm and annunciation in the control room. | C.6.a(4) | C | |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
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| 117. | Where zoned detection systems are used in a given fire area, local means should be provided to identify which zone has actuated. | C.6.a(4) | C | A coding system has been established for all fire alarms in the plant so that the location of a fire can be determined from the sound of the alarm. A list of these codes and their corresponding detection areas will be posted at each fire alarm pull station. |
| 118. | Local audible alarms should sound in the fire area. | C.6.a(4) | C | Fire alarms are annunciated throughout the plant, as well as in the local area in which a fire detector has been actuated. |
| 119. | Fire alarms should be distinctive and unique so they will not be confused with any other plant system alarms. | C.6.a(5) | C | |
| 120. | Primary and secondary power supplies which satisfies the provisions of section 2220 of NFPA 72D should be provided for the fire detection system and for electrically operated control valves for automatic suppression systems. | C.6.a(6) | AC | See Section 9A.3.1.2. |
| | Fire Protection Water Supply Systems | | | |
| 121. | An underground yard fire main loop should be installed to furnish anticipated water requirements. | C.6.b(1) | C | An underground yard fire main loop has been provided and is in compliance with NFPA 24. |
| 122. | Type of pipe and water treatment should be design consideration with tuberculation as one of the parameters. | C.6.b(1) | C | The yard fire main loop utilizes cement-lined cast iron pipe to reduce tuberculation. Water used fire protection service meets the requirements of NFPA 22 and does not require treatment. |
| 123. | Means of inspecting and flushing the systems should be provided. | C.6.b(1) | C | Following its installation, the yard fire main loop was flushed and tested in accordance with NFPA 24 (1973), sections 98 and 99. Flushing of the loop is accomplished through the use of sectional control valves to direct the flow and yard hydrants to serve as discharge points. |
| 124. | Approved visually indicating sectional control valves should be provided to isolate portions of the main for maintenance or repair. | C.6.b(2) | C | Postindicator valves provided for sectionalized control and isolation of portions of the yard fire main loop. |
| 125 | Valves should be installed to permit isolation of outside hydrants from the fire main for maintenance or repair without interrupting the water supply to automatic or manual fire suppression system. | C.6.b(3) | C | A key-operated gate valve with a curb box is provided in each lateral from the yard fire main loop to a fire hydrant. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
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| 126. | The fire main system piping should be separate from service or sanitary water system piping. | C.6.b(4) | C | See Section 9A.3.1.2. |
| 127. | A common yard fire main loop may serve multiunit nuclear power plant sites if cross-connected between units. Sectional control valves should permit maintaining independence of the loop around each unit. | C.6.b(5) | C | The yard fire main loop is common to both reactor units. The loop is cross-connected between units and provided with sectional control valves. |
| 128. | A sufficient number of pumps should be provided to ensure that 100% capacity will be available assuming failure of the largest pump or a LOOP. | C.6.b(6) | C | Two fire pumps (one diesel-driven and one electric motor-driven) are provided, each capable of supplying 100% of the systems flow requirements. |
| 129. | Individual fire pump connections to the yard fire main loop should be separated with sectionalizing valves between connections. | C.6.b(6) | C | |
| 130. | Each pump and its driver and controls should be separated from the remaining fire pumps by a 3 hour fire wall. | C.6.b(60 | C | |
| 131. | The fuel for the diesel fire pump should be separated so that it does not provide a fire source exposing safety-related equipment. | C.6.b(6) | C | The diesel oil day tank is located in a curbed area within the diesel-driven fire pump compartment. This compartment is located in the circulating water pump structure, which is separated from all structures containing safety-related equipment. |
| 132. | Alarms indicating pump running, driver availability, failure to start, and low fire main pressure should be provided in the control room. | C.6.b(6) | AC | Pump running, driver availability, and failure to start are annunciated in the control room. Fire main pressure is indicated in the control room but not annunciated. |
| 133. | The fire pump installation should conform to NFPA 20. | C.6.b(6) | C | |
| 134. | Outside manual hose installation should be sufficient to provide an effective hose stream to any onsite location where fixed or transient combustibles could jeopardize safety-related equipment. Hydrants should be installed approximately every 250 feet on the yard main system. | C.6.b(7) | AC | Hydrants are space between 250 rod and 300 feet apart along the fire main loop. |
| 135. | Recommendations for hose houses and hose carts. | C.6.b(7) | AC | See Section 9A.3.1.2. |
| 136. | Threads compatible with those used by local fire departments should be provided on all hydrants, hose couplings, and standpipe risers. | C.6.b(8) | C | |

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| 137. | Two separate, reliable freshwater supplies should be provided. | C.6.b(9) | C | The cooling tower basins of the Unit 1 and Unit 2 circulating water systems are used as the two sources of water for the fire pumps. |
| 138. | Recommendations for tanks used to supply fire protection water. | C.6.b(9) | NA | Tanks are not utilized for fire protection Water supply. |
| 139. | Recommendations for tanks used to supply fire protection water. | C.6.b(10) | NA | Tanks are not utilized for fire protection water supply. |
| 140. | The fire water supply should be based on the largest expected flow rate for a period of 2 hours, but not less than 300,000 gallons. | C.6.b(11) | C | See Section 9A.3.1.2. |
| 141. | The fire water supply should be capable of delivering the design demand over the longest route of the water supply system. | C.6.b(11) | C | In the event that a portion of the yard fire main loop is valved out of service, the fire pumps are capable of delivering the design demand over the longest route of the water supply system. |
| 142. | Recommendations for freshwater lakes or ponds used to supply fire protection water. | C.6.b(12) | NA | Lakes or ponds are not utilized for fire protection water supply. |
| 143. | Recommendations concerning use of other water systems for fire protection and the ultimate heat sink. | C.6.b(13) | NA | The fire protection system and the ultimate heat sink do not share a common water supply. |
| 144. | Recommendations concerning use of other water systems as the source of fire protection water. | C.6.b(14) | AC | See Section 9A.3.1.2. |
| 145. | Recommendations concerning connection of sprinkler systems and manual hose station standpipes to the yard fire main loop. | C.6.c(1) | C | See Item 19. |
| 146. | Each sprinkler and standpipe system should be equipped with OS&Y gate valve or other approved shutoff valve and water flow alarm. | C.6.c(1) | AC | See Section 9A.3.1.2. |
| 147. | Safety-related equipment should be protected from sprinkler discharge if such discharge could result in unacceptable damage to the equipment. | C.6.c(1) | AC | See Section 9A.3.1.2. |
| 148. | Control and sectionalizing valves in the fire water systems should be electrically supervised (with indication in the control room) or administratively controlled. | C.6.c(2) | C | See Section 9A.3.1.2. |
| 149. | All valves in the fire protection systems should be periodically checked to verify position. | C.6.c(2) | C | |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 150. | Fixed water extinguishing systems should conform to requirements of NFPA 13 and NFPA 15. | C.6.c(3) | AC | See Section 9A.3.1.2. |
| 151. | Recommendations for interior manual hose installations. | C.6.c(4) | NC | See Section 9A.3.1.2. |
| 152. | Individual standpipes should be at least 4 inches in diameter for multiple hose connections and 2.5 inches in diameter for single hose connections. | C.6.c(4) | AC | See Section 9A.3.1.2. |
| 153. | Standpipe and hose station installations should follow the requirements of NFPA 14. | C.6.c(4) | C | |
| 154. | Hose stations should be located as dictated by the fire hazards analysis to facilitate access and use for fire fighting operations. | C.6.c(4) | C | |
| 155. | Recommendations concerning seismic design of standpipes and hose connections. | C.6.c(4) | NC | See Section 9A.3.1.2. |
| 156. | Recommendations concerning hose nozzle selection. | C.6.c(5) | C | |
| 157. | Fire hose should be hydrostatically tested in accordance with NFPA 1962. Hose stored in outside hose houses should be tested annually. Interior standpipe houses should be tested every 3 years. | C.6.c(6) | C | |
| 158. | Consideration of foam suppression systems for flammable liquid fires. | C.6.c(7) | C | See Section 9A.3.1.2. |
| | Halon Suppression Systems | | | |
| 159. | Halon fire extinguishing systems should comply with NFPA 12A ad NFPA 12B. Only UL-Listed or FM-approved agents should be used. | C.6.d | C | Design and installation of the Halon 1301 system is in accordance with NFPA 12A. |
| 160. | Provisions for locally disarming automatic Halon systems should be key-locked and under administrative control. Automatic Halon systems should not be disarmed unless controls as described in Position C.2.j are provided. | C.6.d | NC | Administrative controls do not exist permitting disarming of the Halon system. |
| 161. | Preventive maintenance and testing of the systems, including check-weighing of the Halon cylinders, should be done at least quarterly. | C.6.d | C | |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 162. | Considerations for design of Halon suppression systems. | C.6.d | C | See Section 9A.3.1.2. |
| | Carbon Dioxide Suppression Systems | | | |
| 163. | Carbon dioxide extinguishing systems should comply the requirements of NFPA 12. | C.6.e | C | A Generic Letter 86-10 evaluation was performed for a NFPA code deviation with respect to the Unit 1 cable spreading room since the $CO_2$ system performance concentration met 50% for 15 minutes versus 20, as was the case for Unit 2. |
| 164. | Carbon dioxide extinguishing systems should comply with with a predischarge alarm system and a discharge delay to permit personnel egress. | C.6.e | C | Although the total flooding carbon dioxide system for the cable spreading rooms is actuated manually, a predischarge alarm and discharge delay are provided. The fixed $CO_2$ local application system for the Unit 1 and 2 turbine generator exciter bearing 11 and 12 is manually actuated. The coded fire alarm actuated by the heat and smoke detectors will alert plant personnel of a potential manually initiated $CO_2$ discharge. When either the timed discharge or the spurt discharge push-buttons are activated, rotating beacons and audible alarms located inside and outside the exciter enclosure are actuated to warn site personnel of the $CO_2$ discharge. |
| 165. | Provisions for locally disarming automatic carbon dioxide systems should be key-locked and under administrative control. The systems should not be disarmed unless controls as described in Position C.2.c are provided. | C.6.e | NA | The total flooding carbon dioxide system that is provided for the cable spreading rooms is actuated manually. A manual block valve for the generator exciter $CO_2$ system (Unit 1 and 2) is provided and controlled by station procedures. |
| 166. | Considerations for design of carbon dioxide suppression systems. | C.6.e | C | See Section 9A.3.1.2. |
| 167. | Fire extinguishers should be provided in areas that contain, or could present a fire exposure hazard to, safety-related equipment in accordance with NFPA 10. | C.6.f | C | See Section 9A.3.1.2 |
| 168. | Dry chemical extinguishers should be installed with due consideration given to possible adverse effects on safety-related equipment. | C.6.f | C | |
| | Primary and Secondary Containment | | | |
| 169. | Fire protection for the primary and secondary containment areas should be provided for hazards identified by the fire hazards analysis. | C.7.a(1) | C | Fire hazards have been identified, as discussed in Section 9A.4, and fire suppression system have been provided |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | | | | accordingly. The types and locations of suppression systems are identified in Table 9A.1 and Figures 9A-4 through 9A-12. |
| 170. | Because of the general inaccessibility of primary containment during normal plant operation, protection should be provided by automatic fixed systems. | C.7.a(1) | NC | See Section 9A.3.1.2. |
| 171. | Operation of the fire protection systems should not compromise the integrity of the containment or other safety-related systems. | C.7.a(1)(a) | C | The fire protection systems does not penetrate the primary containment boundary. Also see Item 24. |
| 172. | Recommendations for protection of safety-related cables and equipment inside noninerted containments. | C.7.a(1)(b) | NA | The primary containment is inerted with nitrogen during reactor operation. |
| 173. | Recommendations concerning fire detection inside the primary containment. | C.7.a(1)(c) | NC | See Section 9A.3.1.2. |
| 174. | For BWR drywells, standpipe and hose stations should be placed outside the drywell with adequate lengths of hose, no longer than 100 feet, to reach any location inside the drywell with an effective hose stream. | C.7.a(1)(d) | C | The hose reels located nearest the drywell entrances are equipped with a 100 foot length of fire hose. To supplement this hose length, a hose station equipped with enough hose to reach any location within the drywell is located near each drywell entrance. |
| 175. | Recommendations for reactor coolant pump oil collection system in noninerted containments. | C.7.a(1)(e) | NA | The primary containment is inerted with nitrogen during normal reactor operation. |
| 176. | For secondary containment areas, cable fire hazards that could affect safety should be protected as described in Position C.5.e(2). | C.7.a(1)(f) | -- | See Items 88 through 95. |
| 177. | Self-contained breathing apparatus should be provided near the containment entrances for fire fighting and damage control personnel. These units should be independent of any breathing apparatus provided for general plant activities. | C.7.a(2) | C | See Item 33. |
| | Control Room Complex | | | |
| 178. | The control room complex should be separated from other areas of the plant by 3 hour rated fire barriers. | C.7.b | C | The control room is separated from other parts of the control structure by 3 hour rated floor slabs at el 269' and el 289'. Three hour rated walls at the north, south, east, and west sides of the control room separate it from the reactor enclosures and turbine enclosures. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 179. | Recommendations concerning peripheral rooms in the control room complex. | C.7.b | NC | See Section 9A.3.1.2. |
| 180. | Recommendations concerning the use of Halon and carbon dioxide flooding systems in the peripheral rooms. | C.7.b | NA | The peripheral rooms adjacent to the control room are not provided with Halon or carbon dioxide flooding systems. |
| 181. | Recommendations concerning manual fire fighting capability in the control room. | C.7.b | C | See Section 9A.3.1.2. |
| 182. | Recommendations concerning fire detection in the control room. | C.7.b | AC | See Section 9A.3.1.2. |
| 183. | Breathing apparatus for control room operators should be readily available. | C.7.b | C | See Item 33. |
| 184. | Recommendations concerning control room ventilation. | C.7.b | C | See Section 9A.3.1.2. |
| 185. | All cables that enter the control room should terminate in the control room. | C.7.b | C | |
| 186. | Cables in under-floor and ceiling spaces should meet the separation criteria necessary for fire protection. | C.7.b | C | See Section 9A.3.1.2. |
| 187. | Air handling functions should be ducted separately from cable runs in such spaces. | C.7.b | C | The space above the suspended ceiling in the control room is not used as an air plenum for ventilation of the control room. Ventilation air is deducted through the space above the suspended ceiling. |
| 188. | Fully enclosed electrical raceways located in under-floor and ceiling spaces, if over 1 square foot in cross-sectional area, should have automatic fire suppression inside. | C.7.b | C | None of the fully enclosed raceways in the space above the suspended ceiling in the control room has a cross-sectional area exceeding 1 square foot. The raceways in the raised flooring of the auxiliary equipment room are provided with an automatic Halon suppression system, as described in Section 9A.2.9. |
| 189. | Recommendations concerning automatic fire suppression in under-floor and ceiling spaces. | C.7.b | AC | See Section 9A.3.1.2. |
| 190. | There should be no carpeting in the control room. | C.7.b | NC | See Section 9A.3.1.2. |
| | Cable Spreading Room | | | |
| 191. | Recommendations concerning automatic fire suppression in the cable spreading room. | C.7.c | C | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 192. | Open-head deluge and open directional spray systems should be zoned. | C.7.c | NA | Open-head water suppression systems are not used in the cable spreading room. |
| 193. | Cable spreading rooms should have at least two remote and separate entrances for access by fire brigade personnel. | C.7.c(1) | C | |
| 194. | Cable spreading rooms should have an aisle separation between tray stacks at least 3 feet wide and 8 feet high. | C.7.c(2) | NC | Cable trays in the cable spreading rooms are arranged to provide aisleways with a minimum headroom approximately 6.5 feet high and and a minimum width between tray stacks of approximately 3 feet. At certain locations, structural supports for the cable trays reduce the aisle width to a minimum of 17 inches. All points in the cable spreading rooms can be reached by an effective hose stream. |
| 195. | Cable spreading rooms should have hose stations and portable extinguishers installed immediately outside the room. | C.7.c(3) | C | The locations of hose stations in the vicinity of the cable spreading rooms are shown in Figure 9A.7. |
| 196. | Cable spreading rooms should have area smoke detection. | C.7.c(4) | C | The fire and smoke detection system is described in Section 9A.2.12. The number of detectors located in each fire area is listed in Table 9A.1. |
| 197. | Cable spreading rooms should have continuous line-type heat detectors for cable trays inside the cable spreading room. | C.7.c(5) | NC | Continuous line-type heat detectors are not used in cable trays. Smoke detectors are provided in the cable spreading room (as specified in Table 9A-1) and will provide early warning for cable tray fires occurring in the cable spreading room.<br><br>See Item 89 for further discussion. |
| 198. | Drains to remove fire-fighting water should be provided. | C.7.c | C | |
| 199. | When gas systems are installed, drains should have adequate seals or the gas extinguishing system should be sized to compensate for losses through the drains. | C.7.c | C | The capacity of the carbon dioxide storage tank is sufficient to compensate for losses through the floor drains in the cable spreading rooms. |
| 200. | A separate cable spreading room should be provided for each redundant division. | C.7.c | NC | See Item 57. |
| 201. | Cable spreading rooms should not be shared between reactors. | C.7.c | C | Each reactor unit is provided with its own separate cable spreading room. |
| 202. | Each cable spreading room should be separated from the others and from other areas of the plant by 3 hour fire barriers. | C.7.c | C | See Item 58 of Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 203. | The ventilation system for the cable spreading room should be designed to isolate the area upon actuation of the gas extinguishing system. | C.7.c | C | In the event of actuation of the carbon dioxide system in the cable spreading room, ventilation ducts penetrating the boundaries of the room are automatically isolated by steam isolation dampers. The dampers are actuated by pressure switches connected to the carbon dioxide distribution piping. |
| 204. | Separate manually actuated smoke venting that is operable from outside the room should be provided for the cable spreading room. | C.7.c | C | Portable smoke ejectors are used to clear smoke, toxic gases, and carbon dioxide from the cable spreading rooms. |
| | Plant Computer Rooms | | | |
| 205. | Recommendations concerning fire protection for computers performing safety-related functions. | C.7.d | NA | The plant computer is not safety-related. |
| 206. | Nonsafety-related computers outside the control room should be separated from safety-related areas by 3 hour fire barriers and should be protected as needed to prevent damage to safety-related equipment. | C.7.d | AC | The plant computer is nonsafety-related and is located in the auxiliary equipment room. The auxiliary equipment room is separated from other areas of the plant by 3 hour fire barriers, but the computer is not separated (other than by distance) from safety-related panels in the auxiliary equipment room. Automatic fire suppression for the raised flooring in the auxiliary equipment room is discussed in Section 9A.2.9. |
| | Switchgear Rooms | | | |
| 207. | Switchgear rooms containing safety-related equipment should be separated from the remainder of the plant by 3 hour fire barriers. Redundant switchgear safety divisions should be separated from each other by 3 hour fire barriers. | C.7.e | AC | The safety-related switchgear rooms at el 239' in the control structure are separated from each other and from the remaining areas of the plant by 3 hour rated fire walls. The concrete slab above these rooms is a 3 hour rated barrier, and the slab below the room is capable of a 3 hour fire rating with the exception of exposed structural steel members supporting the slabs. |
| 208. | Automatic fire detectors should alarm and annunciate in the control room and alarm locally. | C.7.e | C | Each safety-related switchgear room is provided with smoke and heat detectors that annunciate in the control room and alarm locally. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 209. | Fire hose stations and portable fire extinguishers should be readily available outside the switchgear rooms. | C.7.e | C | |
| 210. | Drains should be provided to prevent water accumulation from damaging safety-related equipment. | C.7.e | AC | See Section 9A.3.1.2. |
| 211. | Remote manually actuated ventilation should be provided for venting smoke when manual fire suppression effort is needed. | C.7.e | NC | Ventilation features separate from the normal ventilation system are not provided for the switchgear rooms. Smoke removal can be accomplished using portable exhaust fans, if necessary. |
| | Remote Safety-Related Panels | | | |
| 212. | Recommendations concerning separation and electrical isolation of remote safety-related panels. | C.7.f | AC | See Section 9A.3.1.2. |
| 213. | The general area housing remote safety-related panels should be provided with automatic fire detectors that alarm locally and alarm and annunciate in the control room. Combustible materials should be controlled and limited to those required for operation. Portable extinguishers and manual hose stations should be readily available in the general area. | C.7.f | C | |
| | Safety-Related Battery Rooms | | | |
| 214. | Safety-related battery rooms should be separated from each other and other areas of the plant by 3 hour rated fire barriers. | C.7.g | AC | The safety-related battery room are located in the control structure. These rooms are separated from each other and from the remaining areas of the plant by 3 hour rated fire walls. The floor slabs above and below the battery rooms are capable of 3 hour fire ratings with the exception of exposed structural steel members supporting the concrete slabs. |
| 215. | DC switchgear and inverters should not be located in safety-related battery rooms. | C.7.g | AC | See section 3.1.2. |
| 216. | Automatic fire detection should be provided to annunciate in the control room and alarm locally. | C.7.g | C | Each safety-related battery room is provided with smoke and heat detectors that annunciate in the control room and alarm locally. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 217. | Ventilation system in the battery rooms should be capable of maintaining the hydrogen concentration below 2%. | C.7.g | C | See Section 9A.3.1.2. |
| 218. | Loss of ventilation should be alarmed in the control room. | C.7.g | C | See Section 9A.3.1.2. |
| 219. | Portable extinguishers and manual hose stations should be readily available outside the battery rooms. | C.7.g | C | |
| | Turbine Building | | | |
| 220. | The turbine building should be separated from adjacent structures containing safety-related equipment by 3 hour fire barriers. | C.7.h | C | The turbine enclosure is separated from the reactor enclosure and control structure by 3 hour rated fire walls. |
| 221. | The fire barriers should be designed so as to maintain structural integrity in the event of collapse of the turbine structure. | C.7.h | C | See Section 9A.3.1.2. |
| 222. | Openings and penetration in the fire barrier should be minimized and should not be located where the turbine oil system or generator hydrogen cooling system creates a fire exposure hazard to the barrier. | C.7.h | C | See Section 9A.3.1.2. |
| | Diesel Generator Areas | | | |
| 223. | Diesel generators should be separated from each other and from other areas of the plant by 3 hour rated fire barriers. | C.7.i | C | The individual diesel generator cells, each of which encloses a single diesel generator, are separated from adjacent fire areas by 3 hour rated barriers consisting of 24 inch thick reinforced concrete walls and 18 inch thick reinforced concrete slabs. Each door opening in the 3 hour rated walls is provided with a UL Class A fire door. All penetration through the 3 hour rated walls and floor slabs are sealed using penetration seal details that are qualified for use in 3 hour rated fire barriers. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 224. | Automatic fire suppression should be installed to combat diesel generator or lubricating oil fires. Such systems should be designed for operation when the diesel is running without affecting the diesel. | C.7.i | AC | See Section 9A.3.1.2. |
| 225. | Automatic fire detection should be provided to annunciate in the control room and alarm locally. | C.7.i | C | |
| 226. | Portable extinguishers and manual hose stations should be readily available outside the area. | C.7.i | C | Portable extinguishers are available outside the diesel generator cells. Fire hydrants located in the yard can reach any area of the diesel generator cells. |
| 227. | Drainage for fire fighting water and means for local manual venting of smoke should be provided. | C.7.i | AC | See Section 9A.3.1.2. |
| 228. | Day tanks with total capacity up to 1100 gallons are permitted in the diesel generator area under specified conditions. | C.7.i | C | The day tank for each diesel generator has a capacity of 850 gallons. |
| 229. | The day tank should be located in a separated enclosures with a 3 hour fire rating. | C.7.i | C | The day tank for each diesel generator is located in a vault that is separated from the remainder of the diesel generator cell by 3 hour rated fire walls. |
| 230. | The day tank enclosures should be capable of containing the entire contents of the tank. | C.7.i | C | |
| 231. | The day tank enclosure should be protected by an automatic fire suppression system. | C.7.i | C | The preaction sprinkler system provided in each diesel generator cell includes coverage of the day tank vault. |
| | Diesel Fuel Oil Storage Areas | | | |
| 232. | Recommendations concerning diesel fuel oil tanks. | C.7.j | C | Each diesel generator is provided with a diesel fuel oil storage tank that has a capacity of 41,500 gallons. All eight tanks are located adjacent to each other and are buried underground. |
| 233. | Above-ground tanks should be protected by an automatic fire suppression system. | C.7.j | NA | See Item 232. |

CMEB 9.5-1

| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Safety Related Pumps | | | |
| 234. | Pump houses and rooms housing redundant safety-related pump trains should be separated from each other and from other areas of the plant by 3 hour rated fire barriers. | C.7.k | C | The safety-related pump compartments located at el 177' in the reactor enclosure are separated from each other and from other areas of the plant by 3 hour rated fire walls. The spray pond pump structure is located remote from other plant structures, and the two divisions of pumps within the structure are separated by a 3 hour rated fire wall. |
| 235. | These rooms should be protected by automatic fire suppression unless a fire hazards analysis can demonstrate that a fire will not endanger equipment required for safe shutdown. | C.7.k | C | The HPCI compartment and the RCIC pump compartment are protected by automatic preaction sprinkler systems. Fires originating in other safety-related pump compartments would not endanger other safety-related equipment required for safe shutdown, as discussed in Section 9A.5. |
| 236. | These rooms should be provided with automatic fire detection to annunciate in the control room and alarm locally. | C.7.k | C | |
| 237. | Portable extinguishers and manual hose stations should be readily accessible. | C.7.k | NC | Portable extinguishers are provided for use in all areas housing safety-related pumps. Manual hose stations are provided for use in all areas housing safety-related pumps, except for the spray pond pump structure. In consideration of the low combustible loading in the spray pond pump structure, portable extinguishers are deemed adequate to control and extinguish a fire at any pump. |
| 238. | Floor drains should be provided to prevent water accumulation from damaging safety-related equipment. | C.7.k | C | |
| 239. | Provisions should be made for manual control of the ventilation systems to facilitate smoke removal. | C.7.k | C | The ventilation systems in areas housing safety-related pumps are provided with controls that are sufficient to permit manual control of the ventilation as necessary to facilitate smoke removal. |
| 240. | Recommendations for fire protection of the new fuel area. | C.7.l | NA/AC | The normal storage area for new fuel is the spent fuel pool. Prior to plant operation and during the initial phases of plant operation, new fuel may be stored in a temporary outdoor storage area. Fire protection for this temporary new fuel storage area will be provided in accordance with guidelines established by ANI. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Spent Fuel Pool Area | | | |
| 241. | Protection for the spent fuel pool area should be provided by hose stations and portable extinguishers. | C.7.m | C | Hose stations and portable extinguishers are located near the spent fuel pool. |
| 242. | Automatic fire detection should be provided to annunciate in the control room and to alarm locally. | C.7.m | NC | See Section 9A.3.1.2, item 112.j. |
| | Radwaste and Decontamination Areas | | | |
| 243. | Fire barriers, automatic fire suppression and detection, and ventilation controls should be provided. | C.7.n | C | See Section 9A.3.1.2. |
| | Safety-Related Water Tanks | | | |
| 244. | Fire protection provisions for safety-related water tanks. | C.7.o | NA | The plant has no safety-related water tanks. |
| | Records Storage Areas | | | |
| 245. | Records storage areas should be so located and protected that a fire in these areas does not expose safety-related systems or equipment. | C.7.p | C | |
| | Cooling Towers | | | |
| 246. | Cooling towers should be of noncombustible construction or so located and protected that a fire will not adversely affect any safety-related systems or equipment. | C.7.q | C | The cooling towers are of noncombustible construction except for the fill material, which is polyvinyl chloride. No safety-related structures or systems are located near the cooling towers such that they could be affected by a fire in the cooling towers. |
| 247. | Cooling towers should be of noncombustible construction when the basins are used for the ultimate heat sink or for the fire protection water supply. | C.7.q | AC | See Section 9A.3.1.2. |
| | Miscellaneous Areas | | | |
| 248. | Location and protection of miscellaneous areas. | C.7.r | C | See Section 9A.3.1.2. |

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| NO. | CMEB 9.5-1 GUIDELINE | ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Storage of Acetylene/Oxygen Fuel Gases | | | |
| 249. | Gas cylinder storage locations should not be in areas that contain or expose safety-related equipment or the fire protection systems that serve those safety-related areas. | C.8.a | C | Compressed gas storage cylinders for welding are located outdoors, away from safety-related components. |
| 250. | A permit system should be required to use this equipment in safety-related areas of the plant. | C.8.a | C | |
| | Storage Areas for Ion Exchange Resins | | | |
| 251. | Unused ion exchange resins should not be stored in areas that contain or expose safety-related equipment. | C.8.b | AC | Storage areas for dry ion exchange resins in safety-related equipment areas utilize approved metal storage containers. |
| | Hazardous Chemicals | | | |
| 252. | Hazardous chemicals should not be stored in areas that contain or expose safety-related equipment. | C.8.c | AC | Procedural controls exist to ensure hazardous chemical storage in safety-related areas do not pose a fire risk. |
| | Materials Containing Radioactivity | | | |
| 253. | Materials that collect and contain radioactivity should be stored in closed metal tanks or containers that are located in areas free from ignition sources or combustibles. | C.8.d | C | |
| 254. | These materials should be protected from exposure to fires in adjacent areas. | C.8.d | C | |
| 255. | Consideration should be given to requirements for removal of decay heat from entrained radioactive Materials. | C.8.d | C | Provisions for accommodating decay heat are considered when selecting containers. |

9A.3.1.2 Explanatory Notes for Comparison to Branch Technical Position CMEB 9.5-1

**Item 6**

BTP Guideline

The position responsible for formulation and implementation of the fire protection program should have within his organization or as a consultant a fire protection engineer who is a graduate of an engineering curriculum of accepted standing and shall have completed not less than 6 years of engineering attainment indicative of growth in engineering competency and achievement, 3 years of which shall have been in responsible charge of fire protection engineering work. These requirements are the eligibility requirements as a Member in the Society of Fire Protection Engineers.

LGS Design

The Vice President, LGS, is responsible for the formulation and implementation of the fire protection program. In this capacity, he has access to the services of corporate support personnel, other Exelon sites, or vendors as necessary in the capacity of a fire protection engineer. The individual meets the requirements for membership in the Society of Fire Protection Engineers (i.e., a graduate of an engineering curriculum of accepted standing and shall have completed not less than 6 years of engineering attainment indicative of growth in engineering competency and achievement, 3 years of which shall have been in responsible charge of fire protection work).

In addition, fire protection consultants are available to assist in design and review tasks as required.

**Item 15**

BTP Guideline

Fires involving facilities shared between units and fires due to man-made site-related events that have a reasonable probability of occurring and affecting more than one reactor unit (such as an aircraft crash) should be considered.

LGS Design

The control structure, the spray pond pump structure, and the radwaste enclosure are common to the two reactor units. Fires are postulated to occur in these structures just as in other structures, and appropriate provisions are made for fire prevention, fire detection, and fire suppression.

For a discussion of fires due to man-made site-related events, refer to Item 22.

**Item 19**

BTP Guideline

A single active failure or a crack in a moderate energy line (pipe) in the fire suppression system should not impair both the primary and backup fire suppression capability. For example, neither the failure of a fire pump, its power supply or controls, nor a crack in a moderate energy line in the fire suppression system, should result in loss of function of both sprinkler and hose standpipe systems in an area protected by such primary and backup systems.

LGS Design

As described in Section 9A.2.1.2, fire water is supplied by two redundant pumps, each of which is capable of providing the design fire protection system flow rate at the design pressure. Power for the motor-driven fire pump is provided from either of two independent offsite power sources. The controls for the diesel engine-driven fire pump are dc-operated and are powered from batteries which supply only the engine-driven fire pump. Therefore, no single failure of the power supplies or controls can affect both fire pumps.

If a crack should occur in the yard fire main loop, sectional isolation valves can be used to isolate the damaged portion of the loop without affecting the majority of the loop. There is no single active failure that could affect the operability of both the sprinkler systems and manual hose stations for a given area. The standpipes supplying water to the sprinklers and manual hose stations have been designed to minimize the probability of a moderate energy crack occurring in these portions of piping. The standpipes were designed in accordance with NFPA requirements, for which the materials and standards of construction are the same as for ANSI B31.1, "Power Piping." The standpipes were seismically analyzed for safe shutdown earthquake loads in order to verify piping integrity under such loads. In the unlikely event that a crack does occur in a standpipe that supplies water to sprinklers and hose stations serving the same area, such that the ability to achieve design flow rates for the sprinklers and hose stations is affected, an effective hose stream could be provided to the area from a hose station attached to the closest unaffected standpipe.

**Item 21**

BTP Guideline

The fire protection systems should retain their original design capability for natural phenomena of less severity and greater frequency than the most severe natural phenomena (approximately once in 10 years) such as tornadoes, hurricanes, floods, ice storms, or small intensity earthquakes that are characteristic of the geographic region.

LGS Design

The fire pumps, the yard fire main loop, distribution piping within structures, manual hose stations, and fixed suppression systems are conservatively designed so as to retain their operability following the occurrence of natural phenomena with severities corresponding to a recurrence interval of once in 10 years.

**Item 22**

BTP Guideline

The fire protection systems should retain their original design capability for potential man-made site-related events such as oil barge collisions or aircraft crashes that have a reasonable probability of occurring at a specific plant site.

LGS Design

Transportation activities taking place near LGS, and the potential for accidents affecting the plant, are discussed in Section 2.2. As indicated in Section 2.2.2.4, there is no commercial traffic on the Schuylkill River in the vicinity of the site. As discussed in Section 2.2.3, the potential effects of an explosion occurring on nearby highways are exceeded in severity by the potential effects of a

railway explosion. Structures housing safety-related systems and components are designed to withstand impact from missiles generated by a railway explosion. Portions of fire protection systems that are located outside the safety-related structures could potentially be damaged by missiles generated by a railway explosion. However, such damage will not jeopardize safe shutdown capability since the systems and components, excluding offsite power, needed for safe shutdown are protected from damage due to missile impact and are isolated from the effects of fires occurring outside the safety-related structures.

Hazards to the plant resulting from aircraft operating in the vicinity of the site are discussed in Section 3.5.1.6. The control structure, reactor enclosure, and spray pond pump structure are designed to withstand the impact of the design aircraft (a Learjet) without loss of structural integrity. Portions of fire protection systems that are located outside these structures could potentially be damaged by aircraft impact. However, such damage will not jeopardize safe shutdown capability since the systems and components, excluding offsite power, needed for safe shutdown are protected from damage due to aircraft impact and are isolated from the effects of fires occurring outside the control structure, reactor enclosure, and spray pond pump structure.

**Item 24**

BTP Guideline

The consequences of inadvertent operation of or a crack in a moderate energy line in the fire suppression system should meet the guidelines specified for moderate energy systems outside containment in SRP section 3.6.1.

LGS Design

Moderate energy leakage cracks in fire suppression system piping are analyzed as discussed in Section 3.6. Section 3.6.1.2.2 summarizes the results of the moderate energy fluid system analysis and also provides references to other UFSAR sections that discuss the design bases and criteria that were used in the moderate energy fluid system analysis. The analysis demonstrates that the occurrence of a crack in moderate energy piping, including the fire suppression system piping, will not prevent the plant from being brought to a safe, cold shutdown.

Automatic suppression systems have been designed and located so that operation of the systems, either intentional or inadvertent, will not cause damage to redundant trains of safety-related equipment that is needed for safe shutdown of the plant. To the greatest extent practical, safety-related electrical components are located outside the coverage zones of automatic suppression systems. Where necessary, components that are needed in order to achieve safe shutdown and also are located within automatic suppression system coverage zones are designed to remain functional in the event of suppression system actuation. Four of the areas that are provided with automatic water-type suppression systems are the HPCI pump compartment, the RCIC pump compartment, the diesel generator cells, and the 13.2 kV switchgear room. Actuation of the suppression systems in the HPCI and RCIC pump compartments could cause damage significant enough to affect the operability of the systems in those compartments. In the diesel generator cells, baffles are provided to protect the generators and control devices from damage due to suppression system actuation. In the 13.2 kV switchgear room, the design features of the system mitigate the effects due to spurious actuation or MELB. This system is supervised with instrument air and incorporates a double interlock deluge valve that is maintained normally closed. Sprinkler flow is initiated only when two seperate inputs are received; one from a pneumatic actuator, due to the melting of the sprinkler fusible link(s) allowing the supervised air to be

released; and the other from the fire detection system that sends a signal to an electric solenoid valve. Loss of any of these four systems (HPCI, RCIC, or a single diesel generator and 13.2 kV switchgear room) due to suppression system actuation is acceptable, since redundant systems will remain available to bring the plant to a safe, cold shutdown.

There are no cases in which safe shutdown components have electrical interconnections with fire detection or fire suppression systems. Therefore, safe shutdown components cannot be inadvertently actuated or shut down due to either normal or abnormal signals in the control and power circuits of the fire detection and fire suppression systems.

The HPCI and RCIC pump compartments and the diesel generator cells are the only safety-related areas of the plant that are provided with automatic suppression systems and also are potentially subject to steam flooding as a result of high energy pipe breaks. Elevated compartment temperatures due to steam flooding could result in suppression system actuation if the temperatures are high enough to cause the deluge valve to open and the fusible links on the sealed sprinkler heads to open. However, loss of the HPCI system, RCIC system, or a single diesel generator due to suppression system actuation is acceptable, since redundant systems will remain available to bring the plant to a safe, cold shutdown.

Automatic (water) suppression systems located in safety-related areas of the plant are of the type that have fusible heads (either preaction or wet pipe). These systems cannot be actuated in the absence of a significant heat source in the vicinity of the sprinkler heads. Therefore, electrical anomalies in the circuits of the smoke and heat detection systems or the suppression system power supplies cannot cause inadvertent actuation of these suppression systems.

**Item 28**

BTP Guideline

On reactor sites where there is an operating reactor and construction or modification of other units is under way, the fire protection program should provide for continuing evaluation of fire hazards. Additional fire barriers, fire protection capability, and administrative controls should be provided as necessary to protect the operating unit from construction fire hazards.

LGS Design

Administrative procedures will be prepared to protect the operating Unit 1 from fire hazards associated with construction of Unit 2. Special precautions will be taken to prevent and control fire hazards. Use of open flames and welding or cutting equipment will be properly supervised.

Construction of both the underground yard fire main and the fire water distribution piping inside both units of the plant will be completed prior to Unit 1 operation so that manual hose station coverage will be available in Unit 2 as well as Unit 1. Portable fire extinguishers will also be available in the Unit 2 portions of the plant during its construction. The construction site will be kept clean and orderly and contractors' sheds will be kept outside the confines of new construction.

**Item 33**

BTP Guideline

Self-contained breathing apparatus using full face positive- pressure masks approved by the National Institute for Occupational Safety and Health (approval formerly given by the U.S. Bureau of Mines) should be provided for fire brigade, damage control, and control room personnel. At least 10 masks shall be available for fire brigade personnel. Control room personnel may be furnished breathing air by a manifold system piped from a storage reservoir if practical. Service or rated operating life shall be a minimum of one-half hour for the self-contained units.

At least two extra air bottles should be located onsite for each self-contained breathing unit. In addition, an onsite 6 hour supply of reserve air should be provided and arranged to permit quick and complete replenishment of exhausted supply air bottles as they are returned. If compressors are used as a source of breathing air, only units approved for breathing air shall be used; compressors shall be operable assuming a LOOP. Special care must be taken to locate the compressor in areas free of dust and contaminants.

LGS Design

Self-contained breathing apparatus will be available for use by control room personnel and fire brigade members. The breathing apparatus will have a minimum operating life of 4 hours for control room personnel and 1 hour for fire brigade members.

An onsite reserve air supply of six hours for at least five persons will be provided in stored air bottles. Compressors, if used, will be units approved for breathing air.

**Item 34**

BTP Guideline

Recommendations for the fire brigade training program.

LGS Design

Fire Protection program objectives for training fire brigade members is accomplished by using a combination of in plant areas and an off-site training facility that simulates plant physical conditions. Drills are conducted in conformance with plant fire drill procedures.

An off-site facility enables drills to include the use of live fire conditions. These elements plus the use of breathing apparatus and full protective clothing create actual conditions that would be encountered during a real plant fire emergency. Additional drills, including backshift unannounced drills are conducted in plant areas throughout the year. Unannounced drills are scheduled on a "per shift basis" in accordance with the corporate fire protection procedures.

Local fire departments are offered annual training associated with the responsibilities and duties of the plant fire brigade and offsite responders, operational precautions when fighting fires on nuclear power plant sites including awareness of the need for radiological protection of personnel and the special hazards associated with a nuclear power plant site.

**Item 35**

BTP Guideline

The quality assurance programs of applicants and contractors should ensure that the guidelines for design, procurement, installation, and testing and the administrative controls for the fire protection systems for safety-related areas are satisfied. The QA program should be under the management

control of the QA organization. This control consists of (1) formulating a fire protection QA program that incorporates suitable requirements and is acceptable to the management responsible for fire protection or verifying that the program incorporates suitable requirements and is acceptable to the management responsible for fire protection, and (2) verifying the effectiveness of the QA program for fire protection through review, surveillance, and audits. Performance of other QA program functions for meeting the fire protection program requirements may be performed by personnel outside of the QA organization. The QA program for fire protection should be part of the overall plant QA program.

LGS Design

The QA program described below will be under the management control of the licensee and their agent's organizations during the construction and operation phases.

a. Design and Procurement Document Control

The design review performed to compare the LGS design to the BTP guidelines provides assurance that necessary design features are included in appropriate design and procurement documents.

Deviations from the design and procurement documents will be controlled by mechanisms specified in the 10CFR50, Appendix B, QA program for this project.

b. Instructions, Procedures, and Drawings

These requirements will be met through the use of a documented, final installation inspection and through implementation of a written preoperational test.

c. Control of Purchased Material, Equipment, and Services

Based upon the status of procurement and the identification of significant design or manufacturing features, certain fire protection equipment may be subject to shop inspection during manufacture.

Receipt inspection at the site shall be performed.

d. Inspection

These requirements will be met through the use of a documented, final installation inspection and through implementation of a written preoperational test.

e. Test and Test Control

Documented preoperational test procedures including evaluation of results and follow-up action, if indicated, shall be employed to meet these requirements.

f. Inspection, Test, and Operating Status

Installation inspections, as described in Item 4 above, shall be documented in such a manner as to indicate the acceptability of the item/activity inspected. Deficiencies

shall be identified and corrected in accordance with mechanisms specified in the 10CFR50, Appendix B, QA program for this project.

Satisfactory completion of the preoperational test and release for operation shall be accomplished and documented in accordance with mechanisms specified in the 10CFR50, Appendix B, QA program for this project.

g. Nonconforming Items

Nonconforming items shall be identified, controlled, and corrected in accordance with the mechanisms specified in the 10CFR50, Appendix B, QA program for this project.

h. Corrective Action

Conditions adverse to fire protection (such as failures, malfunctions, deficiencies, deviations, defective components, and nonconformances) during the construction phase shall be reported and corrected in accordance with mechanisms specified in the 10CFR50, Appendix B, QA program for this project.

i. Records

Records shall be prepared and maintained to furnish evidence that the criteria described in Items 1 through 10 are being met for activities affecting the fire protection program.

j. Audits

The activities described above are subject to audit. In addition, implementation of receipt inspections, final installation inspections, and preoperational tests shall be subject to audit to conform with documented instructions, procedures, and drawings.

**Item 37**

BTP Guideline

Fire barriers with a minimum rating of 3 hours should be provided to separate redundant divisions of safety-related systems from each other.

LGS Design

Redundant divisions of safety-related systems will be separated from each other so as to achieve the three levels of fire damage limits established in Position C.1.b. The provision of fire barriers between redundant divisions of safety-related systems that do not have safe shutdown functions is not required. Fire barriers will be provided between redundant divisions of safe shutdown systems as necessary to ensure that one train of equipment necessary to achieve safe shutdown is maintained free of fire damage to the degree specified in Position C.1.b unless specified otherwise in Section 9A.5.

The reactor enclosures, turbine enclosures, diesel generator enclosures, radwaste enclosure, and administration building are separated from each other by 3 hour rated fire walls. Walls internal to these structures (and also the spray pond pump structure) which serve as boundaries between different fire areas are provided with fire ratings or construction details consistent with the fire hazard existing in each area. The locations of fire-rated walls are shown on Figures 9A-4 through 9A-12, and the walls surrounding each fire area are further described in the fire area discussions contained in Sections 9A.5.3 through 9A.5.9.

The structural steel beams supporting the floor slabs at el 254', el 269', el 289' and el 304' in the control structure have been fireproofed to provide a 3 hour rating for the complete floor assembly. The structural steel beams supporting floor slabs in other areas have not been fireproofed. The fire ratings of floor slabs above and below each fire area are listed in the fire area discussions contained in Sections 9A.5.3 through 9A.5.9. Those slabs which are shown as "3 hr*" are capable of being rated as 3 hour fire barriers, except for the lack of fireproofing on the structural steel beams supporting the slab.

Reinforced concrete walls without penetrations are considered to qualify for a 3 hour fire rating, provided that the wall has a thickness of at least 6 inches. Concrete block walls designated as fire walls are constructed in accordance with UL Design No. U904, as a minimum. Fire walls incorporating metal studs with lath and plaster are constructed in accordance with UL Design No. U409. Fireproofing material is applied to structural steel beams in accordance with UL Design No. N706, N712, N742, or N760.

**Item 39**

BTP Guideline

Appropriate fire barriers should be provided within a single safety division to separate components that present a fire hazard to other safety-related components or high concentrations of safety-related cables within that division.

LGS Design

The diesel generator day tanks constitute the most significant fire hazard posed by components within safety-related systems. As stated in Item 229, the day tank for each diesel generator is located in a vault that is separated from the remainder of the diesel generator cell by 3 hour rated fire walls. The HPCI, RCIC, RHR, and LPCI systems contain lesser fire hazards in the form of lubricating oil associated with the pumps and drivers in these systems. These pumps are located at el 177' in the reactor enclosure, which is compartmentalized to separate the pumps from each other and from other safety-related systems.

Fire barriers are not provided solely for the purpose of separating safety-related cables from other safety-related cables in the same division. Separation by distance or by fire barriers between redundant divisions is provided as necessary to ensure safe shutdown capability in the event of a fire. Separation to ensure independence between Class 1E and non-Class 1E circuits and between redundant divisions of Class 1E circuits is discussed in Section 8.1.6.1.14.

**Item 40**

BTP Guideline

Openings through fire barriers for pipe, conduit, and cable trays which separate fire areas should be sealed or closed to provide a fire resistance rating at least equal to that required of the barrier itself.

LGS Design

Pipe, conduit, and cable tray penetrations through fire-rated barriers will be sealed to provide a fire resistance rating that is consistent with that of the overall barrier. Such seals in fire barrier penetrations will be installed in accordance with the manufacturer's tested configurations where possible. Individual penetration seals that include configurations or features that constitute deviations from the manufacturer's tested configuration are reviewed and accepted by LGS's authorized insuring agency for use as fire-rated seals.

**Item 41**

BTP Guideline

Openings inside conduit larger than 4 inches in diameter should be sealed at the fire barrier penetration. Openings inside conduit 4 inches or less in diameter should be sealed at the fire barrier unless the conduit extends at least 5 feet on each side of the fire barrier and is sealed either at both ends or at the fire barrier with noncombustible material to prevent the passage of smoke and hot gases.

LGS Design

In areas of the plant that contain safety-related equipment, conduits that penetrate fire barriers will be sealed internally to prevent the passage of smoke and hot gases. For each penetrating conduit that extends 5 feet or more on both sides of the fire barrier, noncombustible seals will be provided on both sides of the fire barrier at the access point (junction box, termination at a cable tray, or equipment connection) that is closest to the fire barrier. For each penetrating conduit that extends less than 5 feet on either side of the fire barrier, a 3 hour fire rated seal will be provided either at the fire barrier or on one side of the barrier at the access point that is closest to the barrier. For the cases in which access to the interior of a conduit has been provided at the fire barrier via a junction box or condulet, the 3 hour seal is located at the barrier. Where no access has been provided at the barrier, the 3 hour seal is located at the access point that is closest to the barrier. For the cases in which the penetrating conduit is larger than 4 inches in diameter and the 3 hour seal is not located at the barrier, the conduit forms part of the fire barrier in combination with the seal. Conduits in this category are schedule 40 rigid steel and will maintain their integrity while exposed to a 3 hour fire.

Any installation which deviates from the above criteria for internal conduit seals is documented in a technical evaluation in the form of a fire hazards and safe shutdown analysis that is performed and reviewed by personnel responsible for fire protection and safe shutdown analyses for the plant. Each technical evaluation documents the as-built configuration and presents the rationale for concluding that the affected seal does not degrade the effectiveness of the fire barrier in preventing the spread of a postulated fire and in limiting the migration of smoke and hot gases. Each technical evaluation performed is retained as part of the permanent plant records.

For conduits that enter the bottom of floor-mounted components that are mounted on fire-rated floor slabs, 3 hour rated seals are normally installed inside each conduit at the point where it enters the component. In some cases, however, the congestion of cables in a conduit prevents the fire

sealant material from being installed to the minimum thickness necessary to qualify as a 3 hour rated seal. In each such situation, a second seal is installed inside the conduit at the access point nearest to the component, with the thickness of the sealant material in the second seal being selected so that the combined thickness of the first and second seals is not less than the thickness required for a 3 hour rated seal.

For fire barriers that separate safety-related areas from nonsafety-related areas of the plant, conduit penetrations will be provided with internal seals in the same manner as discussed above for safety-related areas.

In areas of the plant not containing safety-related equipment, internal seals will be provided for conduits penetrating fire barriers that are adjacent to fire areas with high combustible loadings. The locations of the conduit seals with respect to the fire barrier being penetrated will be the same as discussed above for safety-related areas.

**Item 43**

BTP Guideline

Penetration designs should utilize only noncombustible materials.

LGS Design

All materials used in fire-rated penetration seals are either noncombustible or are listed by an independent testing laboratory for flame spread, smoke generation, and fuel contribution of 25 or less, as determined by testing in accordance with ASTM E-84. Alternatively, the fire retardation of caulking and adhesive materials that are used in small quantities as part of penetration seal assemblies may be demonstrated by successful completion of the fire test specified in section 3.B of the "ANI/MAERP Standard Method of Fire Tests of Cable and Pipe Penetration Fire Stops," issued in February of 1976. The following different types of seals will be used in fire-rated applications:

a. Cement-type grout.

b. Foamed silicone polymer. This is a self-vulcanizing material that results from the mixture of two liquid components.

c. Solid silicone polymer. The polymer is impregnated with a powdered high density filler.

d. Flexible boot with ceramic fiber. The boot material is silicone rubber with woven glass fiber reinforcing. Ceramic fiber is installed inside the boot, in the space between the penetrating object and the edge of the penetration. Stainless steel compression straps and silicone adhesives are used in attaching the boot.

e. Flexible boot with gel. The boot material is silicone rubber with woven glass fiber reinforcing. The boot is filled with a high density silicone dielectric gel. Stainless steel compression straps and silicone adhesives are used in attaching the boot.

**Item 45**

BTP Guideline

The acceptance criteria for the test should require that:

a. The fire barrier penetration has withstood the fire endurance test without passage of flame or ignition of cables on the unexposed side for a period of time equivalent to the fire resistance rating required of the barrier.

b. The temperature levels recorded for the unexposed side are analyzed and demonstrate that the maximum temperature does not exceed 325°F.

c. The fire barrier penetration remains intact and does not allow projection of water beyond the unexposed surface during the hose stream test. The stream shall be delivered through a 1½ inch nozzle set at a discharge angle of 30% with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 5 ft from the exposed face; or the stream shall be delivered through a 1½ inch nozzle set at a discharge angle of 15% with a nozzle pressure of 75 psi and a minimum discharge of 75 gpm with the tip of the nozzle a maximum of 10 ft from the exposed face; or the stream shall be delivered through a 2½ inch national standard play pipe equipped with $1^1/_8$ inch tip, nozzle pressure of 30 psi, located 20 ft from the exposed face.

LGS Design

In accordance with American Nuclear Insurer's NEL-PIA/MAERP, Standard Test method for penetration fire stops, a maximum allowable temperature of 325°F above ambient is applicable to temperature measurements taken at the seal surface on the unexposed side at locations not involving interfaces with objects that penetrate the seal. In accordance with IEEE 634 (1978), a maximum allowable temperature of 700°F is applicable to temperature measurements taken on the unexposed side at interfaces between the seal material and objects that penetrate the seal.

The acceptance criteria for penetration qualification tests are in agreement with those specified in paragraphs (a) and (c) above. The maximum unexposed side temperature criteria used by the ANI test standard was 325°F above ambient. Annular pipe anchors are used in the type of penetration involving a single pipe routed through a steel penetration sleeve that is embedded in a concrete wall. The pipe anchor consists of a steel plate spanning the annular space between the pipe and the penetration sleeve, and which is welded to both the pipe and the penetration sleeve over its entire circumference. Fire resistance for this type of penetration assembly is provided by installing mineral wool in the annular space to a minimum depth of 12 inches. This configuration has been tested for a 3 hour fire rating at the National Gypsum Company Research Center in cooperation with Factory Mutual Research. The assembly withstood the fire test and hose stream test with a maximum temperature of 425°F on the unexposed side of the annular anchor, measured at a location 1 inch from the surface of the pipe. This temperature is attributable to heat conduction through the steel pipe. This seal configuration is acceptable because no cables are associated with the penetration.

**Item 46**

BTP Guideline

Penetration openings for ventilation systems should be protected by fire dampers having a rating equivalent to that required of the barrier.

LGS Design

Except for Fire Areas 3, 4, 5, and 6, ventilation ducts that penetrate fire barriers are provided with 3 hour rated fire dampers at penetrations of 3 hour rated barriers and with 1.5 hour rated dampers at penetrations of 1 hour fire barriers. Both classifications of fire dampers are UL-listed and manufactured to comply with NFPA 90 and the Commonwealth of Pennsylvania Fire Protection Code.

Fire Areas 3, 4, 5, and 6 ventilation duct penetrations, which communicate with Fire Area 2, have fire damper assemblies which have been evaluated per an Engineering Evaluation, dated 03/26/98 (Reference NCR-ECR LG 98-00470) and are commensurate with the postulated fire in these areas.

**Item 48**

BTP Guideline

Door openings in fire barriers should be protected with equivalently rated doors, frames, and hardware that have been tested and approved by a nationally recognized laboratory.

LGS Design

Door openings in fire barriers are protected with equivalently rated doors, frames, and hardware that have been rated as follows:

a. Hollow metal doors are listed by UL and classified as Class A (3 hour) for use in 3 hour rated fire barriers, Class B (1.5 hour) for use in 2 hour rated fire barriers, or Class C (¾ hour) for use in 1 hour rated fire barriers.

b. Roll-up doors less than 120 $ft^2$ in size are labeled with classification markings as described above for hollow metal doors. Roll-up doors larger than 120 $ft^2$ are not provided with UL classification labels but are certified by their manufacturer to be manufactured in compliance (except for size) with the requirements for doors of this class and type that are normally labeled as Class A.

c. Watertight doors are not provided with UL classification labels but are certified by the manufacturer to be equivalent to the requirements of the UL classification for special purpose type fire door and frame assemblies that are rated as Class A.

d. Missile-resistant doors are certified by the manufacturer to be designed so that the doors provide a degree of fire resistance equivalent to a 3 hour fire rating based on exposure to temperatures as defined by the NFPA standard time-temperature curve. Because the missile-resistant doors are custom designed for each specific application, they are not provided with UL classification labels. Only three

missile-resistant doors are specified for use in fire barriers, two of which are 3'-0" by 7'-0" single-leaf doors and one of which is a 7'-0" by 10'-0" double-leaf door. The manufacturer has verified by calculation that the deformation of these doors resulting from exposure to a standard 3 hour fire will remain within the values specified in the acceptance criteria of ASTM E-152-81.

e. Steamtight, airlock, and bullet-resistant doors are labeled as described above for hollow metal doors, except for doors with conditions that do not exactly match the physical units tested and approved by UL. Doors that are not labeled are certified by the door manufacturers to be fabricated in the same manner as the labeled units, except for variances due to special functions required for the doors. These variances include the following:

1. Door size - the size of double-leaf door tested by UL is 6'-0" by 7'-2" whereas the maximum size of the LGS doors is 9'-0" by 10'-0".

2. Door thickness - the maximum thickness tested by UL is 2¾" whereas the maximum thickness of the LGS doors is 4¼".

3. LGS' double-leaf steamtight and airlock doors contain a removable mullion that is not present in the UL-tested assemblies.

4. Minor hardware differences as follows:

(a) Customized hinges

(b) Locksets by Sonicbar Door Systems

(c) Additional security hardware

(d) Surface-mounted hardware

5. LGS' bullet-resistant doors have additional structural features for greater strength that were not included in the tested doors.

The fire loadings on either side of the subject doors are low. The maximum equivalent severity in adjacent compartments is 35 minutes. In none of the cases are the in situ combustibles located immediately adjacent to the doors.

f. Door/frame assemblies not installed in tested configurations that have been evaluated to withstand for three hours the maximum fire expected in the Fire Area.

Doors that are specified for use in fire barriers but are not listed by UL are identified in the fire area discussions contained in Sections 9A.5.3 through 9A.5.9 by a double asterisk (**) following the indicated fire rating.

**Item 58**

BTP Guideline

Cable spreading rooms should be separated from each other and from other areas of the plant by barriers having a minimum fire resistance of 3 hours.

LGS Design

The cable spreading rooms are separated from each other and from adjacent fire areas by 3 hour rated fire barriers consisting of either reinforced concrete or concrete unit masonry walls with a minimum thickness of 12 inches, and reinforced concrete slabs with a minimum thickness of 12 inches. Exposed structural steel supporting the floor slabs above and below the cable spreading rooms are coated with fireproofing material in order to achieve a 3 hour fire rating. Each door opening in the 3 hour rated fire walls is provided with a UL Class A fire door. All penetrations through the 3 hour rated walls and slabs are sealed using penetration seal details that are qualified for use in 3 hour rated fire barriers. HVAC duct penetrations through the 3 hour rated walls are equipped with 3 hour rated fire dampers.

**Item 59**

BTP Guideline

Interior wall and structural components, thermal insulation materials, radiation shielding materials, and soundproofing should be noncombustible.

LGS Design

Most interior walls are constructed of either reinforced concrete, or concrete masonry units. Limited use is made of walls constructed of metal studs with either gypsum wallboard or gypsum plaster on expanded metal lath. Structural components consist of structural steel or reinforced concrete. Soundproofing materials, if required, will be noncombustible. Radiation shielding consists of concrete, concrete masonry unit, steel plates, or other noncombustible materials.

Thermal insulation materials are noncombustible, with the following exceptions:

a. Insulation for domestic cold water piping (in the administration building only) is a closed-cell foamed elastomer with an ASTM E-84 flame spread rating of 25 or less.

b. Insulation for the offgas refrigeration equipment (located only in the offgas enclosure) has an ASTM E-84 flame spread rating of 25 or less.

c. Insulation for duct-work and plenums of the ventilation systems has an ASTM E-84 flame spread rating of 25 or less and a smoke generation rating of 50 or less.

**Item 60**

BTP Guideline

Interior finishes should be noncombustible.

LGS Design

Areas containing systems or equipment required for safe shutdown of the plant are unfinished, or are finished with materials that are either noncombustible or (except for floor coverings and vinyl

cove base) are rated by an independent testing laboratory for flame spread and smoke generation of 25 or less.

Floor coverings in areas containing systems or equipment required for safe shutdown of the plant are Class I material as defined in NFPA 101. In order to qualify for this classification, the floor covering material must have a minimum critical radiant flux of 0.45 watts per square centimeter as determined by NFPA 253 ("Standard Method of Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source").

Vinyl cove base is considered trim and incidental finish and may be Class III material as defined in NFPA 101. As such, it is rated for flame spread of 200 or less and smoke generation of 450 or less. Trim and incidental finish shall not exceed 10% of the aggregate wall and ceiling area of a room.

**Item 61**

BTP Guideline

Metal deck roof construction should be noncombustible and listed as "acceptable for fire" in the UL Building Materials Directory, or listed as Class 1 in the Factory Mutual System Approval Guide.

LGS Design

Metal deck roof construction is used only for the turbine enclosure, which is a nonsafety-related structure. The roof is constructed to meet the requirements of a Class 1 roofing system in accordance with the Factory Mutual System Approval Guide.

**Item 62**

BTP Guideline

Suspended ceilings and their supports should be of noncombustible construction.

LGS Design

Two different design details are used for the suspended ceiling in the control room. One detail includes mineral fiber panels resting on a metal grid system which is supported by steel wires. A second detail, used above the peripheral rooms adjacent to the control room, includes gypsum board panels supported from galvanized steel studs. The materials used in both of these details are either noncombustible or are listed by an independent testing laboratory for flame spread, smoke generation, and fuel contribution of 25 or less.

**Item 63**

BTP Guideline

Concealed spaces should be devoid of combustibles except as noted in Position C.6.b.

LGS Design

There are no combustible materials in the space above the suspended ceiling in the control room, other than electrical cables. These cables (associated primarily with control room annunciators and control room lighting) are routed in conduits, fully enclosed gutters, and cable trays. The cable trays are fully enclosed through the use of solid (steel) top and bottom covers. The only exposed cables in the space above the suspended ceiling are the control room annunciator cables that extend through the bottom covers on the cable trays. Since the annunciators are located immediately adjacent to the cable trays, the exposed length of cable is very short. The cable dropout openings in the tray bottoms will be sealed with ceramic fiber and a flame-retardant mastic coating to ensure that any fire originating within the cable trays is contained within the trays. Eleven smoke detectors are located above the suspended ceiling to provide early warning of fires occurring within the area.

Table 9A-3 lists the insulation and jacketing materials used for electrical cabling. As noted in the table, cable insulation and jacketing materials are specified to meet the IEEE 383 flame test requirements except for lighting, communications, and grounding cables. Lighting cables and communication cables are routed exclusively in conduit, and grounding cables are not routed through the space above the suspended ceiling in the control room.

Electrical cables are routed through the raised floor sections in the auxiliary equipment room. Access to the cables for manual fire fighting efforts is obtained by the removal of floor plates covering the floor sections. The floor plates are constructed of aluminum honeycomb bonded between sheet metal, and are easily removable using two quick-disconnect fasteners on each plate. Automatic fire detection systems and automatic Halon suppression systems are provided in the floor sections. Additional discussion of the auxiliary equipment room raised flooring and the Halon suppression system is provided in Sections 9A.2.9 and 9A.5.3.25.

**Item 65**

BTP Guideline

Outdoor oil-filled transformers should have oil spill confinement features or drainage away from the buildings.

LGS Design

The main transformers, the safeguard transformers, and the auxiliary transformers are each surrounded by a curb approximately 2 feet high. A floor drain is provided within each curbed area to drain liquids to the normal waste drainage system.

The fire walls that are located on three sides of each plant services transformer would prevent spilled oil from flowing toward the circulating water pump structure. The pavement in the vicinity of each transformer is sloped to provide drainage to nearby catch basins.

**Item 66**

BTP Guideline

Outdoor oil-filled transformers should be located at least 50 feet distant from the building, or by ensuring that such building walls within 50 feet of oil-filled transformers are without openings and have a fire resistance rating of at least 3 hours.

LGS Design

The main transformers are located more than 50 feet from any building. The plant services transformers are located adjacent to the circulating water pump structure, but are separated from it by free-standing 3 hour rated fire walls. The safeguard transformers and auxiliary transformers are located approximately 14 feet from the north side of the turbine enclosure. As described in Section 9A.2.4, the latter transformers are provided with automatically actuated deluge systems to suppress fires involving the transformers. This automatic suppression will prevent the turbine enclosure from being damaged as a result of a transformer fire. In addition, the turbine enclosure is nonsafety-related and does not contain any components that are needed in order to achieve safe shutdown of the plant.

**Item 67**

BTP Guideline

Floor drains sized to remove expected fire fighting water without flooding safety-related equipment should be provided in areas where fixed water fire suppression systems are installed.

LGS Design

Two water suppression systems are located in areas with no floor drains. A wet pipe system is located in the elevation 239' corridor (fire area 7) and localized preaction system in the 13.2 kV switchgear room, elevation 217' (fire area 2).

Although no floor drains are located in fire area 7, equipment in adjacent areas are provided with curbs, installed on 4" raised pads or the floor was sloped away from the equipment. Floor drains are also available in the adjacent battery rooms. No safety-related equipment (other than cabling) is located in fire area 7 which is also maintained as a combustible free zone, with the primary combustible loading from cables and cable tray encapsulating material. Although the UFSAR (Section 9A.5.3.7.c) states that ignition of electrical cabling in tray is "extremely unlikely in the absence of a fire source," a smoke detector system provides early warning of the slow developing incipient fire that would be typical for the types of combustibles in the area. The early activation of the smoke detection system provides an audible/visual annunciation in the control room whereby operator actions are expected to mitigate the consequences of the fire before it could develop sufficiently to cause the system to actuate. If the system were to actuate due to a fire event, a flow switch provides an additional alarm to the control room requiring immediate operator actions. As discussed in response to Item 68 below, credit was taken for the opening of doors due to fire brigade response, which would allow water from hand hoses to drain into adjacent nonsafety-related areas containing floor drains.

Although no floor drains are located in fire area 2, the design feature of the installed partial preaction system minimizes the impact to equipment. This system is supervised with instrument air and incorporates a double interlock deluge valve that is maintained normally closed. Sprinkler flow is initiated only when two separate inputs are received; one from a pneumatic actuator, due to the melting of the sprinkler fusible link(s) allowing the supervised air to be released; and the other from the fire detection system that sends a signal to an electric solenoid valve. This system is installed to protect redundant cable trays encapsulated with a 1-hour fire rated material. Although the UFSAR (Section 9A.5.3.2.c) states that ignition of electrical cabling in tray is "extremely unlikely in the absence of a fire source," a smoke detector system provides early warning of a fire throughout the entire area. The early activation of the smoke detection system provides an

audible/visual annunciation in the control room whereby operator actions are expected to mitigate the consequence of the fire before it could develop sufficiently to cause the system to actuate. However, should the system actuate due to a fire, the impact to safe shutdown is mitigated by the location of redundant components outside of this area. This is further supported by MELB evaluations performed in accordance with UFSAR Section 3.6 (Reference; Item 24 of Section 9A.3.1.1, "Detailed Comparison to Branch Technical Position CMEB 9.5-1", of Appendix 9A of the LGS UFSAR) that indicated that equipment was waterspray proof, or judged as not being required to ensure safe shutdown, containment integrity, or containment activity release to 10CFR50.67 limits. In addition, in accordance with Item 210 below, since floor drains were not provided in the safety-related switchgear rooms to prevent water accumulation, credit was taken for the opening of doors to drain water into areas not containing safety-related components.

**Item 68**

BTP Guideline

Floor drains should also be provided in other areas where hand hose lines may be used if such fire fighting water could cause unacceptable damage to safety-related equipment in the area.

LGS Design

All plant areas that are provided with drainage facilities have adequately sized drains to remove all the water discharged from a hand hose line. The only fire areas that are not provided with floor drains and which contain safety-related equipment that is needed for safe shutdown are the 4 kV switchgear compartments (fire areas 12 through 19), the static inverter compartments (fire areas 20 and 21), auxiliary equipment room (fire area 25), and remote shutdown room (fire area 26). The use of hand-held fire hoses in any of these fire areas will not result in flooding that causes unacceptable damage to safety-related equipment.

A fire hose can be used in the 4 kV switchgear compartments only by bringing the hose in through a doorway from adjacent fire areas. For fire areas 12, 14, 16, and 18, the fire hose would be brought in from the generator equipment area (fire zone 113B) along the north side of the control structure. Water discharged from a hose in one of these 4 kV switchgear compartments would flow through the open doorway to fire zone 113B and drain into the floor drains in that area. For fire areas 13, 15, 17, and 19, the fire hose would be brought in from the equipment hatch corridor (fire areas 97 for Unit 1 and 110 for Unit 2) via the control structure corridor (fire area 7). Water discharged from a hose in one of these 4 kV switchgear compartments would flow through the open doorway to fire area 7 and then through the doorway to the equipment hatch corridor. The equipment hatch corridor is provided with floor drains to dispose of the fire fighting water. Since the control structure corridor does not contain any safe shutdown components, the drainage of fire fighting water through the corridor will not have an adverse effect on safe shutdown capability.

A fire hose can be used in the Unit 1 static inverter compartment (fire area 20) only by bringing the hose in from the Unit 1 cable spreading room through an open doorway. Although the Unit 2 static inverter compartment (fire area 21) contains a manual hose station, the fire brigade would fight a fire in this compartment using a hose brought in from the generator equipment area (fire zone 113B) through an open doorway. For both the Unit 1 and Unit 2 static inverter compartments, the doorway that is used for access will remain open during fire fighting activities within the compartment. Water discharged from a hose in the Unit 1 static inverter compartment would flow through the open doorway to the Unit 1 cable spreading room, whereas water discharged from a hose in the Unit 2 static inverter compartment would flow to the generator equipment area. The

cable spreading rooms and the generator equipment area are each provided with floor drains to dispose of the fire fighting water. Since the cable spreading room does not contain any safe shutdown components, the drainage of fire fighting water into the spreading room from the static inverter compartment will not have an adverse effect on safe shutdown capability.

A fire hose can be used in the remote shutdown room (fire area 26) only by bringing the hose in from the control structure stairwell through an open doorway. This stairwell hose reel is the only hose reel available to fight a fire in this area so the door will remain open during fire fighting activities within the room. Water discharged from the hose in the remote shutdown room would flow through the open doorway into the stairwell, which does not contain any safe shutdown components.

A fire hose can be used in the auxiliary equipment room (fire area 25) only by bringing the hose in from the control structure stairwell through an open doorway. This stairwell hose reel is the only hose reel available to fight a fire in this area from the primary attack route so the door will remain open during fire fighting activities within the room. Water discharged from the hose in the auxiliary equipment room would flow through the open doorway into the stairwell, which does not contain any safe shutdown components. The secondary attack route for this area is from fire area 111 through an open door on the east wall of the auxiliary equipment room. Water discharged from the hose in the auxiliary equipment room would flow through the open doorway into the fire area 111, which does not contain any safe shutdown components.

Nonsafety-related areas of the plant that adjoin safety-related areas are provided with floor drains. As a result, fire fighting water that is discharged into the nonsafety-related areas will be disposed of through the floor drains, so that water will not accumulate on the floor and create a potential for inadvertent flooding of the adjoining safety-related areas.

**Item 69**

BTP Guideline

Where gas suppression systems are installed, the drains should be provided with adequate seals, or the gas suppression system should be sized to compensate for the loss of the suppression agent through the drains.

LGS Design

Gas suppression systems are provided for the cable spreading rooms (carbon dioxide), remote shutdown room (Halon 1301), and the raised flooring in the auxiliary equipment room (Halon 1301). The carbon dioxide suppression system is sized to compensate for the loss of carbon dioxide through floor drains. Loss of Halon 1301 through floor drains is not possible, since the auxiliary equipment and remote shutdown rooms do not have floor drains.

**Item 70**

BTP Guideline

Drains in areas containing combustible liquids should have provisions for preventing the backflow of combustible liquids to safety-related areas through the interconnected drain systems.

LGS Design

For the safety-related pump compartments at el 177' of the reactor enclosure, floor drains leading to the reactor enclosure floor drain sump are each provided with backflow prevention devices. The only other safety-related areas of the plant that contain significant quantities of combustible liquids are the diesel generator cells. The drains from the diesel generator cells are not interconnected with drains from other safety-related areas of the plant. The drains from each diesel generator cell are provided with traps upstream of their connection to an oil separator receiver.

The turbine enclosure contains several oil storage tanks, but the floor drains from the turbine enclosure are not interconnected with drains from safety-related areas of the plant.

**Item 78**

BTP Guideline

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

LGS Design

Compressed gases are stored either outdoors or in nonsafety-related structures whenever possible. Compressed gas cylinders used for welding are stored in the construction shop (during periods of usage only) and the machine shop. Hydrogen used in cooling of the main generators is provided from the HWC system tube trailer facility located outside the protected area.

Compressed gas cylinders are stored in safety-related areas of the plant for use with three different systems: PCIG, containment combustible gas monitoring, and offgas hydrogen monitoring. The PCIG system includes compressed gas cylinders located at el 217' in the reactor enclosure. These cylinders contain nitrogen only, and therefore do not constitute a hazard with respect to fire protection. The containment combustible gas monitoring system includes compressed gas cylinders located at el 253' and el 283' in the reactor enclosure. These cylinders contain oxygen and oxygen/nitrogen mixtures, which also do not constitute a hazard with respect to fire protection, since oxygen is not a fuel gas.

The span and reagent gas bottles for the containment combustible gas monitoring systems are located outside the south wall of the Reactor Enclosures. These bottles of high purity oxygen, high purity hydrogen, 7% oxygen and 7% hydrogen are considered transportable, not bulk. The bottles are oriented with the long axis parallel to the Reactor Enclosure walls, minimizing the impact of a bottle failure when combined with the robust design of the Reactor Enclosure.

The offgas hydrogen monitoring system includes two compressed gas cylinders located at el 200' in the control structure. One of these cylinders contains nitrogen and the other contains a nitrogen/hydrogen mixture with a hydrogen content of 7%. An inadvertent release of the nitrogen/hydrogen mixture into the control structure air volume would result in immediate dilution of the hydrogen concentration to less than 4%. Since a hydrogen concentration of less than 4% in air is not combustible, the nitrogen/hydrogen mixture does not constitute a hazard with respect to fire protection.

**Item 79**

BTP Guideline

High pressure gas storage containers should be located with the long axis parallel to building walls.

LGS Design

High pressure gas storage cylinders are stored vertically with their long axis parallel to turbine enclosure walls.

**Item 80**

BTP Guideline

Use of compressed gases (especially flammable and fuel gases) inside buildings should be controlled.

LGS Design

The usage of compressed gases for cutting and welding is limited to those activities authorized as to be outlined in the administrative procedures.

The usage of compressed fuel gases for laboratory and shop use is limited to a low pressure supply system for Bunsen burners in the radioactive chemistry laboratory in the radwaste enclosure and the instrument repair shop on the 269 foot level of the control structure. Compressed fuel gas cylinders and gas pressure- reducing stations are installed outside of the building at a location that does not expose nuclear safety-related structures, systems, and equipment to potential damage from fire at the storage location.

**Item 81**

BTP Guideline

The use of plastic materials should be minimized. In particular, halogenated plastics such as PVC and neoprene should be used only when substitute noncombustible materials are not available.

LGS Design

The use of plastic materials within the plant has been minimized to the greatest extent practicable. However, alternatives to plastic or elastomeric materials for electrical cable insulating systems, with an optimum balance of electrical, physical, and environmental characteristics, are not available. Cable insulation and jacketing materials are chosen for their fire-retardant and self-extinguishing properties, such that fuel contribution to a cable fire is minimized and propagation of a fire along cables is self-limiting in the absence of an external fire hazard. The types of electrical cable insulation and jacketing used in the plant are listed in Table 9A-3.

Electrical components located throughout the plant, such as control panels, relay panels, motor control centers, and power distribution panels, contain relatively small amounts of plastic in the form of terminal blocks, relay cases, circuit breaker cases, and other small items. The use of plastic in these applications is necessary because of its electrically insulating properties.

Plastic materials are also used for electrical conduit, but only when embedded within poured concrete walls and floor slabs.

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**Item 92**

BTP Guideline

Safety-related cable trays of a single division that are separated from redundant divisions by a fire

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with cables associated with other plant systems. Grounding cables are routed independently from

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due to the installation of an automatic sprinkler system in the cable spreading

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| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Water Supplies for Fire Suppression Systems | | | |
| 1. | Two separate water supplies shall be provided to furnish necessary water volume and pressure to the fire main loop. | A | C | |
| 2. | Each supply shall consist of a storage tank, pump, piping, and appropriate isolation and control valves. | A | AC | In lieu of storage tanks, the cooling tower basins of the Unit 1 and Unit 2 circulating water systems are used as the two sources of water for the fire main loop. |
| 3. | These supplies shall be separated so that a failure of one supply will not result in a failure of the other supply. | A | C | See Section 9A.3.2.2. |
| 4. | Each supply of the fire water distribution system shall be capable of providing the maximum expected water demands for a period of 2 hours. | A | C | The storage capacity of each cooling tower is 7,200,000 gallons, which is well in excess of the 387,000 gallon volume required for two hour operation of the largest sprinkler system concurrent with hose stream operation at 500 gpm. |
| 5. | Requirements for ensuring minimum water volume when storage tanks are used for combined service water/fire water uses. | A | NA | See Section 9A.3.2.2. |
| 6. | Requirements for other water systems used as sources of fire protection water. | A | AC | See Section 9A.3.2.2 |
| | Sectional Isolation Valves | | | |
| 7. | Sectional isolation valves such as postindicator valves or key operated valves shall be installed in the fire main loop to permit isolation of portions of the main fire main loop for maintenance or repair without interrupting the entire water supply. | B | C | |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Hydrant Isolation Valves | | | |
| 8. | Valves shall be installed to permit isolation of outside hydrants from the fire main for maintenance or repair without interrupting the water supply to automatic or manual fire suppression systems. | C | C | |
| | Manual Fire Suppression | | | |
| 9. | Standpipe and hose systems shall be installed so that at least one effective hose stream will be able to reach any location that contains or presents an exposure fire hazard to structures, systems, or components important to safety. | D | AC | See Section 9A.3.2.2 |
| 10. | Access to permit effective functioning of the fire brigade shall be provided to all areas that contain or present an exposure fire hazard to structures, systems, or components important to safety. | D | C | |
| 11. | Standpipe and hose stations shall be inside PWR containments and BWR containments that are not inerted. | D | NA | The primary containment is inerted with nitrogen during reactor operation. |
| 12. | For BWR drywells, standpipe and hose stations shall be placed outside the drywell with adequate lengths of hose to reach any location inside the drywell with an effective hose stream. | D | C | The hose reels located nearest the drywell entrances are equipped with a 100 foot length of fire hose. To supplement this hose length, a hose station equipped with enough hose to reach any location within the drywell is located near each drywell entrance. |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Hydrostatic Hose Tests | | | |
| 13. | Fire hose shall be hydrostatically tested at a pressure of 150 psi or 50 psi above maximum fire main operating pressure, whichever is greater. Hose stored in outside hose houses shall be tested annually. Interior standpipe hose shall be tested every three years. | E | C | |
| | Automatic Fire Detection | | | |
| 14. | Automatic fire detection systems shall be installed in all areas of the plant that contain or present an exposure fire hazard to safe shutdown or safety-related systems or components. These fire detection systems shall be capable of operating with or without offsite power. | F | AC | See Item 112 of Section 9A.3.1.2 |
| | Fire Protection of Safe Shutdown Capability | | | |
| 15. | Fire damage shall be limited so that one train of systems necessary to achieve and maintain hot shutdown conditions from either the control room or emergency control station is free of fire damage. | G.1.a | C | |
| 16. | Fire damage shall be limited so that systems necessary to achieve and maintain cold shutdown from either the control room or emergency control station can be repaired within 72 hours. | G.1.b | C | |
| 17. | Consideration of associated nonsafety circuits as requiring protection to ensure freedom from fire damage. | G.2 (part of first paragraph) | C | See Section 9A.6.1 |
| 18. | Alternative means of ensuring that one train of systems necessary to achieve and maintain hot shutdown is free of fire damage (where cables or equipment of redundant trains are located in the same fire area). | G.2.a<br>G.2.b<br>G.2.c | AC | See Section 9A.3.2.2 |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 19. | Alternative means of providing fire protection inside noninerted containments. | G.2.d<br>G.2.e<br>G.2.f | NA | The primary containment is inerted with nitrogen during reactor operation. |
| 20. | Provision of alternative or dedicated shutdown capability in certain fire areas. | G.3 | NC | See Section 9A.3.2.2 |
| | Fire Brigade | | | |
| 21. | Requirements for the onsite fire brigade. | H | C | |
| | Fire Brigade Training | | | |
| 22. | Requirements for training of fire brigade members. | I | AC | See Section 9A.3.2.2. |
| | Emergency Lighting | | | |
| 23. | Emergency lighting units with at least an 8 hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto. | J | C | See Section 9A.3.2.2. |
| | Administrative Controls | | | |
| 24. | Establishment of administrative controls to minimize fire hazards. | K | C | |
| | Alternative and Dedicated Shutdown Capability | | | |
| 25. | The shutdown capability provided for a specific fire area shall be able to achieve and maintain subcritical reactivity conditions in the reactor, maintain reactor coolant inventory, achieve and maintain hot shutdown conditions, achieve cold shutdown conditions within 72 hours, and maintain cold shutdown conditions thereafter. | L.1 | C | |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 26. | During the postfire shutdown, the reactor coolant system process variables shall be maintained within those predicted for a loss of normal ac power, and the fission product boundary integrity shall not be affected. | L.1 | C | |
| 27. | performance goals for the shutdown functions. | L.2 | C | The systems and components relied on for hot shutdown and cold shutdown in the event of a fire have been selected so as to ensure that the listed goals are achieved. |
| 28. | The alternative shutdown capability shall be independent of the specific fire areas. | L.3 | C | |
| 29. | The shutdown capability shall accommodate postfire conditions where offsite power is available and where offsite power is not available for 72 hours. | L.3 | C | All systems and components relied on for hot shutdown and cold shutdown in the event of a fire are capable of being powered from the onsite power supplies, i.e., the station batteries and standby diesel generators. |
| 30. | If the capability to achieve and maintain cold shutdown will not be available because of fire damage, the equipment and systems comprising the means to achieve and maintain the hot shutdown condition shall be capable of maintaining such conditions until cold shutdown can be achieved. | L.4 | C | |
| 31. | If the equipment and systems comprising the means to achieve and maintain hot shutdown conditions will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided. | L.4 | NA | See Section 9A.3.2.2 |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| 32. | Equipment and systems comprising the means to achieve and maintain cold shutdown conditions shall not be damaged by fire; or the fire damage to such equipment and systems shall be limited so that the systems can be made operable and cold shutdown can be achieved within 72 hours. | L.5 | C | |
| 33. | Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs. | L.5 | C | See Section 9A.3.2.2. |
| 34. | If the equipment and systems comprising the means to achieve and maintain cold shutdown conditions (and which are used prior to 72 hours after the fire) will not be capable of being powered by both offsite and onsite power systems because of fire damage, and independent onsite power system shall be provided. | L.5 | NA | See Section 9A.3.2.2. |
| 35. | Shutdown systems installed to ensure positive shutdown capability need not be designed to meet seismic Category I criteria, single failure criteria, or other design basis accident criteria, except where required for other reasons. | L.6 | C | |
| 36. | Isolation of safe shutdown equipment and systems from associated nonsafety circuits. | L.7 | C | See Section 9A.6.1 |
| | Fire Barrier Cable Penetration Seal Qualification | | | |
| 37. | Requirement Deleted | M | N/A | The non-combustibility requirement for fire barrier penetration seals was deleted from 10 CFR 50 Appendix R as documented in the Federal Register, volume 65, No. 119, Tuesday June 20, 2000 (Doc. 00-15544). |
| 38. | Penetration seal designs shall be qualified by tests that are comparable to tests used to rate fire barriers. | M | C | See Section 9A.3.2.2 |

| NO. | APPENDIX R GUIDELINE | APPENDIX R ITEM NO. | COMPARISON | REMARKS |
|---|---|---|---|---|
| | Fire Doors | | | |
| 39. | Acceptance criteria for tests of penetration seal designs. | M.1<br>M.2<br>M.3 | C | The listed criteria are included in documents discussed under item 38. |
| 40. | Fire doors shall be self-closing or provided with closing mechanisms. | N | AC | See Section 9A.3.2.2 |
| 41. | Fire doors shall be inspected semiannually to verify that automatic hold open, release, and closing mechanisms and latches are operable. | N | AC | Fire doors that are not electrically supervised will be inspected semiannually. For doors that are electrically supervised, this supervision provides continual verification that the doors are in the closed position. |
| 42. | Alternative means for ensuring that fire doors protect the door opening as required in case of fire. | N.1<br>N.2<br>N.3<br>N.4 | C | See Section 9A.3.2.2 |
| 43. | The fire brigade Leader shall have ready access to keys for any locked fire doors. | N | C | |
| 44. | Areas protected by automatic total flooding gas suppression systems shall have electrically supervised self-closing fire doors or shall satisfy option 1 above. | N | C | The only automatic total flooding gas suppression systems are the halon systems in the areas under the raised floor of the auxiliary equipment room and the remote shutdown room. There are no fire doors into these areas. |
| | Oil Collection System for Reactor Coolant Pump | | | |
| 45. | The reactor coolant pump shall be equipped with an oil collection system if the containment is not inerted during normal operation. | 0 | NA | The primary containment is inerted with nitrogen during normal reactor operation. |

9A.3.2.2 Explanatory Notes for Appendix R Comparison

**Item 3**

Appendix R Guideline

These supplies shall be separated so that a failure of one supply will not result in a failure of the other supply.

LGS Design

The Unit 1 and Unit 2 circulating water systems are completely separate, so that any failures occurring in one system will not affect the other system. The two fire pumps are located in separate compartments within the circulating water pump structure. The connections of the fire pump discharge lines to the fire main loop are located underground to minimize the potential for damage to the piping.

**Item 5**

Appendix R Guideline

When storage tanks are used for combined service water/fire water uses, the minimum volume for fire uses shall be ensured by means of dedicated tanks or by some physical means such as a vertical standpipe for other water service. Administrative controls, including locks for tank outlet valves, are unacceptable as the only means to ensure minimum water volume.

LGS Design

Storage tanks are not used as the sources of fire protection water. As noted in items 2 and 4 of Section 9A.3.2.1, fire protection water is obtained from the cooling tower basins of the Unit 1 and Unit 2 circulating water systems, each of which has a storage capacity of 7,200,000 gallons. Although the cooling tower basins also serve as the water sources for the service water systems, the storage capacity of the cooling tower basins is sufficient to ensure an adequate water supply for both systems (service water and fire protection water) without dedicating a certain volume of water to either system.

One of the two cooling tower basins will become unavailable as a source of fire protection water if the basin is drained to allow maintenance of it, or if the stop logs are inserted in the 96 inch circulating water lines from the cooling tower to allow work on some portion of the circulating water system. In this situation, the fire pump suction valves from the affected circulating water line will be closed in order to avoid jeopardizing the operability of the fire pumps. The unaffected circulating water lines and cooling tower will remain available to provide fire protection water to both the fire pumps.

**Item 6**

Appendix R Guideline

Other water systems used as one of the two fire water supplies shall be permanently connected to the fire main system and shall be capable of automatic alignment to the fire main system. Pumps, controls, and power supplies in these systems shall satisfy the requirements for the main fire

pumps. The use of other water systems for fire protection shall not be incompatible with their functions required for safe plant shutdown. Failure of the other system shall not degrade the fire main system.

LGS Design

The suction piping of the fire pumps is permanently connected to the 96 inch circulating water lines that supply water from the cooling towers to the main condensers. Since there are no pumps or valves located in the circulating water lines between the cooling tower basins and the connection points of the fire pump suction lines, no realignments are necessary to make the circulating water system available to provide water to the fire pumps. Therefore, there are no active failures of the circulating water system that could degrade the fire main system, and no special requirements are needed for the circulating water pumps or their associated power supplies and controls.

**Item 9**

Appendix R Guideline

Standpipe and hose systems shall be installed so that at least one effective hose stream will be able to reach any location that contains or presents an exposure fire hazard to structures, systems, or components important to safety.

LGS Design

Hose reels are located throughout the plant in areas that either contain systems and components important to safety or present an exposure fire hazard to such areas, with the exception of the spray pond pump structure. Fire suppression capability for the spray pond pump structure is provided by portable fire extinguishers.

As shown in Table 9A-1, the combustible loading in the various compartments of the spray pond pump structure is low enough that portable fire extinguishers are sufficient to extinguish any postulated fire. Those compartments that contain combustible materials are provided with fire detectors that annunciate in the control room. In addition, the spray pond pump structure is divided into two separate fire areas by a 3 hour rated fire wall along the centerline of the structure. A postulated fire in either fire area will leave at least one method available to safely shut the plant down.

**Item 18**

Appendix R Guideline

Except as provided for in paragraph G.3 of this section, where cables or equipment, including associated nonsafety circuits that could prevent operation or cause maloperation due to hot shorts, open circuits, or shorts to ground, of redundant trains of systems necessary to achieve and maintain hot shutdown conditions are located within the same fire area outside of primary containment, one of the following means of ensuring that one of the redundant trains is free of fire damage shall be provided:

a. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a fire barrier having a 3 hour rating. Structural steel forming a part of or

supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated nonsafety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cable and equipment and associated nonsafety circuits of one redundant train in a fire barrier having a 1 hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

LGS Design

To the greatest extent practical, redundant trains of systems necessary to achieve and maintain hot shutdown are located in different fire areas, so that the redundant trains are separated by 3 hour fire barriers. In fire areas where this is not possible due to restrictions on equipment location and electrical cable routing, the capability to achieve hot shutdown is maintained by one of the following alternate means:

a. Enclosing the equipment and cabling of one redundant train in a 3 hour rated fire barrier.

b. Enclosing the equipment and cabling of one redundant train in a 1 hour rated fire barrier, and providing fire detection and automatic fire suppression in the fire area.

c. Dividing a fire area into two portions so that a fire is postulated to occur in only one portion at a time. Division of a fire area is accomplished by establishing a 20 foot wide zone that is free of combustible materials, and providing a water curtain suppression system within the combustible free zone. Components and equipment of redundant trains of systems that are necessary to achieve hot shutdown are located on opposite sides of the combustible free zone. Cables that are needed for operation of one redundant train and are routed through the portion of the fire area that contains equipment of the other redundant train are enclosed in a 3 hour rated fire barrier. Fire detection capability is provided on both sides of the combustible free zone.

d. Methods alternative to the foregoing are utilized in certain fire areas; these individual fire areas are discussed in Sections 9A.5.3, 9A.5.4, and 9A.5.5.

**Item 20**

Appendix R Guideline

Alternative or dedicated shutdown capability and its associated circuits, independent of cables, systems or components in the area, room or zone under consideration, shall be provided:

a. Where the protection of systems whose function is required for hot shutdown does not satisfy the requirement of paragraph G.2 of this section; or

b. Where redundant trains of systems required for hot shutdown located in the same fire area may be subject to damage from fire suppression activities or from the rupture or inadvertent operation of fire suppression systems.

In addition, fire detection and a fixed fire suppression system shall be installed in the area, room, or zone under consideration.

LGS Design

Systems whose function is required for hot shutdown are provided with protection against fire-caused damage in order to ensure that at least one of the redundant trains of these systems remains available in the event of a postulated fire and/or operation of a fire suppression system in any fire area or an alternative shutdown capability is provided to ensure that hot shutdown can be achieved. Alternative methods of shutdown are identified for fires which may occur in the control complex as discussed in Section 9A.5.3.

Components required for hot shutdown are designed so that rupture or inadvertent operation of fire suppression systems will not adversely affect the operability of these components. Where necessary, appropriate protection is provided to prevent impingement of water spray on components required for hot shutdown.

Alternative shutdown capability has been identified for fires that may occur in the control complex. However, a fixed fire suppression system may not be provided in the area, room, or zone under consideration. Compliance with Position C.5.c of BTP CMEB 9.5-1 is discussed in Section 9A.3.1.1, Item 76.

**Item 22**

Appendix R Guideline

Requirements for training of fire brigade members.

LGS Design

Fire Protection program objectives for training fire brigade members is accomplished by using a combination of in plant areas and an off-site training facility that simulates plant physical conditions. Drills are conducted in conformance with plant fire drill procedures.

An off-site facility enables drills to include the use of live fire conditions. These elements plus the use of breathing apparatus and full protective clothing create actual conditions that would be encountered during a real plant fire emergency. Additional drills, including backshift unannounced drills are conducted in plant areas throughout the year.

**Item 23**

Appendix R Guideline

Emergency lighting units with at least an 8 hour battery power supply shall be provided in all areas needed for operation of safe shutdown equipment and in access and egress routes thereto.

LGS Design

Fixed self-contained lighting units with individual 8 hour battery power supplies are provided in all areas to which access may be needed for manual actuation of safe shutdown of equipment, and in access and egress routes thereto. The locations where remote actions are required for achieving safe shutdown in the event of a postulated fire are listed in Table 9A-14. Self-contained battery powered lighting units will maintain a lighting level of at least nominal 0.5 footcandle in the listed areas and in access and egress paths thereto.

In addition to the self-contained individual battery powered lighting units, there is an emergency lighting system consisting of an ac subsystem and an ac/dc subsystem. The emergency ac lighting is powered from Class IE buses which automatically transfer to the standby diesel generators upon loss of the normal power source. Emergency ac lighting is provided throughout the plant to maintain minimum lighting levels necessary for access to and operation of equipment for a period greater than 24 hours. The general location of the emergency ac lighting and the associated lighting levels are shown on Table 9.5-12.

The emergency ac/dc lighting is normally powered from the Class IE buses. In the event of loss of the Class IE ac source, an automatic transfer switch immediately transfers this lighting to the 125 V dc non-Class IE station battery source. This power source will sustain the ac/dc lighting load on battery power for some period of time and could sustain the lights indefinitely if the diesel generator feeding the battery charger is available. All emergency ac/dc lighting fixtures are of the incandescent type. Emergency ac/dc lighting is provided throughout the plant to maintain minimum lighting levels necessary for access to and operation of equipment. The general location of the ac/dc lighting and the associated lighting levels are shown on Table 9.5-12.

The cables for both emergency lighting subsystems are routed exclusively in conduit, most of which is embedded in concrete. The locations of the power distribution buses and the cable routing for the two emergency lighting subsystems are separated to the extent practical such that a fire in any given area is not likely to cause the loss of both lighting subsystems in areas to which access is needed for the operation of safe shutdown equipment.

**Item 31**

Appendix R Guideline

If the equipment and systems comprising the means to achieve and maintain hot shutdown conditions will not be capable of being powered by both onsite and offsite electric power systems because of fire damage, an independent onsite power system shall be provided.

LGS Design

There is no postulated fire in any given fire area that could cause the simultaneous loss of both the offsite and onsite power supplies. Therefore, an additional redundant onsite power supply is not needed to ensure that safe shutdown can be achieved.

**Item 33**

Appendix R Guideline

Materials for such repairs shall be readily available onsite and procedures shall be in effect to implement such repairs.

LGS Design

A total of six different types of repair actions may be needed in order to compensate for the effects of fire-caused damage to equipment and systems involved in achieving and maintaining cold shutdown conditions. The six types of repair actions are described below.

a. It may be necessary to install a temporary cable in order to provide power to the ADS valves or the MSRVs and monitoring instruments at the Remote Shutdown Panel. The repair action is intended to ensure continued availability of electrical power to the ADS valves or MSRVs so that the valves can be opened by operators at the Control Room, PGCC, or Remote Shutdown Panel as necessary. In the case of power for the operation of the MSRVs from the Remote Shutdown Panel, power is also provided for the continued operation of Reactor Vessel and Suppression Pool instrumentation at the RSP. This repair action is only needed in the event of a loss of the ac power supplies to the battery chargers associated with the normal dc battery power supply. The temporary cable will be used to supply power from the Division 2 dc distribution panel to either the Division 1 or Division 3 circuit that provides power to the ADS valves or the MSRVs/RSP instruments.

b. The design of the ESW system includes intertie lines with both the Unit 1 service water system and the Unit 2 service water system. The intertie lines that allow water in the ESW piping to return to the service water system are each provided with two redundant air-operated isolation valves in series. When a given loop of the ESW system is placed in operation, the intertie lines associated with that particular loop need to be isolated in order to prevent long-term diversion of water from the ESW system to the service water system. It may be necessary to remove the air supply tubing for individual isolation valves to ensure that at least one valve in each intertie line closes and remains closed. This action is needed only if both isolation valves in a given intertie line remain open and cannot be reclosed during the first 24 hours of ESW system operation. The isolation valves affected are HV-011-043, HV-011-048, HV-011-121, HV-011-124, HV-011-125, HV-011-221, and HV-011-225.

c. A source of compressed gas may be required to support ADS valve or MSRV operation. The gas is required to allow opening of the valves as required for depressurization and shutdown. An air jumper will be used to connect the tank of a diesel generator air start system to the primary containment instrument gas system. Another air jumper will be connected to open valve HV-059-1(2)29B and leads to valve SV-059-1(2)52A or B may be cut to open it and allow the compressed gas system to function. This repair is only required if the primary containment instrument gas system does not operate.

d. If the Control Room or Auxiliary Equipment Room HVAC system becomes unavailable due to fire damage, it may be necessary to provide a temporary means of ventilating the affected rooms. Ventilation for the control room will need to be re-established no earlier than nine hours after the loss of HVAC. Ventilation of the auxiliary equipment room and remote shutdown panel room will need to be re-established no earlier than seven hours after the loss of HVAC. Ventilation of the 4

kV switchgear rooms and static inverter rooms via natural convection will need to be re-established no earlier than four hours after the loss of HVAC. If necessary, a temporary ventilation capability will be established for the main control room, auxiliary equipment room and remote shutdown panel area by setting up portable fans and flexible duct-work and by opening doors to create an air flow pathway. The portable fans will be powered from either an onsite power source or a mobile diesel generator. A diesel generator that is dedicated to this service is stored onsite in a readily accessible location. Operability of the diesel generator will be ensured by a surveillance and maintenance program. This repair is only required if the normal HVAC fails as a result of the fire.

e. If the Spray Pond Pump Structure HVAC becomes unavailable due to fire damage, it may be necessary to provide a temporary means of ventilating the structure. Ventilation of the structure needs to be re-established no earlier than four and a half hours after the loss of HVAC. If necessary, a repair will be performed to establish a flow path for natural convection through the structure. In addition to opening doors in the spray pond pump structure, it will be necessary to partially disassemble a damper mechanism in order to permit the damper to be opened manually. This repair is only required if the normal HVAC fails as a result of the fire.

f. It may be necessary to utilize existing station procedures for "Loss of Shutdown Cooling" to establish a flow path for RHR shutdown cooling. Permissives to open the shutdown cooling suction line inboard and outboard isolation valves and the shutdown cooling return line outboard isolation valves are not included in the FSSD model and may not be available post-fire. Existing station procedures provide direction to Operations to establish the shutdown cooling flow path. Repair actions will operate the valves at the MCC via the use of jumpers.

For all six types of repairs described above, the tools and materials needed to perform the repairs are stored in readily accessible locations on site. Procedures governing the implementation of the repairs are in effect.

**Item 34**

Appendix R Guideline

If the equipment and systems comprising the means to achieve and maintain cold shutdown conditions (and which are used prior to 72 hours after the fire) will not be capable of being powered by both onsite and offsite power systems because of fire damage, an independent onsite power system shall be provided.

LGS Design

There is no postulated fire in any given fire area that could cause the simultaneous loss of both the offsite and onsite power supplies. Therefore, an additional redundant onsite power supply is not needed for permanent plant equipment to ensure that safe shutdown can be achieved. A mobile diesel generator is stored onsite for use in providing power to temporary fans that may be needed to provide ventilation for the control room, auxiliary equipment room, and remote shutdown room.

**Item 38**

Appendix R Guideline

Penetration seal designs shall be qualified by tests that are comparable to tests used to rate fire barriers.

LGS Design

The designs of penetration seals in fire-rated barriers are tested to verify that the penetration seals are adequate to provide a specific degree of protection against the propagation of fire through the barriers. These tests are performed in accordance with the guidelines provided in the following documents:

a. Institute of Electrical and Electronics Engineers, IEEE 634 (1978), "IEEE Standard Cable Penetration Fire Stop Qualification Test".

b. NRC, Draft Regulatory Guide, "Qualification Test for Cable Penetration Fire Stops for Use in Nuclear Power Plants", (July 1979).

c. NEL-PIA/MAERP, "Standard Method of Fire Tests of Cable and Pipe Penetration Fire Stops", (February 1976).

d. American Nuclear Insurers, "ANI Position on Fire Stop Test Standards", (September 1979).

**Item 40**

Appendix R Guideline

Fire doors shall be self-closing or provided with closing mechanisms.

LGS Design

With the exception of watertight doors, all fire doors are provided with one of the following two features:

a. A self-closer to ensure that a normally closed door returns to the closed position after someone passes through it.

b. An automatic closing mechanism to ensure that a normally open door will close if there is a fire in the vicinity of the door.

Watertight doors that also serve as fire doors cannot be provided with self-closers or automatic closing mechanisms, due to the inherent restrictions of their design and function. These watertight doors are electrically supervised or inspected daily.

**Item 42**

Appendix R Guideline

One of the following measures shall be provided to ensure they will protect the opening as required in case of fire:

a. Fire doors shall be kept closed and electrically supervised at a continuously manned location;

b. Fire doors shall be locked and inspected weekly to verify that the doors are in the closed position;

c. Fire doors shall be provided with automatic hold open and release mechanisms and inspected daily to verify that doorways are free of obstructions; or

d. Fire doors shall be kept closed and inspected daily to verify that they are in the closed position.

LGS Design

Appropriate steps are taken to ensure that safe shutdown fire doors either are closed or will close when required in the event of a fire. One of the four measures listed above is followed for each safe shutdown fire door .

## 9A.4 EVALUATION OF POTENTIAL FIRE HAZARDS

### 9A.4.1 SCOPE OF EVALUATION

This chapter provides an evaluation of the potential for occurrence of fires within the plant and a summary of the capabilities of the existing fire protection program. This evaluation was performed for all structures that contain safety-related equipment or could affect safety-related structures by virtue of the fire hazards present.

A review of the plant was made to identify the combustible materials present, quantify the fire hazard in terms of combustible loading, and relate the potential hazard to the capabilities of the existing fire barriers and fire suppression systems. This information is presented in Table 9A-1 which lists the type of combustible materials present in each fire zone, the corresponding combustible loading, and the availability of detection and suppression equipment. Figures 9A-4 through 9A-12 show the locations of the fire zones, fire barriers, and fire suppression coverage.

### 9A.4.2 PROCEDURE

The evaluation of fire hazards was performed using a procedure that is summarized by the following steps:

a. For identification purposes, the various structures of the plant were divided into specific fire areas. A fire area is defined as that portion of a structure that is separated from other areas by boundaries (walls, floors, and ceilings) which are of a type of construction which is sufficient to prevent the spread of fire across the boundary, considering the combustible loading in the area. Many fire areas were further subdivided into fire zones to permit more precise identification of the locations of combustible materials, fire detection and suppression systems, and components associated with safety-related systems. The breakdown into fire zones was based on the locations of interior walls and slabs within each fire area. Fire areas are identified by a unique number, and fire zones within the same fire area are identified by a subletter. The fire area and fire zone designations are listed in Table 9A-1 "AREA-ZONE".

b. Each fire zone was surveyed to determine the type, quantity, and distribution of combustible materials present.

c. The combustible loading for each fire zone is determined based on the quantity of combustible materials present and the heat of combustion of each type of combustible material. The heat of combustion values used in this analysis are listed in Table 9A-2. The quantity of each type of combustible material (UNIT) is multiplied by the appropriate heat of combustion (BTU/UNIT) to determine the heat release (BTU) of each type of combustible material. The total heat release of all combustibles in the fire zone was then calculated by adding the heat release of each combustible material. To obtain the combustible loading (in BTU/ft$^2$) for each fire zone, the total heat release (in BTU) was divided by floor area of the fire zone.

d. The methodology for calculating fire severity (hours) is based on information presented in the 17$^{th}$ edition of the NFPA Handbook. The methodology uses the relationship between the calculated fire load in an area and an exposure to a fire severity which is equivalent to the standard time-temperature curve which is used

as the exposure fire in the fire resistance rating tests (ASTM E-119). The steps involved in calculating fire severity are as follows:

1. Calculate the fire load (BTU/ft$^2$) for an area as stated within the methodology.

2. Divide the calculated fire load by 80,000 BTU/ft $^2$hr to obtain fire severity:

$$\text{Fire Severity} = \frac{\text{Fire Load BTU / ft}^2}{\text{80,000 BTU / ft}^2\text{ hr}}$$

e. The clarification of the fire loading in a zone is based on the results of fire loading studies performed by the British (contained in the 17th edition of the Fire Protection Handbook). The results of the study show that the loading in an occupancy can be classified as low, moderate, or high, defined by the fire loading (BTU/ft$^2$) of the occupancy. The classifications are defined as follows:

Low - The fire load of a zone is classified as low if it does not exceed an average of 60,000 BTU/ft$^2$ of floor area. This loading corresponds to a fire severity of 45 minutes using the standard time temperature curve (ASTM E-119). Classification of fire load in a fire zone or area as low identifies the zone as having a fire severity below that which could be expected to be contained within a 1-hr fire rated enclosure.

Moderate - The fire load of a zone is classified as moderate if it exceeds an average of 60,000 BTU/ft$^2$ but does not exceed an average of 140,000 BTU/ft$^2$ of floor area. This loading corresponds to a fire severity of 1 hour, 45 minutes using the standard time temperature curve. Classification of fire load in fire zone or area as moderate identifies the zone as having a fire severity below that which could be expected to be contained within a 2-hr fire rated enclosure.

High - The fire load of a zone is classified as high if it exceeds an average of 140,000 BTU/ft$^2$ of floor area. This loading corresponds to a fire severity in excess of 1 hour, 45 minutes using the standard time temperature curve. Classification of fire zone or area as high identifies the zone as having a fire severity which could be expected to be contained within a 3-hour fire rated enclosure provided the defense in depth concept has been provided for high hazard concentrations of combustibles.

No Combustibles Allowed - Item 112 of Section 9A.3.1.2, Explanatory Notes for Comparison to Branch Technical Position CMEB 9.5-1 address a deviation from the installation of automatic fire detection in certain fire zones based on the lack of combustible material located in these

areas. Therefore, in order to comply with the commitments identified in item 112 no combustible materials are allowed.

Control of Combustibles - The NRC granted a deviation on separation requirements based on fire protection defense-in-depth features and low combustible loading. In order to maintain the basis for the deviation from separation requirements, the combustible loading in these areas shall be controlled. Any increase in combustible loading shall be reviewed and approved by the licensee's fire protection engineer.

## 9A.5 ANALYSIS OF CAPABILITY TO ACHIEVE SAFE SHUTDOWN

### 9A.5.1 METHODOLOGY

This chapter provides an evaluation of the effects of postulated fires in each fire area on the ability of the operator to achieve a safe shutdown of the plant. Of the numerous possible combinations of equipment that could be used to effect a safe shutdown, four specific combinations were selected for detailed study for the purposes of this evaluation. These four shutdown methods are described in Section 9A.5.2.

In performing the safe shutdown analysis, the four shutdown methods were examined to determine the minimum equipment, control, and power requirements for operability of each method. The locations of the equipment itself and the cabling associated with the required equipment were identified with respect to the various fire areas.

Each fire area was then examined to determine which components associated with the shutdown methods, if any, would be rendered inoperable by the occurrence of a fire within the fire area. The results of the safe shutdown analysis are summarized in Sections 9A.5.3 through 9A.5.9 for each fire area.

The following assumptions were used in performing the safe shutdown analysis:

a. No credit is taken for manual fire fighting efforts or the operation of automatic fire suppression systems. The fire is assumed to disable all equipment and electrical cabling located in the fire area, unless the fire hazard analysis demonstrates otherwise. An electrical cable tray fire is assumed not to propagate from one tray to another, since separation is provided in accordance with Regulatory Guide 1.75.

b. Plant accidents and severe natural phenomena are not considered to occur concurrently with the postulated fire.

c. A single active component failure is not assumed to occur concurrently with the fire.

d. Credit is taken for reactor trip. Any fire affecting the RPS or the CRD circuitry will not prevent the reactor from being tripped. A reactor trip can be performed manually (in the control room), automatically (by the RPS logic), or by tripping the RPS power supplies (in the auxiliary equipment room).

e. No credit is taken for proper operation or proper positioning of equipment which is not separated or protected in accordance with the guidelines of 10CFR50, Appendix R, unless the safe shutdown analyses presented in Sections 9A.5.3 and 9A.5.4 demonstrate the adequacy of the existing design. For such equipment, loss of operability or spurious operation is assumed, whichever is more conservative. This assumption provides a worst case analysis regarding spurious signals associated with cabling failures in a fire area.

f. For Alternative or Dedicated Shutdown Capability as defined in Chemical Mechanical Engineering Branch Technical Position (CMEBTP) 9.5-1, "Fire Protection Program", and 10CFR50, Appendix R, III, L, offsite power is assumed to be unavailable during the first 72 hours after the onset of the fire. However, no

credit is taken for loss of offsite power in situations for which a loss of offsite power would be advantageous.

g. For Safe Shutdown, as defined in Chemical Mechanical Engineering Branch Technical Position 9.5-1, (CMEBTP) "Fire Protection Program", and 10CFR50, Appendix R, III, offsite power is assumed to be available: except if the fire would cause a loss of offsite power.

One single spurious operation of a non-high/low pressure interface FSSD component is postulated to occur for a fire event. Any number of hot shorts, open circuits, or shorts to ground may occur, but they will result in only one single spurious actuation. Three phase hot shorts of the proper voltage and phase sequence capable of spuriously operating a device are not postulated.

In the discussions of individual fire areas contained in Sections 9A.5.3 through 9A.5.9, paragraph (c) addresses the nature of the fire that is postulated to occur in each fire area. Paragraph (c) relates to potential fires involving in situ combustible materials, and does not preclude the postulation of fires involving transient combustibles. In all cases, the safe shutdown analysis and the resulting fire protection features for each fire area are based on the potential for an exposure fire to affect all components and cables within the fire area.

Those floor slabs identified by an asterisk following the indicated fire rating in the fire area discussions contained in Sections 9A.5.3 through 9A.5.9 are discussed in Item 37 of Section 9A.3.1. Those fire doors identified in Sections 9A.5.3 through 9A.5.9 by a double asterisk (**) following the indicated fire rating are discussed in Item 48 of Section 9A.3.1.

## 9A.5.2 DESCRIPTION OF REACTOR SHUTDOWN METHODS

The following sections provide descriptions of methods that can be used for reactor shutdown and cooldown. Each of these methods includes a system by which makeup water can be added to the reactor vessel, a system by which energy can be removed from the reactor vessel, and any support systems needed to accommodate energy removal to an ultimate heat sink or to return water to its supply source.

Although the safe shutdown analysis for the various fire areas places primary emphasis on achievement of reactor shutdown using the methods described below, many alternative shutdown methods would be available. Use of safety-related and nonsafety-related systems not addressed in the safe shutdown analysis, plus manual operation of certain equipment and controls, would provide numerous combinations of systems with adequate capability to safely shut the plant down.

### 9A.5.2.1 Reactor Shutdown With Balance of Plant Cooling Systems Available

After the turbine-generator has been tripped and all control rods inserted into the reactor core during the course of a normal shutdown and cooldown, reactor decay heat and sensible heat is removed by bypassing main steam to the condenser. Heat is removed from the condenser by the circulating water system and rejected to the atmosphere by the cooling tower. Makeup water is supplied to the reactor vessel by the condensate and feedwater system, taking suction on the condenser hotwell. When the reactor has been depressurized below a nominal 75 psig, the RHR system is initiated in the shutdown cooling mode of operation. In this mode, reactor water is circulated through the RHR heat exchangers, where it is cooled by the RHRSW system. Heat is rejected from the RHRSW system to the atmosphere by using either the cooling tower or the spray pond. The reactor vent valves are opened when reactor pressure reaches atmospheric.

9A.5.2.2 Reactor Shutdown Without Balance of Plant Cooling Systems Available

Four specific methods of achieving cold shutdown and maintaining the plant in that condition have been defined for use in analyzing the capability to safely shut the plant down in the event of a fire. Three of the specific shutdown methods (designated as methods A, B and C) are directed from the Main Control Room and may be supplemented by local operator actions, including actions at the Remote Shutdown Panel (RSP). The fourth shutdown method (designated as method R) is directed from the RSP and may be supplemented by local operator actions. Shutdown methods A, B, C and R each include systems and components necessary to accomplish the major functions of (a) providing makeup water to the reactor vessel, (b) depressurizing the reactor vessel, and (c) removing decay heat and sensible heat from the primary containment. The systems in each shutdown method that are directly relied on for accomplishing these functions are as follows:

| Shutdown Method | Pressure Control | Inventory Control | Decay Heat Removal (Vessel) | Decay Heat Removal (Pool) |
|---|---|---|---|---|
| A | ADS or MSRV | RCIC | RHR in Shutdown Cooling Mode or Alternate Shutdown Cooling Mode | RHR in the Suppression Pool Cooling Mode |
| B | ADS or MSRV | HPCI | RHR in Shutdown Cooling Mode or Alternate Shutdown Cooling Mode | RHR in the Suppression Pool Cooling Mode |
| C | ADS or MSRV | RHR in the LPCI Mode | RHR in Shutdown Cooling Mode or Alternate Shutdown Cooling Mode | RHR in the Suppression Pool Cooling Mode |
| R | MSRV | RCIC | RHR (Loop A) in Shutdown Cooling Mode | RHR (Loop A) in the Suppression Pool Cooling Mode |

The main safe shutdown components that may be relied upon to achieve safe shutdown using these methods are listed in Table
9A-4.

Method A

After closure of the Main Steam Isolation Valves (MSIVs), the RCIC system is used to supply makeup water to the reactor vessel from the suppression chamber. The operation of the RCIC system also removes energy from the reactor in the form of steam to drive the RCIC turbine. During the period in which steam is generated at a rate greater than the consumption of the RCIC system, steam is relieved to the suppression pool by automatic actuation of the Main Steam Relief Valves (MSRV's), which open when reactor pressure reaches the valve setpoint. Heat is removed from the suppression pool by operating a loop of the RHR system in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through the RHR heat exchanger and then returned to the suppression pool. In order to initiate

operation of the shutdown cooling mode of the RHR system, it is necessary to depressurize the reactor below a nominal pressure of 75 psig. This is accomplished by using the ADS valves or MSRV's to discharge steam to the suppression pool. When the reactor has been depressurized below 75 psig, operation of the RCIC system is terminated and the RHR system is switched from the suppression pool cooling mode to the shutdown cooling mode. An alternate shutdown cooling mode has been defined and may be used with Method A instead of the standard shutdown cooling mode. This involves using the RHR pump to circulate water from the suppression pool through the RHR heat exchanger and discharge it into the reactor vessel through the LPCI injection line or through the shutdown cooling return line to the reactor recirculation loop. Water from the reactor vessel is returned to the suppression pool by opening one or more of the ADS valves or MSRVs. The water level in the reactor vessel rises to the main steam line nozzles , allowing water to partially fill the main steam lines and then flow through the open relief valve and down the MSRV discharge line to the suppression pool.

In the suppression pool cooling mode and the shutdown cooling modes, heat is removed from the RHR heat exchanger by the RHRSW system, which in turn dissipates heat at the spray pond. The shutdown cooling or alternate shutdown cooling mode of RHR will maintain the reactor in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in this shutdown method may need to be performed manually from outside the control room. The specific operations are identified in Table 9A-14.

Method B

After closure of the Main Steam Isolation Valves (MSIVs), the HPCI system is used to supply makeup water to the reactor vessel from the suppression chamber. The operation of the HPCI system also removes energy from the reactor in the form of steam to drive the HPCI turbine. During the period in which steam is generated at a rate greater than the consumption of the HPCI system, steam is relieved to the suppression pool by automatic actuation of the Main Steam Relief Valves (MSRV's), which open when reactor pressure reaches the valve setpoint. Heat is removed from the suppression pool by operating a loop of the RHR system in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through the RHR heat exchanger and then returned to the suppression pool. In order to initiate operation of the shutdown cooling mode of the RHR system, it is necessary to depressurize the reactor below a nominal pressure of 75 psig. This is accomplished by using the ADS valves or MSRV's to discharge steam to the suppression pool. When the reactor has been depressurized below 75 psig, operation of the HPCI system is terminated and the RHR system is switched from the suppression pool cooling mode to the shutdown cooling mode. An alternate shutdown cooling mode has been defined and may be used with Method B instead of the standard shutdown cooling mode. This involves using the RHR pump to circulate water from the suppression pool through the RHR heat exchanger and discharge it into the reactor vessel through the LPCI injection line or through the shutdown cooling return line to the reactor recirculation loop. Water from the reactor vessel is returned to the suppression pool by opening one or more of the ADS valves or MSRVs. The water level in the reactor vessel rises to the main steam line nozzles , allowing water to partially fill the main steam lines and then flow through the open relief valve and down the MSRV discharge line to the suppression pool.

In the suppression pool cooling mode and the shutdown cooling modes, heat is removed from the RHR heat exchanger by the RHRSW system, which in turn dissipates heat at the spray

pond. The shutdown cooling or alternate shutdown cooling mode of RHR will maintain the reactor in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in this shutdown method may need to be performed manually from outside the control room. The specific operations are identified in Table 9A-14.

Method C

After closure of the MSIVs, the reactor is depressurized by manually controlling the valves of the ADS or three or more MSRVs. The opening of these valves allows reactor steam to be discharged to the suppression pool. Makeup water is supplied to the reactor vessel from the suppression pool by operating a loop of the RHR system in the LPCI mode after reactor pressure has decreased to a nominal 295 psig. When the reactor has been depressurized below 75 psig, the RHR system is switched from the suppression pool cooling mode to the shutdown cooling mode. An alternate shutdown cooling mode has been defined and may be used with method C instead of the standard shutdown cooling mode. This involves using the RHR pump to circulate water from the suppression pool through the RHR heat exchanger and discharge it into the reactor vessel through the LPCI injection line or through the shutdown cooling return line to the reactor recirculation loop. Water from the reactor vessel is returned to the suppression pool by opening one or more of the ADS valves or MSRVs. The water level in the reactor vessel rises to the main steam line nozzles , allowing water to partially fill the main steam lines and then flow through the open relief valve and down the MSRV discharge line to the suppression pool.

In the suppression pool cooling mode and the shutdown cooling modes, heat is removed from the RHR heat exchanger by the RHRSW system, which in turn dissipates heat at the spray pond. The shutdown cooling or alternate shutdown cooling mode of RHR will maintain the reactor in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in this shutdown method may need to be performed manually from outside the control room. The specific operations are identified in Table 9A-14.

Method R - Reactor Shutdown from Outside the Control Room

In the unlikely event that a fire disables or requires evacuation of the Control Room, an alternative shutdown capability is provided compliant with Position C.5.c of BTP CMEB 9.5-1. The capability is designated as shutdown method R and is used to effect a plant shutdown directed from the Remote Shutdown Panel (RSP).

The shutdown sequence is similar to Shutdown Method A except that the methodology is centered around equipment that may be controlled from the RSP. After closure of the Main Steam Isolation Valves (MSIVs), the RCIC system is used to supply makeup water to the reactor vessel from the suppression chamber. The operation of the RCIC system also removes energy from the reactor in the form of steam to drive the RCIC turbine. During the period in which steam is generated at a rate greater than the consumption of the RCIC system, steam is relieved to the suppression pool by automatic actuation of the Main Steam Relief Valves (MSRVs), which open when reactor pressure reaches the valve setpoint. Heat is removed from the suppression pool by operating the A loop of the RHR system in the suppression pool cooling mode. In this mode, water from the suppression pool is circulated through the RHR heat

exchanger and then returned to the suppression pool. In order to initiate operation of the shutdown cooling mode of the RHR system, it is necessary to depressurize the reactor below a nominal pressure of 75 psig. This is accomplished by using the MSRVs A, C, and N to discharge steam to the suppression pool. When the reactor has been depressurized below 75 psig, operation of the RCIC system is terminated and the A loop of the RHR system is switched from the suppression pool cooling mode to the shutdown cooling mode. In the suppression pool cooling mode and the shutdown cooling modes, heat is removed from the RHR heat exchanger by the RHRSW system, which in turn dissipates heat at the spray pond. The shutdown cooling mode of RHR will maintain the reactor in a cold shutdown condition.

Depending on the location of a fire within the plant, certain operations that are used in this shutdown method may need to be performed manually from outside the control room. The specific operations are identified in Table 9A-14.

## 9A.5.3 SAFE SHUTDOWN ANALYSIS - CONTROL STRUCTURE

### 9A.5.3.1 Fire Area 1: Recombiner Compartments, Condensate Backwash Compartments, and Control Structure Water Chiller Areas (el 180'-0" and 200'-0")

a. Structural and architectural design features of fire area (Figures 9A-4 and 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | N - Reinforced concrete (part; contains 5 $ft^2$ of unrated metal blowout panels) | 3 hr |
| | N - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part below el 200'-0") | 3 hr |
| | S - Concrete masonry unit (part above el 200'-0", eastern half) | 3 hr |
| | S - Concrete masonry unit (part above el 200'-0", western half, contains two HVAC penetrations without fire dampers) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Steamtight door connecting to stairwell no. 7 | 1.5 hr |
| | Double steamtight doors connecting to areas 89 and 102 | 3 hr** |

b. Major safety-related components in fire area:

1. Control structure water chillers 0AK112 and 0BK112

2. Control structure chilled water circulation pumps 0AP162 and 0BP162

c. Postulated fire in area:

1. Ignition of electrical cabling in cable trays. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of oil in a waste oil collection drum associated with the floor drain sump oil removal belt.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 1 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are either: encapsulated by qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

9A.5.3.2 Fire Area 2: 13 kV Switchgear Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Concrete masonry unit - (part adjacent to battery rooms) | 3 hr |
| | E - | Reinforced concrete - (remainder) | 3 hr |
| | S - | Reinforced concrete | 3 hr |
| | W - | Reinforced concrete (part) | 3 hr |
| | W - | Concrete masonry unit (part adjacent to battery rooms) | 3 hr |
| | W - | Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |

| | | |
|---|---|---|
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Door connecting to stairwell no. 7 | 1.5 hr |
| | Doors connecting to areas 3, 4, 5, and 6 | 3 hr |
| | Double steamtight doors connecting to areas 94, 107, and 113 | 3 hr** |

b. Major safety-related components in fire area:

1. Emergency switchgear and battery room fan cabinets OAV118 and OBV118 and associated ventilation dampers

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to the area.

A localized sprinkler system is provided in the area adjacent to the Column Line “J” wall, to provide protection for 1-hour encapsulated safe shutdown cables. When the temperature in the area reaches a nominal 200°F, combined with a smoke detection signal, the sprinklers will open to control the fire.

e. Effect of fire on safe shutdown:

Fire area 2 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Units 1 and 2 are either: encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, method C will be available to shutdown Units 1 and 2.

9A.5.3.3 Fire Area 3: Unit 1 Class 1E Battery Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 2 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (See Section 9A.3.1.2, Item 46) | 3 hr* |
| Access: | Door connecting to area 2 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E battery 1DD101 (Div. 4)

2. Battery charger 1DD103

3. Fuse box 1DD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detector, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 3 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.3.4 Fire Area 4: Unit 1 Class 1E Battery Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (See Section 9A.3.1.2, Item 46) | 3 hr* |
| Access: | Door connecting to area 2 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E battery 1CD101 (Div. 3)

2. Battery charger 1CD103

3. Fuse box 1CD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detector, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 4 contains safe shutdown cables and equipment.

Cables associated with shutdown method A for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method A for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.3.5 Fire Area 5: Unit 2 Class 1E Battery Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (See Section 9A.3.1.2, Item 46) | 3 hr* |
| Access: | Door connecting to area 2 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E battery 2DD101 (Div. 4)

2. Battery charger 2DD103

3. Fuse box 2DD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detector, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 5 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1

and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.3.6 Fire Area 6: Unit 2 Class 1E Battery Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete<br>(See Section 9A.3.1.2, Item 46) | 3 hr* |
| Access: | Door connecting to area 2 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E battery 2CD101 (Div. 3)
2. Battery charger 2CD103
3. Fuse box 2CD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 6 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1

and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.3.7 Fire Area 7: Corridor (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 9, 11, 13, 15, 17, and 19 | 3 hr |
| | Steamtight doors connecting to areas 97 and 110 | 3 hr** |

b. Major safety-related components in fire area: None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. When the temperature in the area reaches a nominal 200°F, the sprinkler will open to control the fire. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to the area.

e. Effect of fire on safe shutdown:

Fire area 7 contains safe shutdown cables but does not contain safe shutdown equipment.

Cables required to support shutdown methods A and C for Units 1 and 2 are either: encapsulated by a qualified fire barrier, associated with equipment that have redundant

components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

9A.5.3.8 Fire Area 8: Unit 1 Class 1E Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 9 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E batteries 1B1D101 and 1B2D101 (Div. 2)

2. Battery chargers 1B1D103 and 1B2D103

3. Fuse box 1BD105

4. Class 1E dc distribution panels 1BD162 (Div. 2) and 1DD162 (Div. 4)

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 8 contains safe shutdown cables and equipment.

Cables associated with shutdown methods A and C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 1 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

9A.5.3.9 Fire Area 9: Unit 1 Class 1E Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 7 and 8 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E batteries 1A1D101 and 1A2D101 (Div. 1)
2. Battery chargers 1A1D103 and 1A2D103
3. Fuse box 1AD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 9 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

9A.5.3.10 Fire Area 10: Unit 2 Class 1E Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 11 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E batteries 2B1D101 and 2B2D101 (Div. 2)
2. Battery chargers 2B1D103 and 2B2D103
3. Fuse box 2BD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 10 contains safe shutdown cables and equipment.

Cables associated with shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 1 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area. The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2.

9A.5.3.11 Fire Area 11: Unit 2 Class 1E Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 7 and 10 | 3 hr |

b. Major safety-related components in fire area:

1. Class 1E batteries 2A1D101 and 2A2D101 (Div. 1)
2. Battery chargers 2A1D103 and 2A2D103
3. Fuse box 2AD105

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 11 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.

9A.5.3.12 Fire Area 12: Unit 1 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr§ |
| | E - Concrete masonry unit | 3 hr§ |
| | S - Concrete masonry unit | 3 hr§ |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 13 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 12 from fire areas 13, 14, and 113.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 10A117 (Div. 3)

2. Class 1E dc distribution panels 1CD102 and 1CD162 (Div. 3)
3. Class 1E instrument ac distribution panel 10Y103 (Div. 3)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 12 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions may be taken to recover any functions that could be lost. Equipment associated with shutdown methods A, B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.13 Fire Area 13: Unit 1 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Concrete masonry unit | 3 hr§ |
| | E - | Concrete masonry unit | 3 hr§ |

| | | |
|---|---|---|
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 7 and 12 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 13 from fire areas 12 and 15.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 10A115 (Div. 1)
2. Class 1E dc distribution panels 1AD102 and 1AD162 (Div. 1)
3. Class 1E instrument ac distribution panel 10Y101 (Div. 1)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 13 contains safe shutdown cables and equipment.

Cables associated with shutdown methods B and C for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Units 1 & 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.14 Fire Area 14: Unit 1 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Concrete masonry unit | 3 hr§ |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 15 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 14 from fire areas 12 and 16.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 10A118 (Div. 4)

2. Class 1E instrument ac distribution panel 10Y104 (Div. 4)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 14 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.15 Fire Area 15: Unit 1 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Concrete masonry unit | 3 hr§ |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 7 and 14 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 15 from fire areas 13 and 17.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 10A116 (Div. 2)
2. Class 1E instrument ac distribution panel 10Y102 (Div. 2)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 15 contains safe shutdown cables and equipment.

Cables associated with shutdown methods A and C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 1 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.16 Fire Area 16: Unit 2 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Concrete masonry unit | 3 hr§ |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |

| | | |
|---|---|---|
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 17 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 16 from fire areas 14 and 18.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 20A118 (Div. 4)

2. Class 1E instrument ac distribution panel 20Y104 (Div. 4)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 16 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.17 Fire Area 17: Unit 2 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Concrete masonry unit | 3 hr§ |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Doors connecting to areas 7 and 16 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 17 from fire areas 15 and 19.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 20A116 (Div. 2)

2. Class 1E instrument ac distribution panel 20Y102 (Div. 2)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 17 contains safe shutdown cables and equipment.

Cables associated with shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C

for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.18 Fire Area 18: Unit 2 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr§ |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr§ |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 19 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 18 from fire areas 16, 19, and 113.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 20A117 (Div. 3)

2. Class 1E dc distribution panel 2CD102 (Div. 3)

3. Class 1E instrument ac distribution panel 20Y103 (Div. 3)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 18 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.19 Fire Area 19: Unit 2 4 kV Switchgear Compartment (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr§ |
| | E - Concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr§ |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr |

Access: Doors connecting to areas 7 and 18 3 hr

Walls denoted above by the "§" symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4 kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in each of the walls indicated above. These walls separate fire area 19 from fire areas 17 and 18.

b. Major safety-related components in fire area:

1. Class 1E 4 kV switchgear 20A115 (Div. 1)

2. Class 1E dc distribution panel 2AD102 (Div. 1)

3. Class 1E instrument ac distribution panel 20Y101 (Div. 1)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 19 contains safe shutdown cables and equipment.

Cables associated with shutdown methods B and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.

f. Deviations:

The unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts are a deviation from the requirements of CMEB 9.5-1, C.5.b. See section 9A.6.3.

9A.5.3.20 Fire Area 20: Unit 1 Static Inverter Compartment (el 254'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 2 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Two doors connecting to area 22 | 3 hr |
| | Door providing access to panel 1BD102 | 3 hr |

b. Major safety-related components in fire area:

1. 125 V dc power distribution panels 1BD102 (Div. 2) and 1DD102 (Div. 4)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, and excessive heat in the enclosure around 1BD102 will activate the heat detector, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 20 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area may have redundant

components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Panel 1BD102 is enclosed by a 3-hour rated enclosure and is available for dsafe shutdown.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

9A.5.3.21 Fire Area 21: Unit 2 Static Inverter Compartment (el 254'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Two doors connecting to area 23 | 3 hr |
| | Steamtight door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

1. 125 V dc power distribution panels 2BD102 (Div. 2) and 2DD102 (Div. 4)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 21 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2.

9A.5.3.22 Fire Area 22: Unit 1 Cable Spreading Room (el 254'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Concrete masonry unit (part) | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Two doors connecting to area 20 | 3 hr |
| | Doors connecting to area 23 and stairwell no. 7 | 3 hr |

b. Major safety-related components in fire area:

1. Cabling for Division 1, 2, 3, and 4 safeguard equipment (in cable tray, gutter, and conduit)

2. Cabling for Division A1, A2, B1, and B2 of the RPS (in cable tray)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. If the compartment temperature rises to 212□F, individual sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. If necessary, the fire brigade may actuate discharge of the total flooding $CO_2$ system, using a local hand switch. HVAC system penetrations into the area will be sealed off by steam isolation dampers which close automatically when the $CO_2$ system is actuated.

e. Effect of fire on safe shutdown:

Fire area 22, the Unit 1 cable spreading room, contains safe shutdown cables associated with shutdown methods A, B, and C for Units 1 and 2 but does not contain safe shutdown equipment.

Alternative shutdown capabilities are available via the use of transfer/isolation and control switches on the remote shutdown panel and other local control stations as well as manual operator actions.

Offsite power cannot be credited for alternative shutdown.

Therefore, method R will be available to shutdown Units 1 and 2.

9A.5.3.23 Fire Area 23: Unit 2 Cable Spreading Room (el 254'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Concrete masonry unit | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Two doors connecting to area 21 | 3 hr |
| | Door connecting to area 23 | 3 hr |

b. Major safety-related components in fire area:

1. Cabling for Division 1, 2, 3, and 4 safeguard equipment (in cable tray, gutter, and conduit)

2. Cabling for Division A1, A2, B1, and B2 of the RPS (in cable tray)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. If the compartment temperature rises to 212□F, individual sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. If necessary, the fire brigade may actuate discharge of the total flooding $CO_2$ system, using a local hand switch. HVAC system penetrations into the area will be sealed off by steam isolation dampers which close automatically when the $CO_2$ system is actuated.

e. Effect of fire on safe shutdown:

Fire area 23, the Unit 2 cable spreading room, contains safe shutdown cables associated with shutdown methods A, B, and C for Units 1 and 2 but does not contain safe shutdown equipment.

Alternative shutdown capabilities are available via the use of transfer/isolation and control switches on the remote shutdown panel and other local control stations as well as manual operator actions.

Offsite power cannot be credited for alternative shutdown.

Therefore, method R will be available to shutdown Units 1 and 2.

9A.5.3.24 Fire Area 24: Control Room and Peripheral Rooms (el 269'-0")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |
| Floor: | Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Two steamtight doors connecting to area 114 | 3 hr** |

b. Safety-related components in fire area:

Safety-related control panels as listed below are located in the control room.

Unit 1 Panels

| | |
|---|---|
| 10C600 | Radiation monitoring<br>Containment combustible gas analyzer (Div. 3 & 4) |
| 10C601 | RHR (Div. 1, 2, 3, 4)<br>CS (Div. 1, 2, 3, 4)<br>MSIVs (Div. 1, 2, 3, 4)<br>Reactor pressure and level (Div. 1 & 2)<br>CAC system (Div. 1, 2, 3, 4) |
| 10C602 | RWCU (Div. 1 & 2)<br>Reactor recirculation system<br>Reactor head vent valves<br>Drywell floor and equipment drain sumps |
| 10C603 | Reactor control (Div. 1, 2, 3, 4) |
| 10C614 | NSSS temperature recorder and leak detection |
| 10C626 | ADS (Div. 1 & 3)<br>Suppression pool temperature monitoring (Div. 1 & 2) |
| 10C647 | HPCI (Div. 2 & 4) |
| 10C648 | RCIC (Div. 1 & 3) |
| 10C651 | Feedwater, condensate, and turbine (Div. 1, 2, 3) |
| 10C668 | Feedwater (Div. 1) |
| 10C669 | Condensate (Div. 1) |
| 10C681 | Reactor enclosure HVAC (Div. 1 & 2) |
| 1AC661 | Safeguard ac power supply (Div. 1) |
| 1BC661 | Safeguard ac power supply (Div. 2) |
| 1CC661 | Safeguard ac power supply (Div. 3) |

| | |
|---|---|
| 1DC661 | Safeguard ac power supply (Div. 4) |
| 1AC696 | Containment hydrogen recombiner package "A" (Div. 1) |
| 1BC696 | Containment hydrogen recombiner package "B" (Div. 2) |

Unit 2 Panels

| | |
|---|---|
| 20C600 | Radiation monitoring<br>Containment combustible gas analyzer (Div. 3 & 4) |
| 20C601 | RHR (Div. 1, 2, 3, 4)<br>CS (Div. 1, 2, 3, 4)<br>MSIVs (Div. 1, 2, 3, 4)<br>Reactor pressure and level (Div. 1 & 2)<br>CAC system (Div. 1, 2, 3, 4) |
| 20C602 | RWCU (Div. 1 & 2)<br>Reactor recirculation system<br>Reactor head vent valves<br>Drywell floor and equipment drain sumps |
| 20C603 | Reactor control (Div. 1, 2, 3, 4) |
| 20C614 | NSSS temperature recorder and leak detection |
| 20C626 | ADS (Div. 1 & 3)<br>Suppression pool temperature monitoring<br>(Div. 1 & 2) |
| 20C647 | HPCI (Div. 2 & 4) |
| 20C648 | RCIC (Div. 1 & 3) |
| 20C651 | Feedwater, condensate, and turbine<br>(Div. 1, 2, 3) |
| 20C668 | Feedwater (Div. 1) |
| 20C669 | Condensate (Div. 1) |
| 20C681 | Reactor enclosure HVAC (Div. 1 & 2) |
| 2AC661 | Safeguard ac power supply (Div. 1) |
| 2BC661 | Safeguard ac power supply (Div. 2) |
| 2CC661 | Safeguard ac power supply (Div. 3) |
| 2DC661 | Safeguard ac power supply (Div. 4) |

| | |
|---|---|
| 2AC696 | Containment hydrogen recombiner package "A" (Div. 1) |
| 2BC696 | Containment hydrogen recombiner package "B" (Div. 2) |

Common Panels

| | |
|---|---|
| 0AC667 | ESW and RHRSW (Div. 1) |
| 0BC667 | ESW and RHRSW (Div. 2) |
| 0CC667 | ESW and RHRSW (Div. 3) |
| 0DC667 | ESW and RHRSW (Div. 4) |
| 00C681 | Control structure HVAC (Div. 3 & 4)<br>Spray pond pump structure HVAC (Div. 1, 2, 3, 4) |
| 00C691 | Control room normal fresh air radiation monitoring (Div. 3 & 4)<br>Control room emergency fresh air radiation monitoring (Div. 3 & 4)<br>Containment area radiation monitoring (Div. 2 & 3) |
| 00C692 | Suppression pool temperature monitoring (Div. 1 & 2) |

c. Postulated fire in area:

Ignition of electrical cabling in cable tray, gutter, or control panels. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The raceways and control panels in the control room have been designed to incorporate divisional separation in order to maintain the independence of redundant divisions of safety-related cables and electrical devices. Considering the absence of combustibles which could contribute to an exposure fire in this area, the separation is adequate to prevent an electrical fire in one division of cabling from propagating and affecting a redundant division.

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. The operator will then bring the plant fire brigade to manually extinguish the fire. An electrical fire occurring in any of the control room panels will generate substantial quantities of smoke with an acrid odor, thereby ensuring immediate detection and location of such a panel fire.

e. Effect of fire on safe shutdown:

Fire area 24, the main control room, contains safe shutdown cables and equipment associated with shutdown methods A, B, and C for Units 1 and 2.

Alternative shutdown capabilities are available via the use of transfer/isolation and control switches on the remote shutdown panel and other local control stations as well as manual operator actions.

Offsite power cannot be credited for alternative shutdown.

Therefore, method R will be available to shutdown Units 1 and 2.

f. Deviations:

Carpeting installed in the Main Control Room that has been tested in accordance with NFPA or ASTM standards to assure minimum critical radiant heat flux values does not create a fire hazard in the area. See Section 9A.3.1.2, Item 190.

The peripheral rooms in the control room complex do not have automatic water suppression; however, incipient detection is provided and manual fire fighting capabilities are provided. Additionally, the entrance doors to the main control room peripheral rooms are kept open as it has been shown that they do not perform any credited barrier function. See Section 9A3,1.2, Item 179.

9A.5.3.25 Fire Area 25: Auxiliary Equipment Room (el 289'-0")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |
| | W - Gypsum board (part adjacent to fire area 26) | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to stairwell no. 7 | 1.5 hr |
| | Steamtight door connecting to area 111 | 3 hr |
| | Door connecting to area 26 | 3 hr ** |

b. Major safety-related components in fire area:

Figure 9A-21 shows the locations of all panels, consoles, and vertical boards in the auxiliary equipment room. Those panels that are associated with the shutdown methods described in Section 9A.5.2.2 are identified in the figure.

The safety-related components located in the auxiliary equipment room consist mainly of the PGCC for Unit 1 and Unit 2. The PGCC for each unit consists of vertical boards mounted on raised floor sections, with a termination cabinet located at one end of each floor section. The safety-related portions of the PGCC are identified in the following listing. The listing applies specifically to Unit 1, but the Unit 2 PGCC is identical.

| Floor Section & Terminating Cabinet | Vertical Board | |
|---|---|---|
| 10U791 & 10C791 | 10C617 | RHR and CS (Div. 1) |
| | 10C640 | RHR and CS (Div. 3) |
| | 10C621 | RCIC |
| | 10C628 | ADS (Div. 1) |
| | 10C631 | ADS (Div. 3) |
| 10U792 & 10C792 | 10C618 | RHR and CS (Div. 2) |
| | 10C641 | RHR and CS (Div. 4) |
| | 10C620 | HPCI |
| | 10C613 | Process instrumentation (Div. 2 & 4) |
| 10U786 | 10C634 | RRCS logic cabinet (Div. 1) |
| | 10C635 | RRCS logic cabinet (Div. 2) |
| 10U787 & 10C787 | 10C608 | Power range neutron monitoring |
| 10U788 & 10C788 | 10C619 | Jet pump instrumentation |
| | 10C623 | Outboard containment isolation valves |
| 10U789 & 10C789 | 10C606 | Startup range neutron monitoring "A" |
| | 10C609 | RPS channel A |
| 10U790 & 10C790 | 10C633 | Startup range neutron monitoring "B" |
| | 10C611 | RPS channel B |
| | 10C646 | Nuclear boiler system |
| 10U793 & 10C793 | 10C622 | Inboard containment isolation valves |
| | 10C612 | Feedwater and reactor recirculation instrumentation (Div. 1 & 3) |

The PGCC and the computer facilities, both of which are located in the auxiliary equipment room, utilize raised flooring approximately 1 foot high. The raised flooring is divided into sections typically 8 feet wide and approximately 20 feet long; PGCC panels or computer equipment are mounted near the center of each floor section. The floor sections are of

all-steel construction (except for the floor plates, which are aluminum) and are each divided into four longitudinal raceways and numerous lateral raceways, each of which is totally enclosed and therefore physically isolated from adjacent raceways. To minimize the possibility of occurrence of a fire, the cabling routed in these raceways is provided with flame retardant insulation, and no other combustible material exists in the floor sections. The highest voltages present within the floor sections are 125 V dc and 120 V ac. To prevent the spread of a postulated fire between different divisions of raceways within a floor section or between adjacent floor sections, fire stops are provided at the ends of the longitudinal raceways, at the ends of those lateral raceways which do not have end caps, in the lateral raceways where cables run from a longitudinal to a lateral raceway, and at the raceway openings at the bottom of the vertical panels. These fire stops consist of refractory material covered by silicone rubber.

The GE licensing topical report NEDO-10466-A, "Power Generation Control Complex Design Criteria and Safety Evaluation" (February 1979), describes the design concepts for the construction of the PGCC components, their arrangement within the PGCC, and the routing of interpanel cabling. The report includes test data that demonstrates the adequacy of the design with regard to fire protection. Additionally, a safety evaluation is provided which addresses NRC and industry safety guidelines and demonstrates design compliance.

A detailed comparison has been made between the design of the LGS PGCC and the design description of the generic PGCC contained in NEDO-10466-A. In all areas that could have an impact on fire protection capability (such as fire resistance, separation features, fire detection, and fire suppression), it was verified that the LGS design is either identical or equivalent to the design described in NEDO-10466-A.

The LGS design floor plates are constructed of aluminum honeycomb core bonded between aluminum sheet metal. The bottom skin is also covered by aluminum coated, steel sheet metal. This provides magnetic shielding and an optimum strength to weight ratio. The top surface of each plate is covered in an aesthetic tile that meets the following requirements:

- Flame spread rating < 25 per ASTM E84.
- Critical radiant flux > 0.45 watts /sq.cm. per NFPA 253.

Each individual floor plate is lightweight and can be easily removed by one person using the installed, recessed, quick-disconnect fasteners. The LGS design has been determined to be equivalent to the design described in NEDO-10466-A.

The RPS and UPS power distribution panels (1AY160 and 1BY160 for Unit 1; 2AY160 and 2BY160 for Unit 2), which are not safety-related, are also located in the auxiliary equipment room.

In addition to the cabling routed through the raised flooring of the auxiliary equipment room, cables associated with safety-related systems are routed in conduits, gutter, and cable tray through the space above the raised flooring.

c. Postulated fire in area:

Ignition of electrical cabling in cable tray, termination cabinets, raised flooring, or vertical boards. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.) An electrical fire occurring within any of these enclosures or raceways is precluded from affecting two redundant shutdown methods simultaneously, through implementation of the electrical separation criteria presented in Section 8.1.6.1.14.

An exposure fire due to transient combustibles in the auxiliary equipment room would not prevent safe shutdown from being achieved for both units of the plant. A liquid combustible spilled onto the surface of the raised floor sections would flow through the cracks between adjacent floor plates, down into the longitudinal raceways of the floor sections. The heat detectors in the floor sections would detect the fire and initiate operation of the Halon suppression system, thereby extinguishing the fire promptly.

An exposure fire involving solid transient combustibles would be extremely limited in scope and confined to a small area due to the lack of available floor space in the auxiliary equipment room. The smoke detectors below the ceiling would detect the fire promptly and annunciate in the control room. The fire brigade would then be dispatched to extinguish the fire.

d. Consequences of fire with active fire suppression:

The raceways, raised flooring, termination cabinets, and vertical boards in the auxiliary equipment room have been designed to incorporate divisional separation in order to maintain the independence of redundant divisions of safety- related cables and electrical devices. The only fire potential in this area is ignition of cable insulation due to electrical faulting. Since the majority of the cables in the area involve low voltage instrument and control circuits, overload protection is provided, and cable insulation is flame retardant, this potential source of fire is minimal.

Particular attention has been given to minimizing the potential for fire and maximizing divisional separation in the PGCC and associated facilities. Considering the absence of combustibles which could contribute to an electrical fire in this area, the separation is adequate to prevent a fire in one division of cabling from propagating and affecting a redundant division.

Smoke detectors are located inside each of the termination cabinets and floor sections in the auxiliary equipment room to provide early warning of fires originating in these components. Additional fire detectors are located near the ceiling, to provide early warning of fires originating outside the termination cabinets and floor sections. Activation of any of the above smoke detectors will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. A local panel is provided to identify the floor section in which smoke has been detected. In the event that a fire in the floor sections is not extinguished by fire brigade response, heat detectors in the floor sections will activate the Halon extinguishing system. The Halon system is described in Section 9A.2.9.

e. Effect of fire on safe shutdown:

Fire area 25 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Units 1 and 2 are either: encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, method C will be available to shutdown Units 1 and 2.

For a fire in the auxiliary equipment room, manual operator actions at the remote shutdown panel may be required. Ventilation air for the remote shutdown room is provided by ductwork that passes through the auxiliary equipment room. The air supply duct for the remote shutdown room does not contain any diffusers within the auxiliary equipment room. However, the air exhaust duct from the remote shutdown room includes two registers that exhaust air from the auxiliary equipment room. The auxiliary equipment room HVAC system, which serves the remote shutdown room as well as the auxiliary equipment room, normally operates in the recirculation mode. When a fire in the auxiliary equipment room is confirmed, the HVAC supply and exhaust smoke dampers for the remote shutdown room are closed minimizing the leakage of smoke into the remote shutdown room. In addition, special features of the walls between the remote shutdown room and the auxiliary equipment room will minimize the infiltration of smoke into the remote shutdown room. The potential smoke infiltration paths in those walls have been sealed, including installation of gaskets on both of the access doors into the remote shutdown room.

During initial plant licensing, the NRC had a concern that a fire in the auxiliary equipment room (AER) could affect plant safe shutdown actions and habitability in the remote shutdown panel room due to smoke infiltration through the HVAC ductwork. In Limerick SER, Supplement 2, Section 9.5.1.4.2 titled "Safe Shutdown Capability," PECO committed to modify the HVAC system so that the remote shutdown panel (RSP) room is maintained at a positive pressure, thereby preventing the infiltration of smoke.

In 1989, it was determined that the AER HVAC may be disabled during the postulated AER fire, and therefore could not maintain the RSP room at a positive pressure to prevent smoke infiltration.

To address this concern and commitment to minimize smoke infiltration into the RSP room, qualified manually operated smoke dampers were installed in the HVAC ductwork and all potential smoke infiltration paths in the RSP room walls have been sealed, including installation of gaskets on both of the access doors into the remote shutdown room. The fire brigade will manually isolate the dampers after verification of a fire in the AER. The dampers can also be manually isolated during plant remote shutdown if smoke is entering the RSP room through ventilation ducts due to a fire. The NRC reviewed the final configuration prior to Unit 2 fuel loading and found it acceptable. Reference Bechtel Letter to PECO #47554, NRC Inspection Report 50-352/89-12 and 50-353/89-19, LER 1-89-039, Letter from PECO to NRC dated June 30, 1989, Letter from PECO to NRC dated June 2, 1989, and NRC Inspection Report 50-352/90-04.

9A.5.3.26 Fire Area 26: Remote Shutdown Room (el 289'-0")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 7) | 3 hr |
| | E - Gypsum board | 3 hr |
| | S - Gypsum board | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to stairwell no. 7 | 3 hr |
| | Door connecting to area 25 | 3 hr ** |

b. Major safety-related components in fire area:

1. Remote shutdown panel 10C201 (for Unit 1)

2. Remote shutdown panel 20C201 (for Unit 2)

c. Postulated fire in area:

Ignition of electrical cabling in raceways, raised flooring, or the remote shutdown panels. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.) An electrical fire occurring within these raceways or enclosures is precluded from affecting two redundant divisions of circuitry simultaneously, through implementation of the electrical separation criteria presented in Section 8.1.6.1.14.

An exposure fire due to transient combustibles in the remote shutdown room would not prevent safe shutdown from being achieved for both units of the plant. Damage to the remote shutdown panels due to an exposure fire would be either extremely limited or nonexistent because of the provisions described below.

Access to the remote shutdown panels is restricted by a woven wire partition that divides the remote shutdown room into two portions, as shown in Figure 9A-21. Access to the aisle-ways at the front and back sides of the remote shutdown panels can be gained only through locked doorways in the woven wire partition. The portion of the remote shutdown room that is outside the partition consists of only a short corridor that leads from stairwell no. 7 to fire area 25 (the auxiliary equipment room). This partition will prevent transient combustibles from being stored or transported in close proximity to the remote shutdown panels. The only portion of fire area 26 in which transient combustibles can be assumed to exist is the portion outside the partition. Any liquid combustible spilled onto the surface of the raised floor sections would flow through the cracks between adjacent floor plates, down into the raised flooring. The heat detectors in the raised flooring would detect the fire and

initiate operation of the Halon suppression system, thereby extinguishing the fire promptly. Any solid combustible material would be located outside the woven wire partition and be of limited size due to the space constraints of the area.

d. Consequences of fire with active fire suppression:

Smoke detectors are located within the raised flooring of the remote shutdown room to provide early warning of fires originating in the raised flooring. Additional smoke detectors are located near the ceiling, to provide early warning of fires originating above the raised flooring. Activation of any of the above smoke detectors will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. A local panel is provided to identify the floor section in which smoke has been detected. In the event that a fire in the raised flooring is not extinguished by fire brigade response, heat detectors in the raised flooring will activate the Halon extinguishing system. The Halon system is described in Section 9A.2.9.

e. Effect of fire on safe shutdown:

Fire area 26 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods C will be available to shutdown Units 1 and 2.

9A.5.3.27 Fire Area 27: Control Structure Fan Room (el 304'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 7 and 8) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 8) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |

| | | |
|---|---|---|
| Floor: | Reinforced concrete | 3 hr |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 7 and 8 | 1.5 hr |
| | Double steamtight door connecting to area 99 | 3 hr** |
| | Steamtight doors connecting to areas 99 and 112 | 3 hr |
| | Equipment hatch in ceiling (filled with 95 $ft^2$ of steel plate) | None |

b. Major safety-related components in fire area:

1. HVAC 120 V ac distribution panel 10Y206 (Div. 1), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 1AC563
   (b) RHRSW radiation monitor 0AS578
   (c) Control structure HVAC local panel 0CC101
   (d) SGTS control panel 0AC124
   (e) RERS control panel 10C207
   (f) Reactor enclosure differential pressure panel 1AC253
   (g) Refueling area differential pressure panel 0AC254

2. HVAC 120 V ac distribution panel 10Y207 (Div. 2), which serves the following components:
   (a) RHRSW radiation monitor 0BS578
   (b) Control structure HVAC local panel 0CC101
   (c) SGTS control panel 0BC124
   (d) RERS control panel 10C207
   (e) Reactor enclosure differential pressure panel 1BC253
   (f) Refueling area differential pressure panel 0BC254

3. HVAC 120 V ac distribution panel 10Y163 (Div. 3), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 1CC563
   (b) DELETED
   (c) Control structure HVAC local panel 0AC101
   (d) SGTS control panel 0CC124
   (e) Containment combustible gas analyzer package 10S206
   (f) ESW control valve XC-11-053A (for control structure chiller "A")
   (g) Control structure chilled water control valves XC-90-042A, XC-90-043A, and XC-90-044A
   (h) Containment combustible gas analyzer heat tracing panel 10C902

4. HVAC 120 V ac distribution panel 10Y164 (Div. 4), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 1DC563
   (b) DELETED
   (c) Control structure HVAC local panel 0BC101

(d) SGTS control panel 0CC124
(e) Containment combustible gas analyzer 10S205
(f) ESW control valve XC-11-053B (for control structure chiller "B"
(g) Control structure chilled water control valves XC-90-042B, XC-90-043B, and XC-90-044B
(h) Containment combustible gas analyzer heat tracing panel 10C901

5. HVAC 120 V ac distribution panel 20Y207 (Div. 2), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 2BC563
   (b) Control structure HVAC local panel 0CC101
   (c) RERS control panel 20C207
   (d) Reactor enclosure differential pressure panel 2BC253

6. HVAC 120 V ac distribution panel 20Y164 (Div. 4), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 2DC563
   (b) Deleted
   (c) Containment combustible gas analyzer package 20S205
   (d) Containment combustible gas analyzer heat tracing panel 20C901

7. Motor control center 00B131 (Div. 3), which serves the following components:
   (a) HVAC 120 V ac distribution panel 10Y163
   (b) Control room emergency supply air fan (0AV127) and intake heater (0AE191)
   (c) Control room emergency air intake isolation valve HV-78-020C
   (d) Control room air supply fan cabinet (0AV116) and heater (0AE192)
   (e) Control room return air fan 0AV121
   (f) Auxiliary equipment room supply air fan cabinet (0AV114) and heater (0AE193)
   (g) Auxiliary equipment room return air fan 0AV120
   (h) Emergency switchgear and battery room supply air fan cabinet 0AV118
   (i) Control structure chilled water pump (0AP162), oil pump (0AP168), pump-out compressor (0AK114)

8. Motor control center 00B132 (Div. 4), which serves the following components:
   (a) HVAC 120 V ac distribution panel 10Y164
   (b) Control room emergency supply air fan (0BV127) and intake heater (0BE191)
   (c) Control room emergency air intake isolation valve HV-78-020D
   (d) Control room air supply fan cabinet (0BV116) and heater (0BE192)
   (e) Control room return air fan 0BV121
   (f) Auxiliary equipment room supply air fan cabinet (0BV114) and heater (0BE193)
   (g) Auxiliary equipment room return air fan 0BV120
   (h) Emergency switchgear and battery room supply air fan cabinet 0BV118
   (i) Control structure chilled water pump (0BP162), oil pump (0BP168), and pump-out compressor (0BK114)

9. Control structure HVAC local panels 0AC101, 0BC101, 0CC101, and 0DC101

10. Auxiliary equipment room supply air fan cabinets OAV114 and OBV114

11. Control room supply air fan cabinets OAV116 and OBV116

12. Auxiliary equipment room return air fans OAV120 and OBV120

13. Control room return air fans OAV121 and OBV121 (14) Control room emergency fresh air supply fans and filter trains OAV127 and OBV127

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished. In the event of a fire in one of the control room emergency fresh air filters, a heat detector inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

The preaction sprinkler system in this area has been installed to provide protection against an exposure fire hazard. Other than the charcoal filters, which have their own water spray systems, electrical cable insulation and jacketing constitutes the only in situ combustible material in the fire area. The insulation and jacketing is qualified in accordance with the IEEE 383 flame test requirements, and is present in such a small quantity that it constitutes a low combustible loading. The cable trays in this area are located at approximately the same elevation as the sprinkler heads. The sprinkler heads are provided with heat collecting shields to ensure prompt actuation in the event of a fire.

e. Effect of fire on safe shutdown:

Fire area 27 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 1 and shutdown method C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 and shutdown method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2.

f. Deviations

The existence of an equipment hatch with unrated steel panels in the ceiling of this fire area is acceptable because of the low combustible loadings in the areas above and below the equipment hatch, the low potential for transient combustibles in these areas, and the height of the equipment hatch above the floor (28 feet). These factors minimize the possibility of fire propagating through the equipment hatch. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the equipment hatch in the slab at elevation 332', safe shutdown capability would still be assured. Fire area 27 and fire area 28 both credit methods A and C for safe shutdown of Unit 1. Fire area 27 and fire area 28 both credit method C for safe shutdown of Unit 2.

The equipment hatch with unrated steel panels is a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the steel panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

The existence of an equipment hatch with unrated steel panels in the floor of this fire area is acceptable because of the low combustible loadings in the areas above and below the equipment hatch, the low potential for transient combustibles in these areas, and the height of the equipment hatch above the floor (28 feet) of the fire area below. These factors minimize the possibility of fire propagating through the equipment hatch. Penetrations of piping and electrical raceway through the floor are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the equipment hatch in the slab at elevation 332', safe shutdown capability would still be assured. Fire area 27 and fire area 28 both credit methods A and C for safe shutdown of Unit 1. Fire area 27 and fire area 28 both credit method C for safe shutdown of Unit 2.

The equipment hatch with unrated steel panels is a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the steel panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.3.28 Fire Area 28: SGTS Filter Compartments and Access Area (el 332'-0")

a. Structural and architectural design features of fire area (Figure 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (exterior wall, also contains louver openings) | None |
| | N - Reinforced concrete (parts adjacent to stairwell nos. 7 and 8) | 2 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 8) | 2 hr |

| | | |
|---|---|---|
| | E - Reinforced concrete (part adjacent to fire area 69) | 3 hr |
| | E - Reinforced concrete (part, exterior wall) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (part adjacent to fire area 46) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 7) | 2 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (roof slab) | None |
| Access: | Two doors connecting to stairwell no. 7 | 1.5 hr |
| | Door connecting to stairwell no. 8 | 1.5 hr |
| | Steamtight doors connecting to areas 46 and 69 | 3 hr |
| | Equipment hatch in floor (filled with 95 $ft^2$ of steel plate) | None |

b. Major safety-related components in fire area:

1. SGTS filters
   Train A: 0AF169, 0AF170, 0AF183
   Train B: 0BF169, 0BF170, 0BF183

2. SGTS exhaust fans 0AV109 and 0BV109

3. SGTS local control panels 0AC124, 0BC124, 0CC124, 0DC124

4. HVAC 120 V ac distribution panel 20Y206 (Div. 1), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 2AC563
   (b) Control structure HVAC local panel 0CC101
   (c) RERS control panel 20C207
   (d) Reactor enclosure differential pressure panel 2AC253

5. HVAC 120 V ac distribution panel 20Y163 (Div. 3), which serves the following components:
   (a) Diesel generator enclosure HVAC control panel 2CC563
   (b) DELETED
   (c) Containment combustible gas analyzer package 20S206
   (d) Containment combustible gas analyzer heat tracing panel 20C902

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the SGTS filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

e. Effect of fire on safe shutdown:

Fire area 28 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A , B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

## 9A.5.4 SAFE SHUTDOWN ANALYSIS - UNIT 1 REACTOR ENCLOSURE

### 9A.5.4.1 Fire Area 29: Suppression Chamber (el 181'-11")

a. Structural and architectural design features of fire area (Figures 9A-4, 9A-5, and 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | All around - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (diaphragm slab) | None |
| Access: | Two access hatches connecting to area 44 | None |

b. Major safety-related components in fire area:

1. Primary containment vacuum relief valve assemblies PSV-57-137 A, B, C & D

c. Postulated fire in area:

Since there are no combustible materials located in this area, no fire is postulated to occur.

d. Consequences of fire with active fire suppression:

Not applicable (see item (c)).

e. Effect of fire on safe shutdown:

Fire area 29 contains safe shutdown cables and equipment.

During normal operation, primary containment is inerted. Since containment is inerted no fire is postulated.

9A.5.4.2 Fire Area 30: Drywell (el 237'-11")

a. Structural and architectural design features of fire area (Figures 9A-7, 9A-8, and 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | All around - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete (diaphragm slab) | None |
| Ceiling: | Steel dome (drywell head) | None |
| Access: | Equipment hatch connecting to area 45 | None |
| | Equipment hatch with personnel lock connecting to area 45 | None |

b. Major safety-related components in fire area:

1. CRDM (total of 185)

2. MSIV (inboard, one per steam line)

3. MSRV (total of 14)

4. Drywell unit coolers (total of 8)

5. Inboard containment isolation valves for HPCI steam supply line, RCIC steam supply line, RWCU letdown line, and RHR shutdown cooling suction line

c. Postulated fire in area:

1. Leakage of lube oil from a recirculation pump motor onto the diaphragm slab, with subsequent ignition of the oil.

2. Ignition of electrical cabling in cable tray, gutter or direct supported metal clad cable.

3. Ingnition of non-scheduled electrical cabling.

d. Consequences of fire with active fire suppression:

The possibility of a fire in the drywell is limited to periods when the reactor is shut down. This is because the primary containment is inerted with nitrogen during reactor operation, so that the oxygen concentration is maintained below 4% by volume. This inert atmosphere will prevent fires from occurring in the primary containment during reactor operation.

In the event of a fire in the drywell while the reactor is shut down and the drywell deinerted, the operator will dispatch the plant fire brigade to el 253' in the reactor enclosure. The fire brigade will enter the drywell through the personnel airlock and will ensure extinguishment of the fire through the use of portable fire extinguishers or hoses from hose reels located outside the entrances to the drywell.

e. Effect of fire on safe shutdown:

Fire area 30 contains safe shutdown cables and equipment.

During normal operation, primary containment is inerted. Since containment is inerted, no fire is postulated.

9A.5.4.3 Fire Area 31: Residual Heat Removal Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | NW - Reinforced concrete (primary containment wall) | None |
| | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part below el 201', exterior wall) | None |
| | E - Reinforced concrete (part above el 201') | 3 hr |
| | S - Reinforced concrete (part below el 198', exterior wall) | None |
| | S - Reinforced concrete (part above el 198') | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 115 $ft^2$ of unrated metal blowout panels leading to area 43) | None |
| Access: | Watertight doors connecting to areas 32 and 39 | 3 hr** |
| | Steamtight doors (el 201') connecting to areas 32 and 41 | 3 hr |

b. Major safety-related components in fire area:

1. RHR pumps 1BP202 and 1DP202

2. RHR heat exchanger 1BE205

3. RHR compartment unit coolers 1BV210, 1DV210, 1FV210, and 1HV210

c. Postulated fire in area:

Leakage of lube oil from both RHR pump motors onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 31 contains safe shutdown cables and equipment.

Cables required to support shutdown method B for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method B for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217’, safe shutdown capability would still be assured.

Fire area 31 and the eastern portion of fire area 43 both credit method C for safe shutdown of Unit 1. The only exception is the need in the eastern portion of fire area 43 to use the Remote Shutdown Panel suppression pool temperature indicator TI-41-102. Although main control room indication is credited for a fire which is contained within fire area 31, the RSP indicator would also be available. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 2.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.4.4 Fire Area 32: Residual Heat Removal Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | NW - Reinforced concrete | 3 hr |
| | NE - Reinforced concrete (primary containment wall) | None |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part below el 198', exterior wall) | None |
| | S - Reinforced concrete (part above el 198') | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 150 $ft^2$ of unrated metal blowout panels leading to area 43) | None |
| Access: | Watertight doors connecting to areas 31 and 33 | 3 hr** |
| | Steamtight doors (el 201') connecting to areas 31 and 42 | 3 hr |

b. Major safety-related components in fire area:

1. RHR pumps 1AP202 and 1CP202

2. RHR heat exchanger 1AE205

3. RHR compartment unit coolers 1AV210, 1CV210, 1EV210, and 1GV210

4. ESW loop "A" valves (HV-11-041, HV-11-071, HV-11-121, and HV-11-123)

c. Postulated fire in area:

Leakage of lube oil from both RHR pump motors onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 32 contains safe shutdown cables and equipment.

Cables required to support shutdown method A for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method A for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217’, safe shutdown capability would still be assured. Fire area 32 and the western portion of fire area 43 both credit method C for safe shutdown of Unit 1. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 2.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.4.5 Fire Area 33: Reactor Core Isolation Cooling Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | NW - Reinforced concrete | 3 hr |
| | NE - Reinforced concrete (primary containment wall) | None |
| | SE - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | S - Reinforced concrete (part, exterior wall below el 198') | None |
| | S - Reinforced concrete (part, exterior wall above el 198') | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 25 $ft^2$ of unrated metal blowout panels leading to area 43) | None |
| Access: | Watertight doors connecting to areas 32 and 34 | 3 hr** |
| | Door connecting to stairwell no. 3 | 1.5 hr |

b. Major safety-related components in fire area:

1. RCIC pump 10P203

2. RCIC turbine 10S212

3. RCIC compartment unit coolers 1AV208 and 1BV208

c. Postulated fire in area:

Leakage of lube oil from RCIC turbine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to

control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 33 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 33 and the western portion of fire area 43 both credit method C for safe shutdown of Unit 1. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 2.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.4.6 Fire Area 34: High Pressure Coolant Injection Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (primary containment wall) | None |
| | SE - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 160 $ft^2$ of unrated metal blowout panels leading to area 43) | None |
| Access: | Watertight doors connecting to areas 33 and 40 | 3 hr** |

b. Major safety-related components in fire area:

1. HPCI pump 10P204
2. HPCI turbine 10S211
3. HPCI compartment unit coolers 1AV209 and 1BV209
4. Instrument rack 10C014 (HPCI)

c. Postulated fire in area:

Leakage of lube oil from HPCI turbine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 34 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 34 and the western portion of fire area 43 both credit method C for safe shutdown of Unit 1. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 2.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.4.7 Fire Area 35: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | W - | Reinforced concrete | 3 hr |
| | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete (primary containment wall) | None |
| | S - | Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | | None |
| Ceiling: | Reinforced concrete | | 3 hr* |
| Access: | Watertight door connecting to area 40 | | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 1AP206

2. Core spray compartment unit coolers 1AV211 and 1EV211

3. Safeguard piping fill pump 1AP256

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 35 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.8 Fire Area 36: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | SE - Reinforced concrete (primary containment wall) | None |
| | S - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 40 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 1CP206

2. Core spray compartment unit coolers 1CV211 and 1GV211

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 36 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.9 Fire Area 37: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | W - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | SW - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 39 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 1DP206

2. Core spray compartment unit coolers 1DV211 and 1HV211

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 37 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.10 Fire Area 38: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N -Reinforced concrete | 3 hr |
| | E -Reinforced concrete | 3 hr |
| | S -Reinforced concrete | 3 hr |
| | W -Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 39 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 1BP206

2. Core spray compartment unit coolers 1BV211 and 1FV211

3. Safeguard piping fill pump 1BP256

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 38 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.11 Fire Area 39: Sump Room and Passageway (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to unexcavated area), | None |
| | S - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part, primary containment wall) | None |
| | W - Reinforced concrete (part) | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight doors connecting to areas 31, 37 and 38 | 3 hr** |
| | Door connecting to stairwell no. 1 | 1.5 hr |

b. Major safety-related components in fire area:

1. Containment isolation valves (HV-52-127 and HV-52-128) for suppression pool cleanup pump suction line

2. Instrument rack 10C076 (RHR pump "B" discharge pressure)

3. Instrument rack 10C078 (RHR pump "D" discharge pressure)

c. Postulated fire in area:

1. Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of oil in a waste oil collection drum associated with the floor drain sump oil removal belt

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 39 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

9A.5.4.12 Fire Area 40: Corridor (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight doors connecting to areas 34, 35 and 36 | 3 hr** |
| | Door connecting to stairwell no. 4 | 1.5 hr |
| | Elevator door | 0.75 hr |

b. Major safety-related components in fire area:

1. HPCI pump discharge flow transmitters (FT-55-1N008 and FT-55-1N051)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 40 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

9A.5.4.13 Fire Area 41: Reactor Enclosure Cooling Water Equipment Area (el 201'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to unexcavated area) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (one portion of the ceiling slab, covering an area of 10 $ft^2$, has a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Access: | Door connecting to stairwell no. 1 | 1.5 hr |
| | Door connecting to area 31 | 3 hr |

b. Major safety-related components in fire area:

1. Instrument rack 10C021 (Div. 2 RHR and Div. 2 RHRSW)

2. Suppression chamber pressure transmitter (PT-57-101)

3. ESW loop "B" valves (HV-11-044, HV-11-074, HV-11-124, HV-11-125, HV-11-126, HV-11-127 and HV-11-128)

4. HVAC unit cooler control panels 1BC208 and 1DC208

5. Motor control center 10B218, which serves the following components:
   (a) RHR loop "D" valves
   (b) RHR compartment unit coolers 1DV210 and 1HV210
   (c) Core spray loop "B" valves
   (d) Core spray compartment unit coolers 1DV211 and 1HV211
   (e) RHRSW outlet valve from RHR "B" heat exchanger (HV-51-1F068B)
   (f) Drywell unit cooler fans 1D2V212 and 1F2V212
   (g) Containment hydrogen recombiner 1BS403 and associated valves

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190□F, the deluge valve will open and prime the preaction sprinkler system with water. At 212□F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 41 contains safe shutdown cables and equipment.

Cables required to support shutdown method B for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method B for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

9A.5.4.14 Fire Area 42: Safeguard System Access Area (el 201'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | SE - Reinforced concrete (primary containment wall) | None |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | S - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (One portion of the ceiling slab, covering an area the ceiling slab, covering an area of 10 $ft^2$, has a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Access: | Elevator door | 0.75 hr |
| | Doors connecting to stairwell nos. 3 and 4 | 1.5 hr |
| | Door connecting to area 32 | 3 hr |
| | Watertight door connecting to area 75 | 3 hr** |

b. Major safety-related components in fire area:

1. HPCI valves HV-55-1F007 (pump discharge) and HV-55-1F008 (pump discharge recirculation to CST)

2. RCIC valves HV-49-1F012 (pump discharge) and HV-49-1F022 (pump discharge recirculation to CST)

3. HPCI level transmitters (LT-55-IN061B&F) and turbine exhaust pressure transmitters (PT-56- 1N055D&H)

4. Instrument rack 10C017 (RCIC)

5. RCIC turbine exhaust pressure transmitters (PT-50-1N055C&G)

6. Instrument rack 10C018 (Div. 1 RHR and Div. 1 RHRSW)

7. Instrument rack 10C075 (RHR pump "A" discharge pressure)

8. Instrument rack 10C077 (RHR pump "C" discharge pressure)

9. HVAC unit cooler control panels 1AC208 and 1CC208

10. Motor control center 10B217, which serves the following components:
    (a) RHR loop "C" valves
    (b) RHR compartment unit coolers 1CV210 and 1GV210
    (c) Core spray pump suction valve (HV-52-1F001C)
    (d) Core spray compartment unit coolers 1CV211 and 1GV211
    (e) RHRSW outlet valve from RHR "A" heat exchanger (HV-51-1F068A)
    (f) Drywell unit cooler fans 1C2V212 and 1G2V212
    (g) Containment hydrogen recombiner 1AS403 and associated valves

c. Postulated fire in Area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 42 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown method C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, method C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

9A.5.4.15 <u>Fire Area 43: Safeguard System Isolation Valve Area (el 217'-0")</u>

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (exterior wall, contains 150 $ft^2$ of unrated blowout panels) | None |
| | W - Concrete masonry unit | 3 hr |
| | Interior boundary – Reinforced concrete (primary containment wall | None |
| Floor: | Reinforced concrete (contains 450 $ft^2$ of unrated metal blowout panels from areas 31, 32, 33, and 34) | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Two steamtight doors connecting to area 44 | 3 hr |

b. Major safety-related components in fire area:

1. HPCI steam line containment isolation valves (HV-55-1F003 and HV-55-1F100)

2. RCIC steam line containment isolation valves (HV-49-1F008 and HV-49-1F076)

3. RHR system valves:
   (a) HV-51-1F008 (shutdown cooling suction containment isolation)
   (b) HV-51-1F015A&B (shutdown cooling return containment isolation)
   (c) HV-51-1F047A&B (heat exchanger inlet)
   (d) HV-C-51-1F048A&B (heat exchanger bypass)
   (e) HV-51-1F023 (head spray containment isolation )

4. CAC containment isolation valves (HV-57-109, HV-57-121, HV-57-123, HV-57-124, HV-57-131, HV-57-135, HV-57-147, HV-57-163, and HV-57-164)

5. PCIG containment isolation valves (HV-59-102, HV-59-129A, HV-59-129B, HV-59-131, HV-59-135, HV-59-151A, and HV-59-151B)

6. HPCI system leakage detection temperature elements

7. RCIC system leakage detection temperature elements

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 43 is divided into an eastern (43E) and a western (43W) portion through the establishment of a 20 foot wide zone that is free of combustible materials.

<u>43E</u>

The eastern portion of fire area 43 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 43.

<u>43W</u>

The western portion of fire area 43 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 1 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that

are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, method C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2, for a fire in the western half of fire area 43.

f. Deviations:

Fire area 43 is divided into a western portion and an eastern portion through the establishment of a 20 foot wide zone that is free of combustible materials. This combustible-free zone was created by using 1 hour rated fire barriers to enclose the cable trays that pass through the zone.

Several valves associated with the credited safe shutdown methods are located in fire area 43. Valves performing active, credited, redundant functions are located on opposite sides of fire area 43 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray. The fire barriers that enclose the portions of the cable trays that are within the combustible-free zone, eliminate the potential for a postulated fire to propagate through the combustible-free zone within the cable trays. The in situ combustible loading in fire area 43 is low. The potential for transient combustibles to exist in the space between credited, redundant valves is severely restricted by the arrangement of fire area 43 and the locations of commodities within it. The space between the credited, redundant equipment is relatively narrow and contains a high concentration of pipes and pipe supports. These obstructions effectively prevent the introduction of significant quantities of combustible materials into this space. The factors discussed above preclude the occurrence of a fire, involving either in situ combustibles or transient combustibles, that could simultaneously affect credited, redundant equipment.

The measures described above for physical separation and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 43.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

The existence of unrated metal panels in the floor of this fire area is acceptable because the low combustible loadings in the areas above and below the panels. Penetrations of piping and electrical raceway through the floor are provided with 3- hour rated seals. Unrated blowout panels exist in the south wall of the fire area that release to the outside of the reactor enclosure, which has no adjoining tire area impacts.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the floor at elevation 217’, safe shutdown capability would still be assured. Fire area 43, 31, 32, 33, and 34 all credit method C for safe shutdown of Unit 1. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 2.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.4.16 Fire Area 44: Safeguard System Access Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 1 and 4) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | S - Reinforced concrete (part adjacent to fire area 124) | 3 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (part adjacent to stairwell nos. 3 and 4) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | Interior boundary (part) - Reinforced concrete and concrete masonry unit walls | 3 hr |
| | Interior boundary (part) - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete (Two portions of the floor slab, each of which covers an area of 10 $ft^2$, have a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 1, 3, and 4 | 1.5 hr |
| | Two steamtight doors connecting to area 43 | 3 hr |
| | Missile-resistant door connecting to area 76 | 3 hr** |
| | Equipment airlock door | None |
| | Elevator door | 0.75 hr |
| | Suppression chamber access hatches | None |
| | Equipment hatchway in ceiling (200 $ft^2$ opening; protected by water curtain suppression system) | None |

b. Major safety-related components in fire area:

1. Core spray full flow test recirculation valves (HV-52-1F015A&B)

2. CAC containment isolation valves (HV-57-104, HV-57-105, HV-57-112, HV-57-118, and HV-57-162)

3. RHR system valves:
   (a) HV-51-125A&B (containment isolation for recirculation to suppression chamber)
   (b) HV-51-1F027A&B (containment isolation for suppression chamber spray)
   (c) HV-51-1F010A&B (loops C and D recirculation to suppression chamber)
   (d) HV-51-1F024A&B (loops A and B recirculation to suppression chamber)

4. Instrument racks 10C001 (core spray loop A) and 10C019 (core spray loop B)

5. Instrument racks 10C015, 10C025, 10C041, and 10C042 (main steam and reactor recirculation flow)

6. Instrument racks 10C016 and 10C036 (HPCI)

7. Instrument racks 10C035 and 10C038 (RCIC)

8. Instrument racks 10C006, 10C009, 10C010, and 10C022 (reactor recirculation system pressure and jet pump flow)

9. RHR flow transmitters (FT-51-1N015A,B,C&D and FT-51-1N052A,B,C&D)

10. Motor control center 10B211, which serves the following components:
    (a) RHR loop "A" valves
    (b) RHR compartment unit coolers 1AV210 and 1EV210
    (c) Core spray loop "A" valves
    (d) Core spray compartment unit coolers 1AV211 and 1EV211
    (e) RHRSW inlet valve to RHR "A" heat exchanger (HV-51-1F014A)
    (f) RHR shutdown cooling suction inboard isolation valve (HV-51-1F009)
    (g) RCIC compartment unit coolers 1AV208 and 1BV208
    (h) RWCU inboard isolation valve (HV-44-1F001)
    (i) Main steam drain line inboard isolation valve (HV-41-1F016)
    (j) Drywell unit cooler fans 1A1V212, 1C1V212, 1E1V212, and 1G1V212

11. Motor control center 10B212, which serves the following components:
    (a) RHR loop "B" valves
    (b) RHR compartment unit coolers 1BV210 and 1FV210
    (c) Core spray loop "B" valves
    (d) Core spray compartment unit coolers 1BV211 and 1FV211
    (e) RHRSW inlet valve to RHR "B" heat exchanger (HV-51-1F014B)
    (f) RHR shutdown cooling return isolation valve (HV-51-1F015A)
    (g) Reactor recirculation pump suction valve (HV-43-1F023B)
    (h) HPCI compartment unit coolers 1AV209 and 1BV209
    (i) Drywell unit cooler fans 1B1V212, 1D1V212, 1F1V212, and 1H1V212

12. Motor control center 10B215, which serves the following components:
    (a) RHR loop "A" valves
    (b) RCIC system valves
    (c) Deleted
    (d) Suppression pool cleanup pump suction isolation valve (HV-52-127)
    (e) Drywell pressure tap isolation valve (HV-42-147A)

(f) Drywell floor drain and equipment drain containment isolation valves (HV-61-112 and HV-61-132)

13. Motor control center 10B216, which serves the following components:
    (a) RHR loop "B" valves
    (b) HPCI system valves
    (c) Deleted
    (d) Suppression pool cleanup pump isolation valve (HV-52-128)
    (e) Drywell pressure tap isolation valve (HV-42-147B)
    (f) Suppression pool level tap isolation valves (HV-55-120 and HV-55-121)
    (g) RHR shutdown cooling suction outboard isolation valve (HV-51-1F008)
    (h) RWCU outboard isolation valve (HV-44-1F004)
    (i) Main steam drain line outboard isolation valve (HV-41-1F019)

14. Dc motor control center 10D201, which serves the following components:
    (a) RCIC system
    (b) Div. 1 RPS and UPS static inverter

15. Dc motor control center 10D202, which serves the HPCI system

16. Dc motor control center 10D203, which serves the following components:
    (a) HPCI system
    (b) Div. 2 RPS and UPS static inverter

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of one of the two preaction sprinkler systems in this fire area, the system will provide automatic suppression of the fire. When the compartment temperature rises to 190□F, the deluge valve will open and prime the preaction sprinkler system with water. At 212□F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 44 is divided into an eastern (44E) and a western (44W) portion through the establishment of two 20 foot wide zones.

<u>44E</u>

The eastern portion of fire area 44 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Units 1 and 2 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2, for a fire in the eastern half of fire area 44.

<u>44W</u>

The western portion of fire area 44 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, method C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2, for a fire in the western half of fire area 44.

f. Deviation:

A 20 foot wide zone that is free of combustibles was created at two locations in fire area 44 by using a galvanized steel cable tray enclosure system to cover the cable trays that pass through the zone. This non-combustible configuration together with the enclosure end seals will prevent fire propagation across the combustible free zone. A fixed suppression system of the water curtain-type is located within each combustible-free zone to provide assurance that a postulated fire due to transient combustibles can be prevented from propagating through the combustible-free zones. The two combustible-free zones, one located in the southwest quadrant of the fire area and one located in the northeast quadrant of the fire area, divide fire area 44 into a western portion and an eastern portion.

Several components associated with the credited safe shutdown methods are located in fire area 44. Components performing active, credited, redundant functions are located on opposite sides of fire area 44 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone.

The locations of preaction sprinkler systems and water curtain suppression systems in fire area 44 are shown in Figure 9A-6.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 44.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.5.7.

9A.5.4.17 Fire Area 45: CRD Hydraulic Equipment Area and Neutron Monitoring System Area (el 253'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 1 2 hr and 4) | |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (parts adjacent to stairwell nos. 3 and 4) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | Interior boundary (part adjacent to main steam tunnel) – Reinforced concrete | 3 hr |
| | Interior boundary (part) – Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 1, 3, and 4 | 1.5 hr |
| | Elevator door | 0.75 hr |
| | Drywell access hatches | None |
| | Watertight door connecting to area 46 | 3 hr** |
| | Equipment hatchways in floor and protected by water curtain suppression systems) | None |

b. Major safety-related components in fire area:

1. DCWS valves HV-87-122, HV-87-123, HV-87-128, and HV-87-129 (supply and return line containment isolation)

2. CRD master control station

3. CRD hydraulic control units

4. Containment combustible gas analyzer sample package 10S206

5. Load center 10B203 (Div. 3)

6. Deleted

7. Instrument racks 10C004, 10C005, 10C026, and 10C027 (RPV instrumentation and LPCI injection valve $\Delta P$ transmitters)

8. SLCS injection line containment isolation valves (HV-48-1F006A&B)

9. Motor control center 10B223, which serves the following components:
   (a) LPCI injection containment isolation valve (HV-51-1F017C)
   (b) RHR loop "C" minimum flow recirculation isolation valve (HV-51-105A)
   (c) RCIC system valves
   (d) SLCS pump 1AP208
   (e) SLCS injection outboard isolation valve (HV-48-1F006)
   (f) Drywell pressure tap isolation valve (HV-42-147C)
   (g) Drywell unit cooler fans 1A2V212 and 1E2V212
   (h) Reactor recirculation pump cooling water isolation valves (HV-13-106 and HV-13-107)

10. Motor control center 10B224, which serves the following components:
    (a) LPCI injection containment isolation valve (HV-51-1F017D)
    (b) RHR loop "D" minimum flow recirculation isolation valve (HV-51-105B)
    (c) HPCI system valves
    (d) SLCS pump 1BP208
    (e) Drywell pressure tap isolation valve (HV-42-147D)
    (f) Reactor recirculation pump cooling water source select valves (HV-13-108, HV-13-109, HV-13-110, and HV-13-111)
    (g) Drywell unit cooler fans 1B2V212 and 1H2V212

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of the preaction sprinkler system in this fire area, the system will provide automatic suppression of the fire. When the compartment

temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 45 is divided into an eastern (45E) and a western (45W) portion through the establishment of a 20 foot wide zone that is free of combustible materials.

45E

The eastern portion of fire area 45 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 1 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods B and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, method C will be available to shutdown Unit 1 and methods B and C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 45.

45W

The western portion of fire area 45 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2, for a fire in the western half of fire area 45.

A postulated fire in the vicinity of the reactor vessel instrumentation reference leg backfill system could adversely affect reactor vessel water level indication due to reference leg density changes caused by an increase in water temperature. Since there are no fire initiators in close proximity to the backfill system tubing, administratively controlled combustible free zones, throughout the locations of the backfill system will preclude any adverse effect on level indication, due to fire, prior to annunciation in the main control room. Following annunciation in the main control room, the backfill system will be administratively isolated from the reference legs.

f. Deviation

A 20 foot wide zone that is free of combustibles was created by ensuring, by analysis, that there are no intervening combustibles which could provide a path for fire propagation through the combustible-free zone. A fixed suppression system of the water curtain-type is located within the combustible-free zone to provide assurance that a postulated fire due to transient combustibles can be prevented from propagating through the combustible-free zone. The combustible-free zone divides the fire area into a western portion and an eastern portion.

Several components associated with the credited safe shutdown methods are located in fire area 45. Components performing active, credited, redundant functions are located on opposite sides of fire area 45 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone. The locations of the preaction sprinkler system and the water curtain suppression system in fire area 45 are shown in Figure 9A-7.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 45.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

If the fire occurs within the coverage area of the wet pipe sprinkler systems in this fire area, the systems will provide automatic suppression of the fire. When the compartment temperature rises to 212°F, individual fusible link sprinklers will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

9A.5.4.18 Fire Area 46: Main Steam Tunnel (el 253'-0")

a. Structural and architectural design features of fire area (Figures 9A-7, 9A-8, 9A-9, and 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (contains 188 $ft^2$ of unrated metal blowout panels) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part , primary containment wall) | None |
| | S - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (part at el 295'-3") | 3 hr* |
| | Reinforced concrete (part at el 365' roof slab) | None |
| Access: | Watertight door connecting to area 45 | 3 hr** |
| | Steamtight doors connecting to areas 28 and 47 | 3 hr |

b. Major safety-related components in fire area:

1. Main steam line outboard containment isolation valves (HV-41-1F028 A,B,C&D)
2. Feedwater line outboard containment isolation valves (HV-41-1F032A&B and HV-41-1F074A&B)
3. Main steam drain line outboard containment isolation valve (HV-41-1F019)
4. RCIC injection valve (HV-49-1F013)
5. Steam line radiation sensors (RE-41-1N006A,B,C&D)

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the plant fire brigade will be dispatched to el 253' and/or el 283' in the reactor enclosure and will enter the main steam tunnel through doors at those elevations. The fire brigade will extinguish the fire using portable fire extinguishers or hoses from hose stations located outside the entrances to the main steam tunnel.

e. Effect of fire on safe shutdown:

Fire area 46 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Unit 1 and shutdown methods A, B, and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 1 and shutdown methods A, B, and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Unit 1, and methods A, B, and C will be available to shutdown Unit 2.

9A.5.4.19 Fire Area 47: RWCU Compartments, FPCC Compartment, and General Equipment Area (el 283'-0" and el 295'-3")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 1 and 4) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (parts adjacent to stairwell nos. 3 and 4) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | Interior boundary (east and west walls of area 46) – Reinforced concrete | 3 hr |
| | Interior boundary (primary containment wall) – Reinforced concrete | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 1, 3, and 4 | 1.5 hr |
| | Steamtight door connecting to area 46 | 3 hr |
| | Elevator door | 0.75 hr |
| | Equipment hatchways in floor and ceiling (200 $ft^2$ openings; protected by water curtain suppression systems) | None |

b. Major safety-related components in fire area:

1. Containment hydrogen recombiner packages 1AS403 and 1BS403

2. SLCS components:

Storage tank 10T204
Injection pumps 1AP208, 1BP208, and 1CP208
Explosive valves XV-48-1F004A,B&C

3. Core spray loop "A" injection valves (HV-52-1F004A and HV-52-1F005)

4. Core spray loop "B" injection valves (HV-52-1F004B, HV-52-1F037, and HV-52-108)

5. RHR system valves:
   HV-51-1F017A,B,C&D (LPCI injection line containment isolation)
   HV-51-1F021A&B (drywell spray line containment isolation)
   HV-51-1F016A&B (drywell spray line shutoff)

6. HPCI system injection valve (HV-55-1F006)

7. RWCU supply line containment isolation valve (HV-44-1F004)

8. CAC purge line containment isolation valves (HV-57-111, HV-57-115, HV-57-114, and HV-57-161)

9. Containment combustible gas analyzer sample cabinet 10S205

10. Load center 10B204 (Div. 4)

11. Motor control center 10B213, which serves the following components:
    (a) RHR loop "A" valves
    (b) Core spray loop "A" valves
    (c) Feedwater startup recirculation valves (HV-41-109A&B)
    (d) Shutoff valves for main steam to miscellaneous steam-driven components (HV-01-108, HV-01-109, HV-01-111, and HV-01-150)
    (e) Drywell chilled water source select valves
    (f) SGTS heater 0AE188
    (g) SGTS exhaust fan 0AV109

12. Motor control center 10B214, which serves the following components:
    (a) RHR loop "B" valves
    (b) Core spray loop "B" valves
    (c) Drywell cooling water containment isolation valves
    (d) SGTS heater 0BE188
    (e) SGTS exhaust fan 0BV109

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of the preaction sprinkler system in this fire area, the system will provide automatic suppression of the fire. When the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 47 is divided into an eastern (47E) and a western (47W) portion through the establishment of a 20 foot wide zone that is free of combustible materials; no cable trays are located within this combustible-free zone.

<u>47E</u>

The eastern portion of fire area 47 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 1 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods B and C for Unit 2 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost.

Equipment associated with shutdown methods B and C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, method C will be available to shutdown Unit 1 and methods B and C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 47.

<u>47W</u>

The western portion of fire area 47 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Unit 1 are either encapsulated by a qualified barrier, associated with equipment that have redundant

components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods B and C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2, for a fire in the western half of fire area 47.

A postulated fire in the vicinity of the reactor vessel instrumentation reference leg backfill system could adversely affect reactor vessel water level indication due to reference leg density changes caused by an increase in water temperature. Since there are no fire initiators in close proximity to the backfill system tubing, administratively controlled combustible free zones, throughout the locations of the backfill system will preclude any adverse effect on level indication, due to fire, prior to annunciation in the main control room. Following annunciation in the main control room, the backfill system will be administratively isolated from the reference legs.

f. Deviations:

A 20 foot wide zone that is free of combustible materials is maintained; no cable trays are located within this combustible-free zone. The combustible-free zone divides fire area 47 into a western portion and an eastern portion.

Several components associated with the credited safe shutdown methods are located in the eastern half of fire area 47. Components and cables performing active, credited, redundant functions are located on opposite sides of fire area 47 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone. The location of the precaution sprinkler system on fire area 47 is shown in Figure 9A-8.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 47.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.4.20 Fire Area 48: RWCU Holding Pump Compartments, RERS Fan Area, and Corridors (el 313'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | W - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (part adjacent to stairwell no. 4) | 2 hr |
| | Interior boundary - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 3 and 4 | 1.5 hr |
| | Airlock door connecting to area 49 | 3 hr |
| | Double airlock door connecting to area 49 | 3 hr** |
| | Elevator door | 0.75 hr |
| | Equipment hatchway in floor (200 $ft^2$ opening; protected by water curtain suppression system) | None |

b. Major safety-related components in fire area:

1. RERS fans (1AV213 and 1BV213)

2. Load center 10B201 (Div. 1)

3. Load center 10B202 (Div. 2)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 48 is divided into an eastern (48E) and a western (48W) portion through the establishment of a 20 foot wide zone that is free of combustible materials.

48E

The eastern portion of fire area 48 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 1 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2, for a fire in the eastern half of fire area 48.

48W

The western portion of fire area 48 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2, for a fire in the western half of fire area 48.

f. Deviations:

Load centers 10B201 and 10B202 and their associated transformers are the only components credited for safe shutdown which are located in fire area 48. The horizontal separation between the two load centers is greater than 35 feet, and the only combustible materials in the intervening space are electrical cables in a cable tray. A 20 foot wide zone that is free of combustibles was created between the two load centers by using a galvanized steel cable tray enclosure system to cover the cable trays that pass through the zone. This non-combustible configuration together with the enclosure and seals will prevent fire propagation across the combustible zone. A fixed suppression system of the water curtain-type is located within the combustible-free zone to provide assurance that a postulated fire due to transient combustibles can be prevented from propagating through the combustible-free zone. To preclude the possibility of a spilled combustible liquid spreading across the area between the two load centers, a concrete curb is provided between the load centers, spanning the full width of the corridor in which the load centers are located. The curb is located within the coverage area of the water curtain system. To protect the load centers from radiant heat that could be generated by a postulated fire occurring in the area between the load centers, each load center is provided with a radiant heat shield. The heat shields are constructed of Marinite sheet and are located adjacent to the side of each load center that faces the concrete curb.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 48.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.4.21 Fire Area 49: Reactor Enclosure Lower Fan Room (el 313'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | S - Louvers open to outside atmosphere (part) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (part below fire area 50) | None |
| | Reinforced concrete (part below fire area 51) | 3 hr* |
| Access: | Airlock door connecting to area 48 | 3 hr |
| | Double airlock door connecting | 3 hr** |

| | | |
|---|---|---|
| | to area 48 | |
| | Emergency exit in ceiling (6.25 $ft^2$ opening) | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Once the control room operators have been notified that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 49 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.22 Fire Area 50: Reactor Enclosure Upper Fan Room and Equipment Compartment Exhaust Filter Rooms (el 331'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete (part adjacent to stairwell no. 3) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| Floor: | Reinforced concrete | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Door connecting to stairwell no. 3 | 1.5 hr |
| | Two doors connecting to area 51 | 3 hr |
| | Emergency exit in floor | None |

(6.25 $ft^2$ opening)

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the reactor enclosure equipment compartment exhaust filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the affected ventilation system will be shut down and the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

e. Effect of fire on safe shutdown:

Fire area 50 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.23 Fire Area 51: RERS Filter Compartments (el 331'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (exterior wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Two doors connecting to area 50 | 3 hr |

b. Major safety-related components in fire area:

1. RERS filter assemblies (1AS297 and 1BS297)

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the RERS filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

e. Effect of fire on safe shutdown:

Fire area 51 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.24 Fire Area 75: Service Water Pipe Tunnel (el 198'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | None |
| | S - Reinforced concrete (part adjacent to diesel generator enclosures) | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation | None |
| Ceiling: | Reinforced concrete (portion below fire areas 44, 67, and 79 through 86) | 3 hr* |
| | Reinforced concrete (portion below fire areas 76, 124, and 125) | None |
| Access: | Watertight doors connecting to areas 42 and 65 | 3 hr** |

b. Major safety-related components in fire area:

1. ESW discharge header isolation valves (HV-11-011A&B and HV-11-015A&B)

2. Flow transmitters FT-11-011A&B, FT-11-013A&B, and FT-11-015A&B for ESW supply and return headers

3. Pressure switches PSL-12-102A&B and PSL-12-202A&B for RHRSW supply to the RHR heat exchangers

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire. Depending on the severity and location of the fire, certain components in the ESW and/or RHRSW systems may be affected.

e. Effect of fire on safe shutdown:

Fire area 75 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

f. Deviations:

The existence of an unrated ceiling for this fire area is acceptable because of the low combustible loadings in the pipe tunnel (fire area 75) below the ceiling and in the corridors and condensate pump rooms (fire areas 124 and 125) above the ceiling. In the highly unlikely event that a fire in this area should propagate through the unrated ceiling, safe shutdown capability would still be assured. Fire area 75 and fire areas 124 and 125 all credit methods A, B, and C for safe shutdown of both Units 1 and 2.

The unrated steel ceiling is a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the ceiling is unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barrier.

9A.5.4.25 <u>Fire Area 76: Refueling Hoist-way (el 217'-0")</u>

a. Structural and architectural design features of fire area (Figures 9A-6, 9A-7, 9A-8, and 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation | None |
| Ceiling: | Concrete hatch plugs connecting to area 78 | None |
| Access: | Missile-resistant doors connecting to areas 44 and 67 | 3 hr** |
| | Railroad car airlock doors | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 76 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.26 Fire Area 77: South Ventilation Exhaust Stack

a. Structural and architectural design features of fire area (Figures 9A-7, 9A-8, 9A-9, and 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Precast concrete panels | None |
| | S - Precast concrete panels | None |
| | W - Precast concrete panels | None |

| | | |
|---|---|---|
| Floor: | None (open to outside) | |
| Ceiling: | None (open to outside) | |
| Access: | Door connecting to area 78 | 3 hr |

b. Major safety-related components located in fire area:

None

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 77 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.27 Fire Area 78: Refueling Area (el 352'-0")

a. Structural and architectural design features of fire area (Figure 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell nos. 4 and 6) | 2 hr |
| | N - Reinforced concrete (part adjacent to fire areas 28, 46, and 69) | 3 hr |
| | N - Reinforced concrete (part, exterior wall) | None |
| | E - Reinforced concrete (part adjacent to stairwell nos. 5 and 6) | 2 hr |
| | E - Reinforced concrete (part) | None |
| | S - Reinforced concrete (part adjacent to stairwell nos. 3 and 5) | 2 hr |

| | | |
|---|---|---|
| | S - Reinforced concrete (part, exterior wall) | None |
| | W - Reinforced concrete (part adjacent to stairwell nos. 3 and 4) | 2 hr |
| | W - Reinforced concrete (part, exterior wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Doors to stairwell nos. 3, 4, 5, and 6 | 1.5 hr |
| | Two doors to area 77 | 3 hr |

b. Major safety-related components in fire area:

1. Reactor enclosure crane

2. Refueling platforms for Units 1 and 2

3. Gate seals, stop seals, and reactor well seals

c. Postulated fire in area:

Ignition of stored materials as a result of an exposure fire. An exposure fire involving stored combustible materials in this fire area would be extremely limited in scope and confined to a small area due to the sparsely distributed combustibles within the refueling area. Ignition of the stored combustible materials is extremely unlikely in the absence of a fire source external to the materials.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire. No effect on safety related systems will result from a fire in the fire area.

e. Effect of fire on safe shutdown:

Fire area 78 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.28 Fire Area 126: North Stack Instrument Room and Vestibule (el 411'-9")

a. Structural and architectural design features of fire area (Figure 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Precast concrete panels | 2 hr |
| | E - Insulated metal siding | None |
| | S - Insulated metal siding | None |
| | W - Insulated metal siding | None |
| Floor: | Reinforced concrete | None |
| Ceiling: | Built-up roofing | UL Class A |
| Access: | Door connecting to north stack | 1.5 hr |
| | Two doors to outside | None |

b. Major safety-related components in fire area:

1. Wide range accident monitors 01S908 and 02S908

2. Wide range accident monitor microprocessor (RY-26-076)

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 126 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.4.29 Fire Area 127: South Stack Instrument Room (el 411'-9")

a. Structural and architectural design features of fire area (Figure 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Insulated metal siding | None |
| | E - Insulated metal siding | None |
| | S - Precast concrete panels | 2 hr |

| | | |
|---|---|---|
| | W - Insulated metal siding | None |
| Floor: | Reinforced concrete | None |
| Ceiling: | Built-up roofing | UL Class A |
| Access: | Door connecting to south stack<br>Two doors to outside | 1.5 hr<br>None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 127 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

## 9A.5.5 SAFE SHUTDOWN ANALYSIS - UNIT 2 REACTOR ENCLOSURE

### 9A.5.5.1 Fire Area 52: Suppression Chamber (el 181'-11")

a. Structural and architectural design features of fire area (Figures 9A-4, 9A-5, and 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | All around - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (diaphragm slab) | None |

| | | |
|---|---|---|
| Access: | Two access hatches connecting to area 67 | None |

b. Major safety-related components in fire area:

1. Primary containment vacuum relief valve assemblies (PSV-57-237A,B,C&D)

c. Postulated fire in area:

Since there are no combustible materials located in this area, no fire is postulated to occur.

d. Consequences of fire with active fire suppression:

Not applicable (see item (c)).

e. Effect of fire on safe shutdown:

Fire area 52 contains safe shutdown cables and equipment.

During normal operation, primary containment is inerted. Since containment is inerted no fire is postulated.

9A.5.5.2 Fire Area 53: Drywell (el 237'-11")

a. Structural and architectural design features of fire area (Figures 9A-7, 9A-8, and 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | All around - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete (diaphragm slab) | None |
| Ceiling: | Steel dome (drywell head) | None |
| Access: | Equipment hatch connecting to area 68 | None |
| | Equipment hatch with personnel lock connecting to area 68 | None |

b. Major safety-related components in fire area:

1. Control rod drive mechanisms (total of 185)

2. Main steam isolation valves (inboard, one per steam line)

3. Main steam relief valves (total of 14)

4. Drywell unit coolers (total of 8)

5. Inboard containment isolation valves for HPCI steam supply line, RCIC steam supply line, RWCU letdown line, and RHR shutdown cooling suction line

c. Postulated fire in area:

1. Leakage of lube oil from a recirculation pump motor onto the diaphragm slab, with subsequent ignition of the oil.

2. Ignition of electrical cabling in cable tray or direct supported metal clad cable.

d. Consequences of fire with active fire suppression:

The possibility of a fire in the drywell is limited to periods when the reactor is shut down. This is because the primary containment is inerted with nitrogen during reactor operation, so that the oxygen concentration is maintained below 4% by volume. This inert atmosphere will prevent fires from occurring in the primary containment during reactor operation.

In the event of a fire in the drywell while the reactor is shut down and the drywell deinerted, the operator will dispatch the plant fire brigade to el 253' in the reactor enclosure. The fire brigade will enter the drywell through the personnel airlock and will ensure extinguishment of the fire through the use of portable fire extinguishers or hoses from hose reels located outside the entrances to the drywell.

e. Effect of fire on safe shutdown:

Fire area 53 contains safe shutdown cables and equipment.

During normal operation, primary containment is inerted. Since containment is inerted no fire is postulated.

9A.5.5.3 Fire Area 54: Residual Heat Removal Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | NE - Reinforced concrete (primary containment wall) | None |
| | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part below el 201', exterior wall) | None |
| | W - Reinforced concrete (part above el 201') | 3 hr |
| | S - Reinforced concrete (part below el 198', exterior wall) | None |
| | S - Reinforced concrete (part above el 198') | 3 hr |
| | E - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |

| | | |
|---|---|---|
| Ceiling: | Reinforced concrete (ceiling contains 115 $ft^2$ of unrated metal blowout panels leading to area 66) | None |
| Access: | Watertight doors connecting to areas 55 and 62 | 3 hr** |
| | Steamtight doors (at el 201') connecting to areas 55 and 64 | 3 hr |

b. Major safety-related components in fire area:

1. RHR pumps 2AP202 and 2CP202

2. RHR heat exchanger 2AE205

3. RHR compartment unit coolers 2AV210, 2CV210, 2EV210, and 2GV210

c. Postulated fire in area:

Leakage of lube oil from both RHR pump motors onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 54 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B and C will be available to shutdown Unit 1 and methods B and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the

panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 54 and the western portion of fire area 66 both credit method C for safe shutdown of Unit 2. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 1.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.5.4 Fire Area 55: Residual Heat Removal Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete | 3 hr |
| | NE - Reinforced concrete | 3 hr |
| | NW - Reinforced concrete (primary containment wall) | None |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part below el 198', exterior wall) | None |
| | S - Reinforced concrete (part above el 198') | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 150 $ft^2$ of unrated metal blowout panels leading to area 66) | None |
| Access: | Watertight doors connecting to areas 54 and 56 | 3 hr** |
| | Steamtight doors (at el 201') connecting to areas 54 and 65 | 3 hr |

b. Major safety-related components in fire area:

1. RHR pumps 2BP202 and 2DP202

2. RHR heat exchanger 2BE205

3. RHR compartment unit coolers 2BV210, 2DV210, 2FV210, and 2HV210

4. RCIC turbine exhaust line vacuum breaker valves HV-49-2F080 and HV-49-2F084

5. ESW loop "B" valves (HV-11-047, HV-11-077, HV-11-225, and HV-11-226)

c. Postulated fire in area:

Leakage of lube oil from both RHR pump motors onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 55 contains safe shutdown cables and equipment.

Cables required to support shutdown method B for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method B for Unit 1 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Unit 1 and method C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 and method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 55 and the eastern portion of fire area 66 both credit method C for safe shutdown of Unit 2. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 1.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.5.5 Fire Area 56: Reactor Core Isolation Cooling Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete (exterior wall) | None |
| | N - Reinforced concrete | 3 hr |
| | NE - Reinforced concrete | 3 hr |
| | NW - Reinforced concrete (primary containment wall) | None |
| | SW - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | S - Reinforced concrete (part, exterior wall below el 198') | None |
| | S - Reinforced concrete (part, exterior wall above el 198') | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 25 $ft^2$ of unrated metal blowout panels leading to area 66) | None |
| Access: | Watertight doors connecting to areas 55 and 57 | 3 hr** |
| | Door connecting to stairwell no. 5 | 1.5 hr |

b. Major safety-related components in fire area:

1. RCIC pump 20P203
2. RCIC turbine 20S212
3. RCIC compartment unit coolers 2AV208 and 2BV208

c. Postulated fire in area:

Leakage of lube oil from RCIC turbine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 56 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 56 and the eastern portion of fire area 66 both credit method C for safe shutdown of Unit 2. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 1.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers

9A.5.5.6 Fire Area 57: High Pressure Coolant Injection Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete (exterior wall) | None |
| | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (primary containment wall) | None |
| | SW - Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| | S - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (ceiling contains 160 $ft^2$ of unrated metal blowout panels leading to area 66) | None |
| Access: | Watertight doors connecting to areas 56 and 63 | 3 hr** |

b. Major safety-related components in fire area:

1. HPCI pump 20P204
2. HPCI turbine 20S211
3. HPCI compartment unit coolers 2AV209 and 2BV209
4. Instrument rack 20C014 (HPCI)

c. Postulated fire in area:

Leakage of lube oil from HPCI turbine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible-visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 57 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2.

f. Deviations:

The existence of unrated metal panels in the ceiling of this fire area is acceptable because the low combustible loadings in the areas above and below the panels and the height of the panels above the floor (40 feet) minimize the possibility of fire propagating through the panels. Penetrations of piping and electrical raceway through the ceiling are provided with 3 hour rated seals.

In the highly unlikely event that a fire in this area should propagate through the metal panels in the ceiling at elevation 217', safe shutdown capability would still be assured. Fire area 57 and the eastern portion of fire area 66 both credit method C for safe shutdown of Unit 2. The unlikely propagation of a fire through the metal panels does not impact safe shutdown of Unit 1.

The unrated metal panels are a deviation from the requirements of CMEB 9.5-1, C.5.b. Although the metal panels are unrated, safe shutdown requirements are met in that safe shutdown can be achieved even with the unlikely failure of the unrated barriers.

9A.5.5.7 Fire Area 58: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (primary containment wall) | None |
| | S - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 63 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 2BP206

2. Core spray compartment unit coolers 2BV211 and 2FV211

3. Safeguard piping fill pump 2BP256

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control

room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 58 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.8 Fire Area 59: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete | 3 hr |
| | N - Reinforced concrete (part adjacent to fire areas 102 and 115) | 3 hr |
| | N - Reinforced concrete (part adjacent to unexcavated area) | None |
| | W - Reinforced concrete | 3 hr |
| | SW - Reinforced concrete (primary containment wall) | None |
| | S - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 63 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 2DP206

2. Core spray compartment unit coolers 2DV211 and 2HV211

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 59 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.9 Fire Area 60: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | E - Reinforced concrete | 3 hr |
| | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | SE - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 62 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 2CP206

2. Core spray compartment unit coolers 2CV211 and 2GV211

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 60 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.

9A.5.5.10 Fire Area 61: Core Spray Compartment (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight door connecting to area 62 | 3 hr** |

b. Major safety-related components in fire area:

1. Core spray pump 2AP206

2. Core spray compartment unit coolers 2AV211 and 2EV211

3. Safeguard piping fill pump 2AP256

c. Postulated fire in area:

Leakage of lube oil from core spray pump motor onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire will activate the smoke detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 61 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.11 Fire Area 62: Sump Room and Passageway (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 2) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to unexcavated area) | None |
| | S - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part, primary containment wall) | None |
| | E - Reinforced concrete (part) | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight doors connecting to areas 54, 60, and 61 | 3 hr** |
| | Door connecting to stairwell no. 2 | 1.5 hr |

b. Major safety-related components in fire area:

1. Containment isolation valves (HV-52-227 and HV-52-228) for suppression pool cleanup pump suction line.

2. Instrument rack 20C075 (RHR pump "A" discharge pressure)

3. Instrument rack 20C077 (RHR pump "C" discharge pressure)

4. Instrument rack 20C018 (Div. 1 RHR and Div. 1 RHRSW)

c. Postulated fire in area:

1. Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of oil in waste oil collection drum associated with the floor drain sump oil removal belt.

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 62 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.12 Fire Area 63: Corridor (el 177'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| | N - Reinforced concrete (part adjacent to | None |

| | | |
|---|---|---|
| | unexcavated area) | |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part adjacent to unexcavated area) | None |
| | E - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Watertight doors connecting to areas 57, 58, and 59 | 3 hr** |
| | Door connecting to stairwell no. 6 | 1.5 hr |
| | Elevator door | 0.75 hr |

b. Major safety-related components in fire area:

1. HPCI pump discharge flow transmitters (FT-55-2N008 and FT-55-2N051)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 63 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1 and methods A and C will be available to shutdown Unit 2.

9A.5.5.13 Fire Area 64: Reactor Enclosure Cooling Water Equipment Area (el 201'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 2) | 2 hr |
| | W - Reinforced concrete (part adjacent to fire area 41) | 3 hr |
| | W - Reinforced concrete (part adjacent to unexcavated area) | None |
| | S - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (One portion of the ceiling slab, covering an area of 10 $ft^2$, has a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Access: | Door connecting to stairwell no. 2 | 1.5 hr |
| | Door connecting to area 54 | 3 hr |

b. Major safety-related components in fire area:

1. Core spray loop "A" minimum flow recirculation valve (HV-52-2F031A)

2. Containment atmosphere sample return line isolation valves (SV-57-290 and SV-57-291)

3. ESW loop "A" valves (HV-11-046, HV-11-076, HV-11-221, HV-11-223, HV-11-224, HV-11-227 and HV-11-228)

4. HVAC unit cooler control panels 2AC208 and 2CC208

5. Motor control center 20B217, which serves the following components:
   (a) RHR loop "C" valves
   (b) RHR compartment unit coolers 2CV210 and 2GV210
   (c) Core spray loop "A" valves
   (d) Core spray compartment unit coolers 2CV211 and 2GV211
   (e) RHRSW outlet valve from RHR "A" heat exchanger (HV-51-2F068A)
   (f) Drywell unit cooler fans 2C2V212 and 2G2V212
   (g) Containment hydrogen recombiner 2AS403 and associated valves
   (h) HVAC 120 V ac transformer 20X283
   (i) PCIG supply header containment isolation valve (HV-59-251A)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190□F, the deluge valve will open and prime the preaction sprinkler system with water. At 212□F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 64 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods B and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2.

9A.5.5.14 Fire Area 65: Safeguard System Access Area (el 201'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | SW - Reinforced concrete (primary containment wall) | None |
| | S - Reinforced concrete (part | 2 hr |

| | | |
|---|---|---|
| | adjacent to stairwell no. 5) | |
| | S - Reinforced concrete (part) | 3 hr |
| | E - Reinforced concrete (part adjacent to unexcavated area) | None |
| | E - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| | E - Reinforced concrete (part adjacent to auxiliary boiler pipe tunnel) | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (One portion of the ceiling slab, covering an area of 10 $ft^2$, has a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Access: | Elevator door | 0.75 hr |
| | Doors connecting to stairwell nos. 5 and 6 | 1.5 hr |
| | Door connecting to area 55 | 3 hr |
| | Watertight door connecting to area 75 | 3 hr** |

b. Major safety-related components in fire area:

1. HPCI valves HV-55-2F007 (pump discharge) and HV-55-2F008 (pump discharge recirculation to CST)

2. RCIC valves HV-49-2F012 (pump discharge) and HV-49-2F022 (pump discharge recirculation to CST)

3. HPCI level transmitters (LT-55-2N061B&F) and turbine exhaust pressure transmitters (PT-56-2N055D&H)

4. RCIC pump suction line level transmitters (LT-49-2N035A&E)

5. ESW loop "B" valves (HV-11-048, HV-11-049, HV-11-078, and HV-11-079)

6. Suppression chamber pressure transmitter (PT-57-201)

7. Instrument rack 20C017 (RCIC)

8. Instrument rack 20C021 (Div. 2 RHR and Div. 2 RHRSW)

9. Instrument rack 20C076 (RHR pump "B" discharge pressure)

10. Instrument rack 20C078 (RHR pump "D" discharge pressure)

11. HVAC unit cooler control panels 2BC208 and 2DC208

12. Motor control center 20B218, which serves the following components:

(a) RHR loop "D" valves
(b) RHR compartment unit coolers 2DV210 and 2HV210
(c) Core spray pump suction valve (HV-52-2F001D)
(d) Core spray compartment unit coolers 2DV211 and 2HV211
(e) RHRSW outlet valve from RHR "B" heat exchanger (HV-51-2F068B)
(f) Drywell unit cooler fans 2D2V212 and 2F2V212
(g) Containment hydrogen recombiner 2BS403 and associated valves
(h) HVAC 120 V ac transformer 20X284
(i) PCIG supply header containment isolation valve (HV-59-251B)

c. Postulated fire in Area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 65 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2.

9A.5.5.15 Fire Area 66: Safeguard System Isolation Valve Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (exterior wall, contains 150 $ft^2$ of unrated blowout panels) | None |
| | W - Reinforced concrete | 3 hr |
| | Interior boundary - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete (contains 450 $ft^2$ of unrated metal blowout panels from areas 54, 55, 56, and 57) | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Two steamtight doors connecting to area 67 | 3 hr |

b. Major safety-related components in fire area:

1. HPCI steam line containment isolation valves (HV-55-2F003 and HV-55-2F100)

2. RCIC steam line containment isolation valves (HV-49-2F008 and HV-49-2F076)

3. RHR system valves:
   (a) HV-51-2F008 (shutdown cooling suction containment isolation)
   (b) HV-51-2F015A&B (shutdown cooling return containment isolation)
   (c) HV-51-2F047A&B (heat exchanger inlet)
   (d) HV-C-51-2F048A&B (heat exchanger bypass)

4. CAC system containment isolation valves (HV-57-209, HV-57-221, HV-57-223, HV-57-224, HV-57-231, HV-57-235, HV-57-247, HV-57-263, and HV-57-264)

5. PCIG system containment isolation valves (HV-59-202, HV-59-229A, HV-59-229B, HV-59-235, HV-59-251A, and HV-59-251B)

6. HPCI system leakage detection temperature elements

7. RCIC system leakage detection temperature elements

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 66 is divided into an eastern (66E) and a western (66W) portion through the establishment of a 20 foot wide zone that is free of combustible materials; no cable trays are located within this combustible-free zone.

<u>66E</u>

The eastern portion of fire area 66 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 66.

<u>66W</u>

The western portion of fire area 66 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either encapsulated by a qualified fire barrier, or associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the western half of fire area 66.

f. Deviations:

Fire area 66 is divided into a western portion and an eastern portion through the establishment of a 20 foot wide zone that is free of combustible materials. No cable trays are located within this combustible-free zone.

Several valves associated with the credited safe shutdown methods are located in fire area 66. Valves performing active, credited, redundant functions are located on opposite sides of fire area 66 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable trays, and none of these cable trays are located within the combustible-free zone. The in situ combustible loading in fire area 66 is relatively light, with an equivalent severity of only 13 minutes. The potential for transient combustibles to exist in the space between credited, redundant valves is severely restricted by the arrangement of fire area 66 and the locations of commodities within it. The space between credited, redundant valves is relatively narrow and contains a high concentration of pipes and pipe supports. These obstructions effectively prevent the introduction of significant quantities of combustible materials into this space. The factors discussed above preclude the occurrence of a fire, involving either in situ combustibles or transient combustibles, that could simultaneously affect credited, redundant equipment.

The measures described above for physical separation and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or eastern portion of fire area 66.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.5.16 Fire Area 67: Safeguard System Access Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 2 and 6) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 2) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | S - Reinforced concrete (part adjacent to fire area 125) | 3 hr |

| | | |
|---|---|---|
| | S - Reinforced concrete (part, exterior wall) | None |
| | E - Reinforced concrete (part adjacent to stairwell nos. 5 and 6) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| | Interior boundary (part) - Reinforced concrete walls | 3 hr |
| | Interior boundary (part) - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete (Two portions of the floor slab, each of which covers an area of 10 $ft^2$, have a reduced concrete thickness that varies between 4.5 inches and 9.0 inches.) | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 2, 5, and 6 | 1.5 hr |
| | Two steamtight doors connecting to area 66 | 3 hr |
| | Missile-resistant door connecting to area 76 | 3 hr** |
| | Equipment airlock door | None |
| | Elevator door | 0.75 hr |
| | Suppression chamber access hatches | None |
| | Equipment hatchway in ceiling (200 $ft^2$ opening; protected by water curtain suppression system) | None |

b. Major safety-related components in fire area:

1. Core spray full flow test recirculation valves (HV-52-2F015A&B)

2. CAC system containment isolation valves (HV-57-204, HV-57-205, HV-57-212, HV-57-218, and HV-57-262)

3. RHR system valves:
   (a) HV-51-225A&B (containment isolation for recirculation to suppression chamber)
   (b) HV-51-2F027A&B (containment isolation for suppression chamber spray)
   (c) HV-51-2F010A&B (loops C and D recirculation to suppression chamber)
   (d) HV-51-2F024A&B (loops A and B recirculation to suppression chamber)

4. Instrument racks 20C001 (core spray loop A) and 20C019 (core spray loop B)

5. Instrument racks 20C015, 20C025, 20C041, and 20C042 (main steam and reactor recirculation flow)

6. Instrument racks 20C016 and 20C036 (HPCI)

7. Instrument racks 20C035 and 20C038 (RCIC)

8. Instrument racks 20C006, 20C009, 20C010, and 20C022 (reactor recirculation system pressure and jet pump flow)

9. RHR flow transmitters (FT-51-2N015A,B,C&D and FT-51-2N052A,B,C&D)

10. Motor control center 20B211, which serves the following components:
    (a) RHR loop "A" valves
    (b) RHR compartment unit coolers 2AV210 and 2EV210
    (c) Core spray loop "A" valves
    (d) Core spray compartment unit coolers 2AV211 and 2EV211
    (e) RHRSW inlet valve to RHR "A" heat exchanger (HV-51-2F014A)
    (f) RHR shutdown cooling suction inboard isolation valve (HV-51-2F009)
    (g) RCIC compartment unit coolers 2AV208 and 2BV208
    (h) RWCU inboard isolation valve (HV-44-2F001)
    (i) Main steam drain line inboard isolation valve (HV-41-2F016)
    (j) Drywell unit cooler fans 2A1V212, 2C1V212, 2E1V212, and 2G1V212
    (k) Safeguard piping fill pump 2AP256
    (l) PCIG compressor suction line containment isolation valve (HV-59-201)
    (m) 120 V instrument ac distribution panel 20Y101
    (n) Battery chargers 2A1D103 and 2A2D103
    (o) Motor control center 20B215

11. Motor control center 20B212, which serves the following components:
    (a) RHR loop "B" valves
    (b) RHR compartment unit coolers 2BV210 and 2FV210
    (c) Core spray loop "B" valves
    (d) Core spray compartment unit coolers 2BV211 and 2FV211
    (e) RHRSW inlet valve to RHR "B" heat exchanger (HV-51-2F014B)
    (f) RHR shutdown cooling return isolation valve (HV-51-2F015A)
    (g) Reactor recirculation pump suction valve (HV-43-2F023B)
    (h) HPCI compartment unit coolers 2AV209 and 2BV209
    (i) Drywell unit cooler fans 2B1V212, 2D1V212, 2F1V212, and 2H1V212
    (j) Safeguard piping fill pump 2BP256
    (k) CAC system purge line isolation valve (HV-57-205)
    (l) 120 V instrument ac distribution panel 20Y102
    (m) Battery chargers 2B1D103 and 2B2D103
    (n) Motor control center 20B216

12. Motor control center 20B215, which serves the following components:
    (a) RHR loop "A" valves
    (b) RCIC system valves
    (c) Deleted.
    (d) Suppression pool cleanup pump suction isolation valve (HV-52-227)
    (e) Drywell pressure tap isolation valve (HV-42-247A)
    (f) Drywell floor drain and equipment drain containment isolation valves (HV-61-212 and HV-61-232)
    (g) Main steam drain line flow control valve (HV-C41-2F020)

13. Motor control center 20B216, which serves the following components:
    (a) RHR loop "B" valves
    (b) HPCI system valves
    (c) Deleted
    (d) Suppression pool cleanup pump isolation valve (HV-52-228)
    (e) Drywell pressure tap isolation valve (HV-42-247B)
    (f) Suppression pool level tap isolation valves (HV-55-220 and HV-55-221)
    (g) Reactor head spray outboard isolation valve (HV-51-2F023)
    (h) RHR shutdown cooling suction outboard isolation valve (HV-51-2F008)
    (i) RWCU outboard isolation valve (HV-44-2F004)
    (j) Main steam drain line outboard isolation valve (HV-41-2F019)
    (k) RHR to radwaste discharge line isolation valve (HV-51-2F049)

14. Dc motor control center 20D201, which serves the following components:
    (a) RCIC system
    (b) Div. 1 RPS and UPS static inverter

15. Dc motor control center 20D202, which serves the HPCI system

16. Dc motor control center 20D203, which serves the following components:
    (a) HPCI system
    (b) Div. 2 RPS and UPS static inverter

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of one of the three preaction sprinkler systems in this fire area, the system will provide automatic suppression of the fire. When the compartment temperature rises to 190$^{o}$F, the deluge valve will open and prime the preaction sprinkler system with water. At 212$^{o}$F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 67 is divided into an eastern (67E) and a western (67W) portion through the establishment of a 20 foot wide zone that is free of combustible materials.

<u>67E</u>

The eastern portion of fire area 67 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 67.

<u>67W</u>

The western portion of fire area 67 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the western half of fire area 67.

f. Deviations:

Fire area 67 is divided into a western portion and an eastern portion through the establishment of a 20 foot wide zone that is free of combustible materials. All cable trays located within this combustible-free zone are enclosed by a galvanized steel cable tray enclosure system to cover the cable trays that pass through the zone. This non-combustible configuration together with the enclosure and seals will prevent fire propagation across the combustible zone. A fixed suppression system of the water curtain-type is located within the combustible-free zone to provide assurance that a postulated fire

due to transient combustibles can be prevented from propagating through the combustible-free zone.

Several components associated with the credited safe shutdown methods are located in fire area 67. Components performing active, credited, redundant functions are located on opposite sides of fire area 67 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone.

The locations of preaction sprinkler systems and water curtain suppression systems in fire area 67 are shown in Figure 9A-6.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 67.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.5.17 Fire Area 68: CRD Hydraulic Equipment Area and Neutron Monitoring System Area (el 253'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 2 and 6) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 2) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | E - Reinforced concrete (parts adjacent to stairwell nos. 5 and 6) | 2 hr |
| | E - Reinforced concrete (part, exterior wall) | None |
| | Interior boundary (part adjacent to main steam tunnel) - Reinforced concrete | 3 hr |
| | Interior boundary (part) - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |

| | | |
|---|---|---|
| Access: | Doors connecting to stairwell nos. 2, 5, and 6 | 1.5 hr |
| | Elevator door | 0.75 hr |
| | Drywell access hatches | None |
| | Watertight door connecting to area 69 | 3 hr** |
| | Equipment hatchways in floor and ceiling (200 $ft^2$ openings; protected by water curtain suppression systems) | None |

b. Major safety-related components in fire area:

1. DCWS valves HV-87-222, HV-87-223, HV-87-228, and HV-87-229 (supply and return line containment isolation)

2. CRD system master control station

3. CRD system hydraulic control units

4. Containment combustible gas analyzer sample package 20S206

5. Load center 20B203 (Div. 3)

6. Deleted

7. Instrument racks 20C004, 20C005, 20C026, and 20C027 (RPV instrumentation and LPCI injection valve $\Delta$P transmitters)

8. SLCS injection line containment isolation valves (HV-48-2F006A&B)

9. Reactor vessel pressure transmitters (PT-42-203A&B)

10. Reactor vessel water level transmitters (LT-42-215A&B)

11. Drywell pressure transmitters (PT-42-201 and PT-42-270)

12. PCIG supply line pressure monitoring instrumentation (PT-59-252A&B and PDS-59-206A&B)

13. Motor control center 20B223, which serves the following components:
    (a) LPCI injection containment isolation valve (HV-51-2F017C)
    (b) RHR loop "C" minimum flow recirculation isolation valve (HV-51-205A)
    (c) RCIC system valves (HV-49-2F007 and HV-49-2F084)
    (d) Standby liquid control pump 2CP208
    (e) Containment combustible gas analyzer sample package 20S206
    (f) Drywell pressure tap isolation valve (HV-42-247C)
    (g) Drywell unit cooler fans 2A2V212 and 2E2V212
    (h) Reactor recirculation pump cooling water isolation valves (HV-13-206 and HV-13-207)

(i) Battery charger 2CD103
(j) Instrument ac transformer 20X108
(k) Feedwater line inboard maintenance isolation valve (HV-41-2F011B)

14. Motor control center 20B224, which serves the following components:
(a) LPCI injection containment isolation valve (HV-51-2F017D)
(b) RHR loop "D" minimum flow recirculation isolation valve (HV-51-205B)
(c) HPCI system valves (HV-55-2F002 and HV-55-2F095)
(d) Containment combustible gas analyzer sample package 20S205
(e) Drywell pressure tap isolation valve (HV-42-247D)
(f) Reactor recirculation pump cooling water source select valves (HV-13-208 and HV-13-211)
(g) Drywell unit cooler fans 2B2V212 and 2H2V212
(h) Battery charger 2DD103
(i) Instrument ac transformer 20X109

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of one of the two preaction sprinkler systems in this fire area, the system will provide automatic suppression of the fire. When the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

If the fire occurs within the coverage area of the wet pipe sprinkler systems in this fire area, the systems will provide automatic suppression of the fire. When the compartment temperature rises to 200°F, individual fusible link sprinklers will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 68 is divided into an eastern (68E) and a western (68W) portion through the establishment of a 20 foot wide zone that is free of combustible materials; no cable trays are located within this combustible-free zone.

<u>68E</u>

The eastern portion of fire area 68 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 68.

<u>68W</u>

The western portion of fire area 68 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the western half of fire area 68.

A postulated fire in the vicinity of the reactor vessel instrumentation reference leg backfill system could adversely affect reactor vessel water level indication due to reference leg density changes caused by an increase in water temperature. Since there are no fire initiators in close proximity to the backfill system tubing, administratively controlled

combustible free zones, throughout the locations of the backfill system will preclude any adverse effect on level indication, due to fire, prior to annunciation in the main control room. Following annunciation in the main control room, the backfill system will be administratively isolated from the reference legs.

f. Deviations:

Fire area 68 is divided into a western portion and an eastern portion through the establishment of a 20 foot wide zone that is free of combustible materials. No cable trays are located within this combustible-free zone. A fixed suppression system of the water curtain-type is located within the combustible-free zone to provide assurance that a postulated fire due to transient combustibles can be prevented from propagating through the combustible-free zone.

Several components associated with the credited safe shutdown methods are located in fire area 68. Components performing active, credited, redundant functions are located on opposite sides of fire area 68 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone.

The locations of the preaction sprinkler systems and the water curtain suppression system in fire area 68 are shown in Figure 9A-7.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 68.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.5.18 Fire Area 69: Main Steam Tunnel (el 253'-0")

a. Structural and architectural design features of fire area (Figures 9A-7, 9A-8, 9A-9, and 9A-10):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete (contains 233 $ft^2$ of unrated metal blowout panels) | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part, primary containment wall) | None |
| | S - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (part at el 295'-3") | 3 hr* |
| | Reinforced concrete (part at el 365' roof slab) | None |
| Access: | Watertight door connecting to | 3 hr** |

| | |
|---|---|
| area 68 | |
| Steamtight doors connecting to areas 28 and 70 | 3 hr |

b. Major safety-related components in fire area:

1. Main steam line outboard containment isolation valves (HV-41-2F028A,B,C&D)

2. Feedwater line outboard containment isolation valves (HV-41-2F032A&B and HV-41-2F074A&B)

3. Main steam drain line outboard containment isolation valve (HV-41-2F019)

4. Deleted
5. RCIC injection valve (HV-49-2F013)
6. Steam line radiation sensors (RE-41-2N006A,B,C&D)

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the plant fire brigade will be dispatched to el 253' and/or el 283' in the reactor enclosure and will enter the main steam tunnel through doors at those elevations. The fire brigade will extinguish the fire using portable fire extinguishers or hoses from hose stations located outside the entrances to the main steam tunnel.

e. Effect of fire on safe shutdown:

Fire area 69 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.

9A.5.5.19 Fire Area 70: RWCU Compartments, FPCC Compartment, and General Equipment Area (el 283'-0" and el 295'-3")

a. Structural and architectural design features of fire area (Figure 9A-8):

| Construction | Rating |
|---|---|

| | | |
|---|---|---|
| Walls: | N - Reinforced concrete (parts adjacent to stairwell nos. 2 and 6) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete (part adjacent to stairwell no. 2) | 2 hr |
| | W - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | E - Reinforced concrete (parts adjacent to stairwell nos. 5 and 6) | 2 hr |
| | E - Reinforced concrete (part, exterior wall) | None |
| | Interior boundary (east and west walls of area 69) - Reinforced concrete | 3 hr |
| | Interior boundary (primary containment wall) - Reinforced concrete | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | einforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 2, 5, and 6 | 1.5 hr |
| | Steamtight door connecting to area 69 | 3 hr |
| | Elevator door | 0.75 hr |
| | Equipment hatchways in floor and ceiling (200 $ft^2$ openings; protected by water curtain suppression systems) | None |

b. Major safety-related components in fire area:

1. Containment hydrogen recombiner packages 2AS403 and 2BS403

2. SLCS components:
   (a) Storage tank 20T204
   (b) Injection pumps 2AP208, 2BP208, and 2CP208
   (c) Explosive valves XV-48-2F004A,B&C

3. Core spray loop "A" injection valves (HV-52-2F004A and HV-52-2F005)

4. Core spray loop "B" injection valves (HV-52-2F004B, HV-52-2F037, and HV-52-208)

5. RHR system valves:
   (a) HV-51-2F017A,B,C&D (LPCI injection line containment isolation)
   (b) HV-51-2F021A&B (drywell spray line containment isolation)
   (c) HV-51-2F016A&B (drywell spray line shutoff)

6. HPCI system injection valve (HV-55-2F006)

7. RWCU supply line containment isolation valve (HV-44-2F004)

8. CAC system purge line containment isolation valves (HV-57-211, HV-57-215, HV-57-214, and HV-57-261)

9. Containment combustible gas analyzer sample package 20S205

10. Load center 20B204 (Div. 4)

11. Motor control center 20B213, which serves the following components:
   (a) RHR loop "A" valves
   (b) Core spray loop "A" valves
   (c) Feedwater startup recirculation valve (HV-41-209A)
   (d) Shutoff valves for main steam to miscellaneous steam-driven components (HV-01-208, HV-01-209, HV-01-211, and HV-01-250)
   (e) Drywell chilled water source select valves (HV-87-220A&B, HV-87-221A&B, HV-87-224A&B, and HV-87-225A&B)
   (f) Feedwater line outboard containment isolation valve (HV-41-2F032B)
   (g) Feedwater line inboard maintenance isolation valve (HV-41-2F011A)
   (h) SLCS pump 2AP208
   (i) SLCS injection line containment isolation valve (HV-48-2F006A)
   (j) RERS train "A" valves (HV-76-209, HV-76-284A, and HV-76-291A)
   (k) CAC system containment isolation valves (HV-57-212 and HV-57-215)
   (l) HVAC 120 V ac distribution panel 20X281

12. Motor control center 20B214, which serves the following components:
   (a) RHR loop "B" valves
   (b) Core spray loop "B" valves
   (c) Drywell cooling water containment isolation valves (HV-87-222, HV-87-223, HV-87-228, and HV-87-229)
   (d) Feedwater startup recirculation valve (HV-41-209B)
   (f) Feedwater line outboard containment isolation valve (HV-41-2F032A)
   (g) SLCS pump 2BP208
   (h) SLCS injection line containment isolation valve (HV-48-2F006B)
   (i) RERS train "B" valves (HV-76-210, HV-76-284B, and HV-76-291B)
   (j) CAC system containment isolation valve (HV-57-211)
   (k) HVAC 120 V ac distribution panel 20X282

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the fire occurs within the coverage area of the preaction sprinkler system in this fire area, the system will provide automatic suppression of the fire. When the compartment temperature rises to 190$^{o}$F, the deluge valve will open and prime the preaction sprinkler system with water. At 212$^{o}$F, individual fusible link sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 70 is divided into an eastern (70E) and a western (70W) portion through the establishment of a 20 foot wide zone that is free of combustible materials; no cable trays are located within this combustible-free zone.

<u>70E</u>

The eastern portion of fire area 70 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 70.

<u>70W</u>

The western portion of fire area 70 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either encapsulated by a qualified fire barrier, associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area have redundant

components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the western half of fire area 70.

A postulated fire in the vicinity of the reactor vessel instrumentation reference leg backfill system could adversely affect reactor vessel water level indication due to reference leg density changes caused by an increase in water temperature. Since there are no fire initiators in close proximity to the backfill system tubing, administratively controlled combustible free zones, throughout the locations of the backfill system will preclude any adverse effect on level indication, due to fire, prior to annunciation in the main control room. Following annunciation in the main control room, the backfill system will be administratively isolated from the reference legs.

f. Deviations:

Fire area 70 is divided into a western portion and an eastern portion through the establishment of a 20 foot wide zone that is free of combustible materials. No cable trays are located within this combustible-free zone.

Several components associated with the credited safe shutdown methods are located in fire area 70. Components performing active, credited, redundant functions are located on opposite sides of fire area 70 and are separated by the combustible free zone. The only combustible materials in the intervening space are electrical cables in cable tray up to the boundaries of the combustible free zone.

The location of the preaction sprinkler system in fire area 70 is shown in Figure 9A-8.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 70.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.5.20 Fire Area 71: RWCU Holding Pump Compartments, RERS Fan Area, and Corridors (el 313'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| Construction | Rating |
|---|---|

| | | |
|---|---|---|
| Walls: | N - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| | N - Reinforced concrete (part) | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | E - Reinforced concrete (part, exterior wall) | None |
| | E - Reinforced concrete (part adjacent to stairwell no. 6) | 2 hr |
| | Interior boundary - Reinforced concrete (primary containment wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Doors connecting to stairwell nos. 5 and 6 | 1.5 hr |
| | Airlock door connecting to area 72 | 3 hr |
| | Double airlock door connecting to area 72 | 3 hr** |
| | Elevator door | 0.75 hr |
| | Equipment hatchway in floor (200 $ft^2$ opening; protected by water curtain suppression system) | None |

b. Major safety-related components in fire area:

1. RERS fans (2AV213 and 2BV213)

2. Load center 20B201 (Div. 1)

3. Load center 20B202 (Div. 2)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

For the purposes of safe shutdown analyses, fire area 71 is divided into an eastern (71E) and a western (71W) portion through the establishment of a 20 foot wide zone that is free of combustible materials; no cable trays are located within this combustible-free zone.

<u>71E</u>

The eastern portion of fire area 71 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown methods A and C for Unit 2 located in this fire area either have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2, for a fire in the eastern half of fire area 71.

<u>71W</u>

The western portion of fire area 71 contains safe shutdown cables and equipment.

Cables required to support shutdown method C for Unit 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area, or can be credited for safe shutdown by manual operator actions to recover any functions that could be lost.

Cables required to support shutdown methods A, B, and C for Unit 1 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and method C will be available to shutdown Unit 2, for a fire in the western half of fire area 71.

f. Deviation:

Load centers 20B201 and 20B202 and their associated transformers are the only components credited for safe shutdown which are located in fire area 71. The horizontal separation between the two load centers is approximately 35 feet, and there are no cable trays located in the intervening space. A 20 foot wide zone that is free of combustible materials is maintained between the two load centers. A fixed suppression system of the

water curtain-type is located within the combustible-free zone to provide assurance that a postulated fire due to transient combustibles can be prevented from propagating through the combustible-free zone. To preclude the possibility of a spilled combustible liquid spreading across the area between the two load centers, a concrete curb is provided between the load centers, spanning the full width of the corridor in which the load centers are located. The curb is located within the coverage area of the water curtain system. To protect the load centers from radiant heat that could be generated by a postulated fire occurring in the area between the load centers, each load center is provided with a radiant heat shield. The heat shields are constructed of Marinite sheet and are located adjacent to the side of each load center that faces the concrete curb.

The measures described above for physical separation, fire suppression, and provision of fire barriers ensure that the plant can be safely shut down in the event of a fire in either the western portion or the eastern portion of fire area 48.

This is a deviation from the CMEB 9.5-1, C.5.b requirement for automatic suppression. This deviation is documented in reference 9A.7.5.

9A.5.5.21 Fire Area 72: Reactor Enclosure Lower Fan Room (el 313'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (part, exterior wall) | None |
| | S - Louvers open to outside atmosphere (part) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete (part below fire area 73) | None |
| | Reinforced concrete (part below fire area 74) | 3 hr* |
| Access: | Airlock door connecting to area 71 | 3 hr |
| | Double airlock door connecting to area 71 | 3 hr** |
| | Emergency exit in ceiling (6.25 $ft^2$ opening) | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Once the control room operators have been notified that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect on fire safe shutdown:

Fire area 72 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.22 Fire Area 73: Reactor Enclosure Upper Fan Room and Equipment Compartment Exhaust Filter Rooms (el 331'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | E - Reinforced concrete (part adjacent to stairwell no. 5) | 2 hr |
| | E - Reinforced concrete (part) | 3 hr |
| Floor: | Reinforced concrete | None |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Door connecting to stairwell no. 5 | 1.5 hr |
| | Two doors connecting to area 74 | 3 hr |
| | Emergency exit in floor (6.25 $ft^2$ opening) | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the reactor enclosure equipment compartment exhaust filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the affected ventilation system will be shut down and the plant fire brigade will be dispatched to extinguish the fire.

The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

e. Effect on fire safe shutdown:

Fire area 73 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.5.23 Fire Area 74: RERS Filter Compartments (el 331-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (exterior wall) | None |
| Floor: | Reinforced concrete | 3 hr* |
| Ceiling: | Reinforced concrete | 3 hr* |
| Access: | Two doors connecting to area 73 | 3 hr |

b. Major safety-related components in fire area:

1. RERS filter assemblies (2AS297 and 2BS297)

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the reactor enclosure recirculation system filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum.

e. Effect on fire safe shutdown:

Fire area 74 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6 SAFE SHUTDOWN ANALYSIS - DIESEL GENERATOR ENCLOSURES

9A.5.6.1 Fire Area 79: Diesel Generator Cell 1A (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete (exterior wall) | None |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 1A and auxiliaries

2. ESW supply and return shutoff valves (11-1131A, HV-11-132A, HV-11-133A, and HV-11-134A)

3. Diesel generator air exhaust fans 1AV512 and 1EV512

4. Diesel generator control board 1AC514

5. Dc distribution panel 1AD501 (serving diesel generator 1A and auxiliaries)

6. Motor control center 10B515, which serves the following components:
   (a) Auxiliaries of diesel generator 1A
   (b) ESW loop "A" discharge valve (HV-11-011A)

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 79 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

9A.5.6.2 Fire Area 80: Diesel Generator Cell 1C (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 1C and auxiliaries

2. ESW supply and return shutoff valves (11-1131C, HV-11-132C, HV-11-133C, and HV-11-134C)

3. Diesel generator air exhaust fans 1CV512 and 1GV512

4. Diesel generator control board 1CC514

5. Dc distribution panel 1CD501 (serving diesel generator 1C and auxiliaries)

6. Motor control center 10B517, which serves auxiliaries of diesel generator 1C

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 80 contains safe shutdown cables and equipment.

Cables required to support shutdown method A for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method A for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6.3 Fire Area 81: Diesel Generator Cell 1B (el. 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 1B and auxiliaries

2. ESW supply and return shutoff valves (HV-11-131B, HV-11-132B, 11-1133B, and HV-11-134B)

3. Diesel generator air exhaust fans 1BV512 and 1FV512

4. Diesel generator control board 1BC514

5. Dc distribution panel 1BD501 (serving diesel generator 1B and auxiliaries)

6. Motor control center 10B516, which serves auxiliaries of diesel generator 1B

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 81 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

9A.5.6.4 Fire Area 82: Diesel Generator Cell 1D (el. 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (part adjacent to equipment airlock) | 3 hr |
| | E - Reinforced concrete (part, exterior wall) | None |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 1D and auxiliaries

2. ESW supply and return shutoff valves (HV-11-131D, HV-11-132D, 11-1133D, and HV-11-134D)

3. Diesel generator air exhaust fans 1DV512 and 1HV512

4. Diesel generator control board 1DC514

5. Dc distribution panel 1DD501 (serving diesel generator 1D and auxiliaries)

6. Motor control center 10B518, which serves the following components:
   (a) Auxiliaries of diesel generator 1D
   (b) ESW loop "B" discharge valve (HV-11-015B)

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190$^{o}$F, the deluge valve will open and prime the preaction sprinkler system with water. At 212$^{o}$F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 82 contains safe shutdown cables and equipment.

Cables required to support shutdown method B for Units 1 and 2 are either associated with equipment that have redundant components that are not affected by a fire in this area, or associated with equipment for which manual operator actions can be taken to recover any functions that could be lost. Equipment associated with shutdown method B for Units 1 and 2 located in this fire area may have redundant components that are not affected by a fire in this area, or manual operator actions may be taken to recover any essential functions that could be lost.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6.5 Fire Area 83: Diesel Generator Cell 2A (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete (part adjacent to equipment airlock) | 3 hr |
| | W - Reinforced concrete (part, exterior wall) | None |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 2A and auxiliaries

2. ESW supply and return shutoff valves (11-2231A, HV-11-232A, HV-11-233A, and HV-11-234A)

3. Diesel generator air exhaust fans 2AV512 and 2EV512

4. Diesel generator control board 2AC514

5. Dc distribution panel 2AD501 (serving diesel generator 2A and auxiliaries)

6. Motor control center 20B515, which serves auxiliaries of diesel generator 2A

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 83 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods B and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods B and C will be available to shutdown Unit 2.9A.5.6.6 Fire Area 84: Diesel Generator Cell 2C (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 2C and auxiliaries

2. ESW supply and return shutoff valves (11-2231C, HV-11-232C, HV-11-233C, and HV-11-234C)

3. Diesel generator air exhaust fans 2CV512 and 2GV512

4. Diesel generator control board 2CC514

5. Dc distribution panel 2CD501 (serving diesel generator 2C and auxiliaries)

6. Motor control center 20B517, which serves the following components:
   (a) Auxiliaries of diesel generator 2C
   (b) ESW loop "A" discharge valve (HV-11-015A)

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 84 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6.7 Fire Area 85: Diesel Generator Cell 2B (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (portion on foundation slab) | None |

| | | |
|---|---|---|
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 2B and auxiliaries

2. ESW supply and return shutoff valves (HV-11-231B, HV-11-232B, 11-2233B, and HV-11-234B)

3. Diesel generator air exhaust fans 2BV512 and 2FV512

4. Diesel generator control board 2BC514

5. Dc distribution panel 2BD501 (serving diesel generator 2B and auxiliaries)

6. Motor control center 20B516, which serves the following components:
   (a) Auxiliaries of diesel generator 2B
   (b) ESW loop "B" discharge valve (HV-11-011B)

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual to register on the fire protection panels in the control room. If the compartment temperature rises to 190$^{o}$F, the deluge valve will open and prime the preaction sprinkler system with water. At 212$^{o}$F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 85 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Unit 1 and methods A and C for Unit 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Unit 1, and methods A and C will be available to shutdown Unit 2.

9A.5.6.8 Fire Area 86: Diesel Generator Cell 2D (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (exterior wall) | None |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (portion on foundation slab) | None |
| | Reinforced concrete (portion above fire area 75) | 3 hr* |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door at north side of cell | 3 hr |
| | Door at south side of cell | None |

b. Major safety-related components in fire area:

1. Diesel generator 2D and auxiliaries

2. ESW supply and return shutoff valves (HV-11-231D, HV-11-232D, 11-2233D, and HV-11-234D)

3. Diesel generator air exhaust fans 2DV512 and 2HV512

4. Diesel generator control board 2DC514

5. Dc distribution panel 2DD501 (serving diesel generator 2D and auxiliaries)

6. Motor control center 20B518, which serves auxiliaries of diesel generator 2D

c. Postulated fire in area:

Leakage of fuel oil or lubricating oil from the diesel engine onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

A fire will activate the detectors in this area, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 86 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6.9 Fire Area 124: Diesel Generator Access Corridor for Unit 1 (el. 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete (exterior wall) | None |
| Floor: | Reinforced concrete | None |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door to outside at west end of corridor | None |
| | Four doors at south side of corridor, leading to diesel generator cells | 3 hr |

b. Major safety-related components in fire area:

1. RHRSW radiation monitors 0AS578 and 0BS578

2. Deleted

3. Primary containment post-LOCA radiation monitoring electronics (RY-26-191A,B,C,D)

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 124 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.6.10 Fire Area 125: Diesel Generator Access Corridor for Unit 2 (el. 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Reinforced concrete (exterior wall) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete | None |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door to outside at east end of corridor | None |
| | Four doors at south side of corridor, leading to diesel generator cells | 3 hr |

b. Major safety-related components in fire area:

1. Deleted

2. Primary containment post-LOCA radiation monitoring electronics (RY-26-291A,B,C,D)

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receipt of notification in the control room that a fire has occurred in this area, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 125 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

## 9A.5.7 SAFE SHUTDOWN ANALYSIS - SPRAY POND PUMP STRUCTURE

### 9A.5.7.1 Fire Area 122: Spray Pond Pump Structure, Western Half

a. Structural and architectural design features of fire area (Figures 9A-11 and 9A-12):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete(exterior wall) | None |
| | E - Reinforced concrete | 3 hr |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete (exterior wall) | None |
| Floor: | Reinforced concrete foundation | None |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door connecting to area 123 | 3 hr |
| | Door connecting to outside | None |
| | Roll-up door connecting to outside | None |

b. Major safety-related components in fire area:

1. ESW pumps OAP548 and OCP548

2. RHRSW pumps OAP506 and OCP506

3. Sluice gates HV-12-003A&C

4. RHRSW valves:
   (a) HV-12-031A&C (winter bypass line)
   (b) HV-12-032A&C (spray networks A and C)
   (c) HV-12-034A (spray network cross-connection)
   (d) HV-12-112 and HV-12-114 (inlet from the Unit 1 cooling tower)

5. Spray pond pump structure supply fans OAV543 and OCV543

6. Motor control centers OOB519 (Div. 1) and OOB521 (Div. 3), which serve the following components:
   (a) ESW loop "A" valves
   (b) RHRSW loop "A" valves
   (c) Spray pond pump structure supply fan OAV543 and associated heaters and dampers
   (d) Spray pond pump structure supply fan OCV543 and associated heaters and dampers

7. Class 1E instrument ac distribution panels 01Y501 (Div. 1) and 03Y501 (Div. 3)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 122 contains safe shutdown cables and equipment.

Cables required to support shutdown methods B and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods B and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods B and C will be available to shutdown Units 1 and 2.

9A.5.7.2 Fire Area 123: Spray Pond Pump Structure, Eastern Half

a. Structural and architectural design features of fire area (Figures 9A-11 and 9A-12):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete(exterior wall) | None |
| | E - Reinforced concrete (exterior wall) | None |
| | S - Reinforced concrete (exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation | None |
| Ceiling: | Reinforced concrete roof slab | None |
| Access: | Door connecting to area 122 | 3 hr |
| | Door connecting to outside | None |
| | Roll-up door connecting to outside | None |

b. Major safety-related components in fire area:

1. ESW pumps OBP548 and ODP548

2. RHRSW pumps OBP506 and ODP506

3. Sluice gates HV-12-003B&D

4. RHRSW valves:
   (a) HV-12-031B&D (winter bypass line)

(b) HV-12-032B&D (spray networks B and D)
(c) HV-12- (spray network cross-connection)
(d) HV-12-212 and HV-12-214 (inlet from the Unit 2 cooling tower)

5. Spray pond pump structure supply fans OBV543 and ODV543

6. Motor control centers OOB520 (Div. 2) and OOB522 (Div. 4), which serve the following components:
   (a) ESW loop "B" valves
   (b) RHRSW loop "B" valves
   (c) Spray pond pump structure supply fan OBV543 and associated heaters and dampers
   (d) Spray pond pump structure supply fan ODV543 and associated heaters and dampers

7. Class 1E instrument ac distribution panels 02Y501 (Div. 2) and 04Y501 (Div. 4)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 123 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A and C will be available to shutdown Units 1 and 2.

## 9A.5.8 SAFE SHUTDOWN ANALYSIS - TURBINE ENCLOSURE

### 9A.5.8.1 Fire Area 87: Condensate Pump-Room (el 189'-0")

a. Structural and architectural design features of fire area (Figures 9A-5 and 9A-6):

| Construction | Rating |
|---|---|

| | | |
|---|---|---|
| Walls: | N - Reinforced concrete(exterior wall) | None |
| | E - Reinforced concrete (below el 217 feet) | 3 hr |
| | E - Concrete masonry unit (above el 217 feet) | 2 hr |
| | S - Reinforced concrete (above el 217 feet) | 3 hr |
| | W - Reinforced concrete | 3 hr |
| | S- Reinforced concrete (below el 217 feet) | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Watertight door connecting to area 88 | 3 hr** |
| | Two doors connecting to area 113 | 1.5 hr |
| | Roll-up door connecting to area 113 | 2 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

1. Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of oil in a waste oil collection drum associated with the floor drain sump oil removal belt.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 87 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.2 Fire Area 88: Main Condenser Area and Feedwater Heater Rooms (el 200'-0" and el 239'-0")

a. Structural and architectural design features of fire area (Figures 9A-5, 9A-6, and 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete and concrete masonry unit | None |

| | | |
|---|---|---|
| | (exterior wall, below el 217') | |
| | N - Reinforced concrete and precast concrete panels (exterior wall, above el 217') | None |
| | E - Reinforced concrete (below el 217'; contains 25 $ft^2$ of unrated steel plate as separation from area 115) | 3 hr |
| | E - Reinforced concrete and concrete masonry unit (above el 217') | 3 hr |
| | S - Reinforced concrete and concrete masonry unit (below el 217') | 3 hr |
| | S - Reinforced concrete (between el 217' and el 239') | 3 hr |
| | S - Reinforced concrete (above el 239', contains 188 $ft^2$ of unrated metal blowout panels) | 3 hr |
| | W - Reinforced concrete (portion north of column line N) | 3 hr |
| | W - Concrete masonry unit and precast concrete panels (exterior wall south of column line N) | None |
| Floor: | Reinforced concrete foundation mat (el 200' and el 217') | None |
| | Reinforced concrete (el 239' supported by structural steel ;members without fireproofing) | None |
| Ceiling: | Reinforced concrete | None |
| Access: | Watertight doors connecting to areas 87 and 94 | 3 hr** |
| | Three doors connecting to area 89 | 3 hr |
| | Five doors connecting to area 97 | 3 hr |
| | Doors connecting to areas 95 and 113 | 3 hr |

b. Major safety-related components in fire area:

1. Main turbine stop valve position switches (ZS-01-104A,B,C&D)

2. Turbine control valve fast closure pressure switches (PS-01-102A,B,C&D)

3. Main steam line area temperature detectors

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. If the fire is in the main condenser area and the compartment temperature rises to 212$^{o}$F, individual sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire.

e. Effect of fire on safe shutdown:

Fire area 88 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.3 Fire Area 89: Reactor Feedwater Pump Lube Oil Areas, Control Rod Drive Water Pump Area, and Condensate Filter/Demineralizer Compartments (el 200'-0")

a. Structural and architectural design features of fire area (Figures 9A-5 and 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N -Reinforced concrete and concrete masonry unit (part adjacent to fire areas 88 and 115) | 3 hr |
| | N -Reinforced concrete (part adjacent to unexcavated area) | None |
| | E -Reinforced concrete | 3 hr |
| | S -Reinforced concrete | 3 hr |
| | W -Reinforced concrete(exterior wall) | None |
| Floor: | Reinforced concrete foundation mat (contains 76 $ft^2$ grating opening connecting to area 115) | None |
| Ceiling: | Reinforced concrete (contains156 $ft^2$ grating opening connecting to area 94) | None |
| Access: | Three doors connecting to area 88 | 3 hr |
| | Double steamtight door connecting to area 1 | 3 hr** |
| | Door connecting to stairwell no. 30 | 1.5 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Leakage of lube oil from the reactor feedwater pump lube oil reservoirs onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212°F, individual fusible link sprinkler heads in the wet pipe sprinkler systems will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 89 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.4 Fire Area 90: Air Ejector and Steam Packing Exhauster Compartment (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete concrete masonry unit | 3 hr |
| | S - | Reinforced concrete | 3 hr |
| | W - | Reinforced concrete and concrete masonry unit | 3 hr |
| Floor: | | Reinforced concrete foundation mat | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 90 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.5 Fire Area 91: Air Ejector and Steam Packing Exhauster Compartment (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete and concrete masonry unit | 3 hr |
| | S - | Reinforced concrete and concrete masonry unit | 3 hr |
| | W - | Reinforced concrete | 3 hr |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 91 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.6 Fire Area 92: Mechanical Vacuum Pump-Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete and concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Door connecting to area 94 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 92 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.7 Fire Area 93: Air Compressor Area, EHC Power Unit Area, and Turbine Lube Oil Storage Tank Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Precast concrete panels (exterior wall) | None |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete | 3 hr |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete foundation mat | None |
| Ceiling: | | Reinforced concrete (contains equipment hatch with 55 $ft^2$ of steel plate and a 96 $ft^2$ opening partially filled with grating) | None |
| Access: | | Door connecting to area 94 | 3 hr |
| | | Door connecting to stairwell no. 32 | 1.5 hr |
| | | Roll-up door to outside | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Leakage of lube oil from the turbine lube oil storage tanks onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212°F, individual fusible link sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 93 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.8 Fire Area 94: Reactor Feedwater Pump-Turbine Compartments Reactor Feedwater Pump Access Area, Deep Bed Demineralizer Compartments (EL 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr. |
| | E - | Reinforced concrete and concrete masonry unit | 3 hr. |
| | S - | Reinforced concrete (part) | 3 hr. |
| | S - | Reinforced concrete (part adjacent to area 120) | 2 hr. |
| | S - | Reinforced concrete and concrete masonry unit (part adjacent to area 89; contains 8 HVAC duct penetrations without fire dampers) | None |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete (contains 156 $ft^2$ grating opening connecting to area 89) | None |
| Ceiling: | | Reinforced concrete contains equipment hatch with 66 $ft^2$ of steel plate) | None |
| Access: | | Doors connecting to areas 92 and 93 | 3 hr. |
| | | Doors connecting to area 120 | 1.5 hr. |
| | | Steamtight door connecting to area 2 | 3 hr.** |
| | | Watertight door connecting to | 3 hr.** |

| | |
|---|---|
| area 88 | |
| Door connecting to stairwell no. 30 | 1.5 hr. |
| Open stairwell leading up to area 95 | None |
| Roll-up doors to Entry Access (5-Line Outage Support Facility) | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 94 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.9 Fire Area 95: MCC Room, TECW Equipment Area, and Turbine Lube Oil Reservoir and Centrifuge Area (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Precast concrete panels (exterior wall) | None |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| | W - Precast concrete panels (exterior wall) | None |
| Floor: | Reinforced concrete (contains equipment hatch with 55 $ft^2$ of steel plate and a 96 $ft^2$ opening partially filled with grating) | None |
| Ceiling: | Reinforced concrete | None |
| Access: | Doors connecting to areas 88 and 96 | 3 hr |
| | Door connecting to stairwell no. 32 | 1.5 hr |
| | Open stairwell leading down to area 94 | None |

b. Major safety-related components in fire area:

1. Main turbine first-stage pressure transmitters (PT-01-1N052A,B,C&D)

2. Main steam line pressure transmitters (PT-01-1N076A,B,C&D)

c. Postulated fire in area:

Leakage of lube oil from the turbine lube oil reservoir onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212°F, individual fusible link sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. In addition, a compartment temperature of 190°F will cause actuation of the deluge systems located over the turbine lube oil reservoir and the turbine lube oil centrifuge. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 95 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.10 Fire Area 96: Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | Reinforced concrete | 3 hr |
| Access: | Door connecting to area 95 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke and heat generated by a fire in this area will activate the smoke and heat detectors which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 96 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.11 Fire Area 97: Equipment Hatch Corridor (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete (part) | 3 hr |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete (contains equipment hatch with 66 $ft^2$ of steel plate) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Five doors connecting to area 88 | 3 hr |
| | | Steamtight door connecting to area 7 | 3 hr** |
| | | Door connecting to stairwell no. 30 | 1.5 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 97 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.12 Fire Area 98: Reactor Recirculation Pump MG Set Area and Feedwater Heater Rooms (el 269'-0")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Concrete masonry unit | 3 hr |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete (part) | 3 hr |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | | Reinforced concrete (contains two equipment hatches covered with steel plate, one of 75 $ft^2$ and one of 110 $ft^2$) | None |
| Access: | | Door connecting to stairwell no. 30 | 1.5 hr |
| | | Door connecting to area 45 | 3 hr |
| | | Two doors connecting to area 114 | 3 hr |
| | | Two roll-up doors connecting to area 114 | 3 hr** |

b. Major safety-related components in fire area:

1. Junction boxes containing cables associated with the following components:
   (a) Main turbine stop valve position switches (ZS-01-104A,B,C&D)

(b) Turbine control valve fast closure pressure switches (PS-01-102A,B,C&D)

c. Postulated fire in area:

Ignition of electrical cables in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. The preaction sprinkler system over the MG sets has been spared and is not in service. The ASD System has replaced the MG sets. Smoke detection has been added in the area over the ASD System.

e. Effect of fire on safe shutdown:

Fire area 98 contains safe shutdown cables and equipment.

Cables required to support shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 201 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.13 Fire Area 99: Turbine Enclosure HVAC Area and Equipment Compartment Exhaust Filter Area (el 302'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Concrete masonry unit | 3 hr |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete (part) | 3 hr |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete (contains | None |

| | | |
|---|---|---|
| | two equipment hatches covered with steel plate, one of 75 $ft^2$ and one of 110 $ft^2$) | |
| Ceiling: | Metal deck, nonreinforced concrete, and built-up roofing | UL Class A |
| Access: | Door connecting to stairwell no. 30 | 1.5 hr |
| | Steamtight door connecting to area 27 | 3 hr |
| | Double steamtight door connecting to area 27 | 3 hr** |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the turbine enclosure equipment compartment exhaust filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum. No effect on safety-related systems will result from a fire in this area.

e. Effect of fire on safe shutdown:

Fire area 99 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.14 Fire Area 100: Condensate Pump-Room (el 189'-0")

a. Structural and architectural design features of fire area (Figures 9A-5 and 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete (exterior wall) | None |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete | 3 hr |

| | | |
|---|---|---|
| | W - Reinforced concrete (below el 217') | 3 hr |
| | W - Reinforced concrete (above el 217') | 2 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Watertight door connecting to area 101 | 3 hr** |
| | Two doors connecting to area 113 | 1.5 hr |
| | Roll-up door connecting to area 113 | 1.5 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

1. Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of oil in waste oil collection drum associated with the floor drain sump oil removal belt.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 100 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear, via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.15 Fire Area 101: Main Condenser Area and Feedwater Heater Rooms (el 200'-0" and el 239'-0")

a. Structural and architectural design features of fire area (Figures 9A-5, 9A-6, and 9A-7):

| Construction | Rating |
|---|---|

| | | | |
|---|---|---|---|
| Walls: | N - | Reinforced concrete and concrete masonry unit (exterior wall, below el 217') | None |
| | N - | Reinforced concrete and precast concrete panels (exterior wall, above el 217') | None |
| | E - | Reinforced concrete (portion north of column line N) | 3 hr |
| | E - | Concrete masonry unit and precast concrete panels (exterior wall south of column line N) | None |
| | S - | Reinforced concrete and concrete masonry unit (below el 217') | 3 hr |
| | S - | Reinforced concrete (between el 217'and el 239') | 3 hr |
| | S - | Reinforced concrete (above el 239'; contains 188 $ft^2$ of unrated metal blowout panels) | 3 hr |
| | W - | Reinforced concrete (below el 217'; contains 25 $ft^2$ of unrated steel plate as separation from area 115) | 3 hr |
| | W - | Reinforced concrete and concrete masonry unit (above el 217') | 3 hr |
| Floor: | Reinforced concrete foundation mat (el 200' and el 217') | | None |
| | Reinforced concrete (el 239'; supported by structural steel members without fireproofing) | | None |
| Ceiling: | Reinforced concrete | | None |
| Access: | Watertight doors connecting to areas 100 and 107 | | 3 hr** |
| | Three doors connecting to area 102 | | 3 hr |
| | Five doors connecting to area 110 | | 3 hr |
| | Doors connecting to areas 108 and 113 | | 3 hr |

b. Major safety-related components in fire area:

1. Main turbine stop valve position switches (ZS-01-204A,B,C&D)

2. Turbine control valve fast closure pressure switches (PS-01-202A,B,C&D)

3. Main steam line area temperature detectors

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. If the fire is in the main condenser area and the compartment temperature rises to 212°F, individual sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire.

e. Effect of fire on safe shutdown:

Replacement text for paragraph “e.”

Fire area 101 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.16 <u>Fire Area 102: Reactor Feedwater Pump Lube Oil Areas, Control Rod Drive Water Pump Area, and Condensate Filter/Demineralizer Compartments (el 200'-0")</u>

a. Structural and architectural design features of fire area (Figures 9A-5 and 9A-6):

| | | | | |
|---|---|---|---|---|
| Walls: | N | - | Reinforced concrete and concrete masonry unit (part adjacent to fire areas 101 and 115) | 3 hr |
| | N | - | Reinforced concrete | None |

| | | |
|---|---|---|
| | (part adjacent to unexcavated area) | |
| | E - Reinforced concrete (exterior wall) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (contains 156 $ft^2$ grating opening connecting to area 107) | None |
| Access: | Three doors connecting to area 101 | 3 hr |
| | Two double steamtight doors connecting to area 1 | 3 hr** |
| | Door connecting to stairwell no. 31 | 1.5 hr |
| | Door connecting to area 115 | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area;

Leakage of lube oil from the reactor feedwater pump lube oil reservoirs onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212$^{o}$F, individual fusible link sprinkler heads in the wet pipe sprinkler systems will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 102 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.17 Fire Area 103: Air Ejector and Steam Packing Exhauster Compartment (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete and concrete masonry unit | 3 hr |
| | S - | Reinforced concrete | 3 hr |
| | W - | Reinforced concrete and concrete masonry unit | 3 hr |
| Floor: | | Reinforced concrete foundation mat | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 103 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.18 Fire Area 104: Air Ejector and Steam Packing ExhausterCompartment (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete and concrete masonry unit | 3 hr |
| | W - | Reinforced concrete and concrete masonry unit | 3 hr |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Door connecting to area 113 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 104 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.19 Fire Area 105: Mechanical Vacuum Pump-Room (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Concrete masonry unit | 3 hr |
| | E - Reinforced concrete and concrete masonry unit | 3 hr |
| | S - Concrete masonry unit | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Door connecting to area 107 | 3 hr |

b. Major safety-related components in fire area;

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 105 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.20 Fire Area 106: Air Compressor Area, EHC Power Unit Area, and Turbine Lube Oil Storage Tank Area (el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Precast concrete panels (exterior wall) | None |
| | E - Precast concrete panels (exterior wall) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (contains equipment hatch with 55 $ft^2$ of steel plate and a 96 $ft^2$ opening partially filled with grating) | None |
| Access: | Door connecting to area 107 | 3 hr |
| | Door connecting to stairwell no. 33 | 1.5 hr |
| | Roll-up door to outside | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Leakage of lube oil from the turbine lube oil storage tanks onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212°F, individual fusible link sprinkler heads in the

wet pipe sprinkler system will open to control and/or extinguish the fire. The plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 106 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.21 Fire Area 107: Reactor Feedwater Pump-Turbine Compartments and Reactor Feedwater Pump Access Area Deep Bed Demineralizer Compartments(el 217'-0")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | Construction | Rating |
|---|---|---|
| Walls: | N - Reinforced concrete | 3 hr |
| | E - Precast concrete panels (exterior wall) | None |
| | S - Reinforced concrete (part) | 3 hr |
| | S - Reinforced concrete and concrete masonry unit (part adjacent to area 102; contains 8 HVAC duct penetrations without fire dampers) | None |
| | W - Reinforced concrete and concrete masonry unit | 3 hr |
| Floor: | Reinforced concrete (contains 156 $ft^2$ grating opening connecting to area 102) | None |
| Ceiling: | Reinforced concrete (contains equipment hatch with 66 $ft^2$ of steel plate) | None |
| Access: | Doors connecting to areas 105, 106, and an entryway to the Unit 2 reactor enclosure | 3 hr |
| | Two doors connecting to the administration complex | 3 hr |
| | Steamtight door connecting | 3 hr** |

| | |
|---|---|
| to area 2 | |
| Watertight door connecting to area 101 | 3 hr** |
| Door connecting to stairwell no. 31 | 1.5 hr |
| Roll-up door to outside | None |
| Open stairwell leading to area 108 | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 107 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.22 Fire Area 108: MCC Room, TECW Equipment Area, and Turbine Lube Oil Reservoir and Centrifuge Area (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Precast concrete panels (exterior | None |

| | | |
|---|---|---|
| | wall) | |
| | E - Precast concrete panels (exterior wall) | None |
| | S - Reinforced concrete | 3 hr |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (contains equipment hatch with 55 $ft^2$ of steel plate and a 96 $ft^2$ opening partially filled with grating) | None |
| Ceiling: | Reinforced concrete | None |
| Access: | Doors connecting to areas 101 and 109 | 3 hr |
| | Door connecting to stairwell no. 33 | 1.5 hr |
| | Open stairwell leading down to area 107 | None |

b. Major safety-related components in fire area:

1. Main turbine first-stage pressure transmitters (PT-01-2N052A,B,C&D)

2. Main steam line pressure transmitters (PT-01-2N076A,B,C&D)

c. Postulated fire in area:

Leakage of lube oil from the turbine lube oil reservoir onto the floor of the compartment, with subsequent ignition of the oil.

d. Consequences of fire with active fire suppression:

The heat generated by a fire in this area will activate the heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. If the compartment temperature rises to 212°F, individual fusible link sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. In addition, a compartment temperature of 212°F will cause actuation of the deluge systems located over the turbine lube oil reservoir and the turbine lube oil centrifuge. The plant fire brigade will be dispatched to ensure that the fire is extinguished.

e. Effect of fire on safe shutdown:

Fire area 108 contains cables and equipment associated with providing power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown

methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.23 Fire Area 109: Battery Room (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Concrete masonry unit | 3 hr |
| | E - | Concrete masonry unit | 3 hr |
| | S - | Concrete masonry unit | 3 hr |
| | W - | Reinforced concrete | 3 hr |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | | Reinforced concrete | 3 hr |
| Access: | | Door connecting to area 108 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of battery cases and/or battery spacers as the result of an exposure fire.

d. Consequences of fire with active fire suppression:

The smoke and heat generated by a fire in this area will activate the smoke and heat detectors which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 109 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by

a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.24 Fire Area 110: Equipment Hatch Corridor (el 239'-0")

a. Structural and architectural design features of fire area (Figure 9A-7):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Precast concrete panels (exterior wall) | None |
| | S - | Reinforced concrete (part) | 3 hr |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Reinforced concrete | 3 hr |
| Floor: | | Reinforced concrete (contains equipment hatch with 66 $ft^2$ of steel plate) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | | Five doors connecting to area 101 | 3 hr |
| | | Steamtight door connecting to area 7 | 3 hr** |
| | | Door connecting to stairwell no. 30 | 1.5 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 110 contains cables associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.25 Fire Area 111: Reactor Recirculation Pump MG Set Area and Feedwater Heater Rooms (el 269'-0")

a. Structural and architectural design features of fire area (Figure 9A-8):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Concrete masonry unit | 3 hr |
| | E - | Precast concrete panels (exterior wall) | None |
| | S - | Reinforced concrete (part) | 3 hr |
| | S - | Precast concrete panels (part, exterior wall) | None |
| | W - | Reinforced concrete | 3 hr |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | | Reinforced concrete (contains two equipment hatches covered with steel plate, one of 75 $ft^2$ and one of 110 $ft^2$) | None |
| Access: | | Door connecting to stairwell no. 31 | 1.5 hr |
| | | Door connecting to administration complex | 3 hr |
| | | Two doors connecting to area 114 | 3 hr |
| | | Two roll-up doors connecting to area 114 | 3 hr** |

b. Major safety-related components in fire area:

1. Junction boxes containing cables associated with the following components:
   (a) Main turbine stop valve position switches (ZS-01-204A,B,C&D)
   (b) Turbine control valve fast closure pressure switches (PS-01-202A,B,C&D)

c. Postulated fire in area:

Ignition of electrical cables in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling).

d. Consequences of fire with active fire suppression:

The smoke generated by a fire in this area will activate the smoke detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. The preaction sprinkler system over MG sets has been spared and is not in service. The ASD System has replaced the MG sets. Smoke detection has been added in the area over the ASD System.

e. Effect of fire on safe shutdown:

Fire area 111 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 201 safeguard bus may be affected by a fire in this area. Offsite power to the 4kV switchgear via the 101 safeguard bus is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.26 Fire Area 112: Turbine Enclosure HVAC Area and Equipment Compartment Exhaust Filter Area (el 302'-0")

a. Structural and architectural design features of fire area (Figure 9A-9):

| | | | Construction | Rating |
|---|---|---|---|---|
| Walls: | N | - | Concrete masonry unit | 3 hr |
| | E | - | Precast concrete panels (exterior wall) | None |
| | S | - | Reinforced concrete (part) | 3 hr |

| | | |
|---|---|---|
| | S - Precast concrete panels (part, exterior wall) | None |
| | W - Reinforced concrete | 3 hr |
| Floor: | Reinforced concrete (contains two equipment hatches covered with steel plate, one of 75 $ft^2$ and one of 110 $ft^2$) | None |
| Ceiling: | Metal deck, nonreinforced concrete, and built-up roofing | UL Class A |
| Access: | Door connecting to stairwell no. 31 | 1.5 hr |
| | Steamtight door connecting to area 27 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of charcoal filters.

d. Consequences of fire with active fire suppression:

In the event of a fire in one of the turbine enclosure equipment compartment exhaust filters, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum. No effect on safety-related systems will result from a fire in this area.

e. Effect of fire on safe shutdown:

Fire area 112 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.8.27 Fire Area 113: Railroad Access Area and Generator Equipment Area (el 217'-0" and el 239'-0")

a. Structural and architectural design features of fire area (Figures 9A-6 and 9A-7):

| Construction | Rating |
|---|---|

| | | |
|---|---|---|
| Walls: | N - Reinforced concrete and concrete masonry unit (exterior wall) | None |
| | E - Reinforced concrete and concrete masonry unit (part) | 3 hr |
| | E - Concrete masonry unit (part adjacent to area 100) | 2 hr |
| | S - Reinforced concrete and concrete masonry unit | 3 hr§ |
| | W - Reinforced concrete and concrete masonry unit (part) | 3 hr |
| | W - Concrete masonry unit (part adjacent to area 87) | 2 hr |
| Floor: | Reinforced concrete foundation mat | 3 hr |
| Ceiling: | Reinforced concrete (contains a 1960 $ft^2$ hatchway partially filled \ with grating) | None |
| Access: | Two doors connecting to area 87 and two doors connecting to area 100 | 1.5 hr |
| | Roll-up door panel connecting to area 87 | 2 hr |
| | Roll-up door connecting to area 100 | 1.5 hr |
| | Door connecting to areas 88, 90, 91, 101, 103, and 104 | 3 hr |
| | Steamtight doors connecting to areas 8, 10, 12, 14, 16, and 18 | 3 hr |
| | Steamtight door connecting to stairwell no. 7 | 3 hr** |
| | Double steamtight door connecting to area 2 | 3 hr** |

Walls denoted above by the § symbol are capable of being rated as 3 hour fire barriers, except for unrated wall penetration assemblies associated with the 4kV nonsegregated phase bus ducts. These penetration assemblies are described in Section 9A.6.3. A maximum of two penetration assemblies are located in the wall indicated above. This wall separates fire area 113 from fire areas 12 and 18.

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Leakage of seal oil from the generator hydrogen seal oil units onto the floor of the compartment, with subsequent ignition of the oil or ignition of material stored in the Facility/laydown area, Floor Operators Break Facility (Rm 468A,B,C) and Plant Operators Building (Rm 468).

d. Consequences of fire with active fire suppression:

A rise in compartment temperature to 140°F will cause the deluge valve to open and prime the preaction sprinkler system with water. At 165°F, individual sprinkler heads will open to control and/or extinguish the fire. A rise in the temperature of the Facility/laydown area, Floor Operators Break Facility (Rm 468A, B, C) or Plant Operators Building (Rm 468) to 155°F will open individual sprinklers of the wet pipe sprinkler system in that area to control and/or extinguish the fire in the associated area. In addition, a compartment temperature of 212°F will cause actuation of the deluge systems located over the generator hydrogen seal oil units. The plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 113 contains cables and equipment associated with providing offsite power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area. Equipment associated with providing offsite power to shutdown methods A, B, and C for Units 1 and 2 located in this fire area have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

f. Deviations:

See Section 9A.6.3.

9A.5.8.28 Fire Area 114: Turbine Operating Floor (el 269'-0")

a. Structural and architectural design features of fire area (Figures 9A-8 and 9A-9):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Precast concrete panels (exterior wall) | None |
| | E - | Precast concrete panels (exterior wall) | None |
| | S - | Reinforced concrete and concrete masonry unit | 3 hr |
| | W - | Precast concrete panels (exterior wall) | None |
| Floor: | | Reinforced concrete (contains a 1960 $ft^2$ hatchway partially filled with grating, plus 14 equipment hatches | None |

| | | |
|---|---|---|
| | covered with steel plate) | |
| Ceiling: | Metal deck, nonreinforced concrete, and built-up roofing | UL Class A |
| Access: | Doors connecting to stairwell nos. 32 and 33 | 1.5 hr |
| | Two doors connecting to area 98 and two doors connecting to area 111 | 3 hr |
| | Two roll-up doors connecting to area 98 and two roll-up doors connecting to area 111 | 3 hr** |
| | Two steamtight and bullet-resistant doors connecting to area 24 | 3 hr** |
| | Steamtight door connecting to stairwell no. 7 | 3 hr** |

b. Major safety-related components located in fire area:

1. Main condenser pressure transmitters (PT-01-1N075A,B,C&D)

2. Junction boxes containing cables associated with the following components:
   (a) Main turbine first-stage pressure transmitters (PT-01-1N052A,B,C&D)
   (b) Main steam line pressure transmitters (PT-01-1N076A,B,C&D)

c. Postulated fire in area:

Ignition of electrical cabling in cable tray and ignition of materials present in the Control Room Annex. As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling, and an exposure fire involving the materials in the Control Room Annex would be extremely limited in scope and would be confined to a small area due to the configuration of the combustibles within the Control Room Annex. Ignition of the materials in the Control Room Annex is extremely unlikely in the absence of a fire source external to the materials.

d. Consequences of fire with active fire suppression:

The smoke and heat generated by a fire in this area will activate the early warning smoke and heat detectors, which will cause an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. If the fire occurs under the turbine's appearance lagging or under the generator's appearance lagging, the preaction sprinkler system will provide automatic suppression of the fire. At 190°F, the deluge valve will open and prime the preaction sprinkler system with water. At 212°F, individual sprinkler heads will open to control and/or extinguish the fire. If the fire occurs at the Unit 1 and 2 turbine generator exciter bearings, the heat detectors within the exciter enclosure will annunciate the fire condition on the fire protection panel in the control room and initiate the coded alarm annunciation within the plant. A smoke detector suitable for high-velocity air flow in the exciter exhaust ductwork will annunciate the fire. The fixed $CO_2$ local application system will be manually initiated by either a timed discharge or a spurt

discharge from push-button stations located in the vicinity of the exciter enclosure. No effect on safety-related systems will result from a turbine generator exciter bearing fire.

e. Effect of fire on safe shutdown:

Fire area 114 contains cables associated with providing power to safe shutdown components.

Cables for offsite power which supports shutdown methods A, B, and C for Units 1 and 2 are associated with equipment that have redundant components that are not affected by a fire in this area.

The availability of offsite power to the 4kV switchgear via the 101 and 201 safeguard buses may be affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9 SAFE SHUTDOWN ANALYSIS - RADWASTE ENCLOSURE

9A.5.9.1 Fire Area 115: Radwaste Pipe Tunnel (el 183'-0", el 187'-0", el 191'-0", and el 200'-0")

a. Structural and architectural design features of fire area (Figures 9A-4 and 9A-5):

| | Construction | Rating |
|---|---|---|
| Walls: | West wall near column line 18, approx. 19 feet north of column line N, between el 200' and el 205' - Steel plate (25 $ft^2$) | None |
| | East wall near column line 28, approx. 19 feet north of column line N, between el 200' and el 205' - Steel plate (25 $ft^2$) | None |
| | North wall at 7.5 feet north of column line J, between columns 23 and 26.6, and between el 200' and el 217' - Concrete masonry unit | 3 hr |
| | East wall at column line 26.6 between el 200' and el 217' - reinforced concrete | 3 hr |
| | South walls - Reinforced concrete | 3 hr |
| | All other walls - Reinforced concrete and concrete masonry unit | None |
| Floor: | Below zone 115D between column lines 19.4 and 26.6 - Reinforced concrete (supported by structural steel members without fireproofing) | None |
| | Below all other portions of the fire area - Reinforced concrete foundation mat | None |

| | | |
|---|---|---|
| Ceiling: | Reinforced concrete (contains 76 $ft^2$ grating opening connecting to area 89) | None |
| Access: | Door connecting to area 102 | None |
| | Door connecting to area 118 | 3 hr |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 115 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.2 Fire Area 116: Miscellaneous Radwaste Equipment Areas (el 162'-0")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete (part north of column line D) | 3 hr |
| | E - | Reinforced concrete (part south of column line D, exterior wall) | None |
| | S - | Reinforced concrete (exterior wall) | None |
| | W - | Reinforced concrete | None |
| Floor: | | Reinforced concrete foundation mat | None |
| Ceiling: | | Reinforced concrete (contains equipment hatch filled with 49 $ft^2$ of steel plate) | None |
| Access: | | Doors connecting to stairwell | 1.5 hr |

nos. 1 and 2

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

1. Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

2. Ignition of charcoal filters.

3. Ignition of oil in a waste oil collection drum associated with the floor drain sump oil removal belt.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. In the event of a fire in the waste tank vent exhaust filter, a thermal sensor inside the filter plenum will cause an audible/visual annunciation to register on the fire protection panels in the control. The fire brigade will utilize a manual valve in the fire protection water supply system to initiate operation of a water spray system inside the filter plenum. No effect on safety-related systems will result from a fire in this area.

e. Effect of fire on safe shutdown:

Fire area 116 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.3 Fire Area 117: Offgas Pipe Tunnel (el 186'-0" and el 187'-6")

a. Structural and architectural design features of fire area (Figure 9A-4):

| | Construction | Rating |
|---|---|---|
| Walls: | All walls - Reinforced concrete | None |
| Floor: | Reinforced concrete foundation mat | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Concrete hatch plugs | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Since no combustible materials are located in this area, the origin of a postulated fire is indeterminate.

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 117 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.4 Fire Area 118: Miscellaneous Radwaste Equipment Areas (el 191'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete (part north of column line C) | 3 hr |
| | E - | Reinforced concrete (part, exterior wall) | None |
| | S - | Reinforced concrete (exterior wall) | None |
| | W - | Reinforced concrete (part, exterior wall) | None |
| | W - | Reinforced concrete (part adjacent to area 119; contains piping and electrical penetrations without fire-rated seals and HVAC duct penetrations without fire dampers) | None |
| Floor: | | Reinforced concrete (contains equipment hatch filled with 49 $ft^2$ of steel plate) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |

| | | |
|---|---|---|
| Access: | Door connecting to area 115 | 3 hr |
| | Doors connecting to stairwell nos. 1 and 2 | 1.5 hr |
| | Door connecting to area 119 | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 118 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.5 Fire Area 119: Offgas Equipment Areas (el 195'-0")

a. Structural and architectural design features of fire area (Figure 9A-5):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 3 hr |
| | E - | Reinforced concrete (contains piping and electrical penetrations without fire-rated seals and HVAC duct penetrations without fire dampers) | None |
| | S - | Reinforced concrete (exterior wall) | None |
| | W - | Reinforced concrete (exterior wall) | None |
| Floor: | | Reinforced concrete (supported in some areas by structural steel members without fireproofing) | None |

| | | |
|---|---|---|
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Door connecting to stairwell no. 1 | 1.5 hr |
| | Door connecting to area 118 | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

Upon receiving notification that a fire has occurred in this area, the operator will dispatch the plant fire brigade to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 119 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.6 Fire Area 120: Radwaste Control Room, Laundry, Decontamination and Change Areas, Waste Drum Storage Room, and Cask Loading Area (el 217'-0")

Renovated Area of Radwaste Enclosure: Data Acquisition Room, Storage Room, Source Storage/Standard's Preparation Room, Technician's Area (el 217'-0)

Chemical Building: Hot Lab, Frisk Area (corridor - RCA), Office Area, Air Lock, Corridor (Non RCA), Conference/Lunch, Cold Lab, Toilets, Locker Vestibule; Count Room, Instrument Lab (el 217;-0"); Penthouse (el. 234'6")

a. Structural and architectural design features of fire area (Figure 9A-6):

| | | Construction | Rating |
|---|---|---|---|
| Walls: | N - | Reinforced concrete | 2 hr |
| | E - | Reinforced concrete | 3 hr |
| | S - | Reinforced concrete (part, exterior wall) | None |

| | | | |
|---|---|---|---|
| | S - | Reinforced concrete (part adjacent to stairwell no. 1) | 2 hr |
| | W - | Reinforced concrete (exterior wall) | None |
| | | <u>Chemistry Lab Building</u> | |
| | N - | Precast Concrete Exterior with Gypsum Board Interior | None |
| | S - | Precast Concrete Exterior with Gypsum Board Interior | None |
| | W - | Precast Concrete Exterior with Gypsum Board Interior | None |
| | E - | Reinforced Concrete | None |
| | | <u>Chemistry Lab Building (Penthouse)</u> | |
| | N - | Metal Siding with Interior Insulation | None |
| | E - | Metal Siding with Interior Insulation | None |
| | S - | Metal Siding with Interior Insulation | None |
| | W - | Metal Siding with Interior Insulation | None |
| Floor: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| | | Terrazzo Tile (Chem Lab Bldg) | None |
| | | Concrete (Chem Lab Bldg) | None |
| Ceiling: | | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| | | Suspended Tile (Chem Lab Bldg) | None |
| Roof: | | Metal Deck, Insulation and Built Up Roofing (chem Lab Bldg, Penthouse) | None |
| Access: | | Door connecting to area 94 | 1.5 hr |
| | | Door connecting to stairwell no. 4 | 3 hr |
| | | Doors connecting to stairwell nos. 2 and 3 | 1.5 hr |
| | | Two doors to outside | None |
| | | Roll-up door to outside | None |
| | | Open stairwell leading up to area 121 | None |
| | | Two Doors open to exterior, one door Connecting to Radwaste Enclosure | None |
| | | Door connecting to Frisk Area/Corridor (Chem Lab Bldg) | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

If a fire occurs in the fire zones which are provided with smoke or heat detectors, the smoke and heat generated by the fire will activate the detectors, causing an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. If a fire occurs in the waste drum storage room and the temperature in that area rises to 212$^{o}$F, individual fusible link sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. If the fire occurs in the Count room, Instrument Lab, health physics room, radwaste supervisor's office, warm chem. Lab, counting room, file storage area, conventional chem. room, radiation chemical lab, or in the Penthouse, the preaction sprinkler system will provide automatic suppression of the fire. At 190$^{o}$F, the deluge valve will open and prime the preaction sprinkle system with water. At 212$^{o}$F, individual sprinkler will open to control and/or extinguish the fire.

If a fire occurs in the Chem Lab rooms and the temperature in that area raised to 165$^{o}$F, individual fusible link sprinkler heads in the wet pipe sprinkler system will open to control and/or extinguish the fire. Again, the plant fire brigade will be dispatched to ensure that the fire is extinguished. No effect on safety-related systems will result from a fire in this area.

e. Effect of fire on safe shutdown:

Fire area 120 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

9A.5.9.7 Fire Area 121: Centrifuge Rooms, Solid Radwaste Equipment Rooms, Ventilation Filter Compartments, and Supply and Exhaust Fan Areas (el 237'-0" and el 257'-0")

a. Structural and architectural design features of fire area (Figures 9A-7 and 9A-8):

| | Construction | Rating |
|---|---|---|
| Walls: N - | Reinforced concrete | 3 hr |
| E - | Reinforced concrete | 3 hr |
| S - | Reinforced concrete (part, exterior wall) | None |
| S - | Reinforced concrete (part adjacent to area 120 between el 237' and el 257'; contains | None |

| | | |
|---|---|---|
| | piping and electrical penetrations without fire-rated seals) | |
| | W - Reinforced concrete (part adjacent to area 120 between el 237' and el 257'; contains piping penetrations without fire-rated seals) | None |
| | W - Reinforced concrete (part, exterior wall) | None |
| Floor: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Ceiling: | Reinforced concrete (supported by structural steel members without fireproofing) | None |
| Access: | Door connecting to stairwell no. 2 | 1.5 hr |
| | Two doors connecting to stairwell no. 3 | 1.5 hr |
| | Open stairwell leading down to area 120 | None |

b. Major safety-related components in fire area:

None

c. Postulated fire in area:

Ignition of electrical cabling in cable tray. (As discussed in Table 9A-3, the ignition of electrical cabling is extremely unlikely in the absence of a fire source external to the cabling.)

d. Consequences of fire with active fire suppression:

If a fire occurs in the fire zones which are provided with smoke detectors, the smoke generated by the fire will activate the detectors, causing an audible/visual annunciation to register on the fire protection panels in the control room. Once the alarm has been received in the control room, the plant fire brigade will be dispatched to extinguish the fire. No effect on safety-related systems will result from such a fire.

e. Effect of fire on safe shutdown:

Fire area 121 does not contain safe shutdown cables and equipment.

Offsite power to the 4kV switchgear via the 101 and 201 safeguard buses is not affected by a fire in this area.

Therefore, methods A, B, and C will be available to shutdown Units 1 and 2.

## 9A.6 SPECIAL TOPICS

### 9A.6.1 ANALYSIS OF ASSOCIATED CIRCUITS

Generic Letter 81-12, issued by the NRC on February 20, 1981, discussed the types of information that the NRC considers necessary for the completion of their reviews of safe shutdown capability in the event of a fire. One of the enclosures to Generic Letter 81-12 addressed the subject of associated circuits and the possibility that fire-induced damage to associated circuits could prevent operation or cause maloperation of the shutdown methods designated to be used in the event of a fire in the plant. Generic Letter 81-12 defines associated circuits to be those circuits (either safety-related or nonsafety-related) that have a separation from the equipment and cables of the redundant safe shutdown methods that is less than that required by section III.G.2 of Appendix R to 10CFR50 and also have any of the following:

a. A common power source with the safe shutdown equipment, and the power source is not electrically protected from the circuit by coordinated circuit breakers, fuses, or similar devices.

b. A connection to circuits of equipment whose spurious operation could adversely affect the shutdown capability.

c. A common enclosure or raceway with safe shutdown cables, and are not electrically protected by circuit breakers, fuses, or similar devices.

In accordance with guidance contained in Generic Letter 81-12, an analysis has been performed for LGS to verify that fire-induced damage to associated circuits will not jeopardize the plant's safe shutdown capability. This analysis utilizes a systems approach, wherein the features of circuit design, such as overcurrent protection, are evaluated together with cable routing and separation criteria in order to confirm the adequacy of the electrical system design to prevent fire-induced damage to nonsafe shutdown circuits from jeopardizing safe shutdown capability. The methodology and results of the analysis are summarized in the following sections.

#### 9A.6.1.1 Associated Circuits Involving Common Power Sources

All systems and components that are relied on for achieving safe shutdown receive power from the Class 1E ac distribution system or Class 1E dc power system. Offsite power may be credited as the source for the Class 1E ac distribution system for fire areas which do not require Alternative Shutdown and for which the offsite source(s) to the 4kV switchgear is not affected by fire damage. The Emergency Seal Oil Pump (ESOP) that services the main generator and the Emergency Bearing Oil Pump (EBOP) that services the main turbine are powered exclusively by a dedicated non-Class 1E battery and do not involve a common power source with other plant equipment or systems. The main feed from the battery and the battery charger to both motors are protected by coordinated fault actuated protective devices. All other circuits, both Class 1E and non-Class 1E, are individually protected by coordinated fault actuated protective devices. Proper coordination among these protective devices is demonstrated by the time-current coordination curves shown in Figures 9A-13 through 9A-15 for the 4 kV and 440 V ac system, Figure 9A-16 for the 120 V ac system, and Figures 9A-17 through 9A-20 for the 125/250 V dc system. These curves are typical for each type of protective device and application that is represented. The time-current coordination curves show that for each voltage level, the individual circuit breakers or fuses will clear a fault prior to the operation of the source breaker or fuse protecting the source bus. Consequently, the fault-actuated protective devices will act to isolate any

faulted circuit without jeopardizing the availability of other circuits connected to the same power source.

Because of the use of fault-actuated protective devices in power circuits as described above, LGS does not have associated circuits involving common power sources, as defined by Generic Letter 81-12.

9A.6.1.2 Associated Circuits Involving Spurious Operation

Components whose spurious operation could adversely affect the shutdown capability are considered to be essential for safe shutdown of the plant. These components and the circuits that serve them are therefore treated as part of the safe shutdown systems and are included in the review of separation between the different shutdown methods. Item 18 of Section 9A.3.2.2 describes the physical separation, fire barriers, and suppression systems that are provided to ensure that at least one shutdown method remains available to shut the plant down in the event of a fire.

Because of the design and analysis approach described above, LGS does not have associated circuits involving spurious operation, as defined by Generic Letter 81-12.

9A.6.1.3 Associated Circuits Involving Common Enclosures and Raceways

Separation between the different divisions of Class 1E circuits and between Class 1E and non-Class 1E circuits is discussed in Sections 7.1.2.2.3.2 and 8.1.6.1.14.b. Cabling for Class 1E circuits is routed only in raceways designated for Class 1E use. Cabling for non-Class 1E circuits is routed only in raceways designated for non-Class 1E use, except for selected non-Class 1E loads fed from Class 1E buses, which are identified and treated as Class 1E and are routed in dedicated Class 1E raceways. Non-Class 1E cables identified and treated as Class 1E do not become associated with other Class 1E divisions.

The potential for propagation of an electrical fire in enclosures (either raceways or panels) is minimized by the selection of appropriate cable construction systems and by the provision of physical separation. Insulation and jacketing materials used in both Class 1E and non-Class 1E cables are flame retardant, as discussed in Table 9A-3.

As discussed in Section 9A.6.1.1, circuits are individually protected by coordinated fault-actuated protective devices. This protection ensures that faulted circuits in common enclosures will be isolated.

Because of the provisions described above for preventing fire propagation and isolating circuit faults in common enclosures, LGS does not have associated circuits involving common enclosures, as defined by Generic Letter 81-12.

9A.6.1.4 Summary

For the reasons discussed in the preceding sections, LGS does not have associated circuits in any of the three categories established by Generic Letter 81-12. Therefore, fire-induced damage to circuits that are not designated as necessary for safe shutdown will not affect the operability of any of the four safe shutdown methods described in Section 9A.5.2.2.

9A.6.2 ANALYSIS OF HIGH/LOW PRESSURE INTERFACES

Generic Letter 81-12, issued by the NRC on February 20, 1981, discussed the types of information that the NRC considers necessary for the completion of their reviews of safe shutdown capability in the event of a fire. One of the enclosures to Generic Letter 81-12 addressed the subject of interfaces between high pressure and low pressure systems. The NRC's concern involves the valves that serve to isolate low pressure systems from the high pressure reactor coolant system. If the isolation valves at a given interface point consist of two electrically controlled valves in series, and a single fire could damage the cabling associated with both valves, both valves could be caused to open. This consequence could result in a fire-induced LOCA through the high/low pressure system interface.

Information Notice 87-50, issued by the NRC on October 9, 1987, expressed a concern that spurious opening of high/low pressure interface isolation valves would overpressurize the low pressure systems connected to the reactor coolant system, thereby creating the potential for a LOCA that cannot be isolated. The information notice specifically addressed the case of a bypass line around a check valve in the discharge lines of the RHR system for certain plants. This information notice states that "Because of this bypass line around the check valve, credit for the check valve in preventing a LOCA at the high and low pressure interface can no longer be given."

A review of the LGS design has been performed to verify that a high/low pressure interface LOCA cannot be caused by a single fire. Each system that contains interfaces between the RCPB and low pressure portions of the system was reviewed to identify the valves that provide isolation at the interface point, and also to assess the susceptibility of the valves to simultaneous opening due to fire-caused damage. Table 9A-12 identifies each such high/low pressure interface and lists the valves at the interface point.

### 9A.6.3 FIRE BARRIER PENETRATION ASSEMBLIES FOR 4 KV BUS DUCTS

At el 239' in the control structure, 4 kV nonsegregated phase bus ducts penetrate some of the walls that separate the 4 kV switchgear compartments (fire areas 12 through 19) from each other and from adjacent compartments. The bus ducts are either 15.4 by 36 inches or 19.4 by 36 inches in size, and are constructed of steel plate having a thickness of 0.119 inch. Inside these steel ducts, copper bus bars are supported by porcelain insulators. At each wall penetration, a smoke and hot gas barrier is provided internal to the duct. The bus duct penetrations have been evaluated as being adequate for the hazards present. See reference 9A.7.12.

### 9A.6.4 ANALYSIS OF EFFECTS OF MULTIPLE HIGH-IMPEDANCE FAULTS ON THE SAFE SHUTDOWN CAPABILITY OF THE PLANT

The NRC response to question No. 5.3.8 of "Appendix R Questions and Answers", an enclosure to Generic Letter 86-10 (issued by the NRC on April 24, 1986) states that in order to meet the separation criteria of sections III.G.2 and III.G.3 of Appendix R, multiple high impedance faults should be considered for all associated (nonsafe shutdown) circuits located in the fire area of concern.

In accordance with the guidelines contained in Generic Letter 86-10, a calculation has been performed for LGS to verify that postulated high impedance faults resulting from fire-induced damage to safe shutdown cables and associated (nonsafe shutdown) cables supplied from the same bus will not jeopardize the plant's safe shutdown capability. The calculation involved a review of protective device coordination with consideration given to multiple high impedance faults for power cables at the 13.2 kV, 4.16 kV, 480 V, and 120/208 V levels of the ac power distribution

system and at the 125 V and 250 V levels of the dc power distribution system. The methodology used in the calculation is based on the intention of implementing restorative actions for manually clearing the effects of multiple high impedance faults if the effects were determined to be detrimental to safe shutdown capability. The methodology used and the results of this study are summarized in the following sections.

9A.6.4.1 Methodology and Assumptions

To determine if restorative actions were required for a particular circuit, a phase analysis approach was utilized as described below.

Phase 1 analysis is a gross screening of the power sources that support safe shutdown loads to evaluate the effects of a High Impedance Fault (HIF) load on the power source circuit breaker or fuse. All circuits from a safe shutdown bus are considered as experiencing simultaneous HIFs regardless of fire area influence. The combined load and HIF current is assumed just below the trip setpoint of the associated branch breaker and to continue indefinitely. The sum of all HIF and load currents on bus is determined and compared with the trip characteristics of the power supply protective device. The high impedance fault current contribution for each load was taken to be equal to the 1000 second current rating of the load's protective device. This value was chosen since it is the maximum current the protective device can pass for an indefinite time without a trip. The high impedance fault currents were summed and compared to the 60 second rating of the feeder breaker. If the sum was less than this rating, no restorative actions were considered to be necessary.

The basis for this approach is a flame test that was performed by the licensee for the PBAPS and which showed that 54 seconds was the maximum duration of an high impedance fault. As before, if the high impedance fault current applied to the feeder breaker did not exceed its 60 second rating, no restorative actions were deemed necessary.

Phase 2 of the analysis is applied to those panels that fail the Phase 1 analysis. This analysis is performed in more detail using the actual circuit routing on a per fire area basis, with only those cables routed through the fire area of concern experiencing a simultaneous HIF. Phase 3 of the analysis is applied to those panels that fail the Phase 2 analysis and review normally de-energized loads while considering the routing of both power and control cables when evaluating specific fire areas. Phase 4 of the analysis is applied to those panels that fail the Phase 3 analysis. This Phase determines if the failed panels are required for safe shutdown in the subject fire area and whether restorative procedures are technically feasible to maintain panel operability in the event of a fire.

9A.6.4.2 Results

The results and conclusions derived in this calculation were input into the LGS Fire Area Analysis Calculations which sufficiently demonstrate that the LGS post-fire safe shutdown capability for both units will not be jeopardized due to fire-induced multiple high impedance faults.

9A.6.5 MINIMUM EFFECTIVE DESIGN DENSITY (MEDD)

This Section will discuss the use of the “Minimum Effective Design Density” (MEDD) concept for determining the operability of water based suppression systems at the Limerick Generating Station Units 1 and 2 (LGS).

In general, the design basis of the Limerick Generating Station sprinkler systems is to provide a density of 0.30 gpm/ft$^2$ over the hydraulically most remote 3000 ft$^2$ (unless specified otherwise). Limerick Technical Specifications (now Technical Requirements Manual) define OPERABILITY as...

"A system, subsystem, train, component, or device shall be operable or have operability when it is capable of performing its specified function(s)."

In the referenced paragraph above, the words "capable of performing its specific function(s)" as applied to suppression systems, means their ability to control a fire. A literature review of fire test information on cable and oil fires was performed to determine the minimum effective design density. The focus of this review was to determine how low the design density could be and still extinguish a fire. The literature review was intended to determine the minimum effective design density that will control a fire.

EPRI Research, Sandia National Laboratories and Factory Mutual test reports were reviewed to determine the minimum effective density necessary to extinguish a cable tray fire or oil spill fire. These two fire scenarios were selected because they present the greatest challenge to the plant sprinkler systems and these were the fires postulated in the FPER for the plant areas protected by the majority of the Technical Requirements Manual sprinkler systems.

A variety of tests and studies performed by Factory Mutual Research Corporation and Sandia National Laboratories were reviewed to determine the minimum effective density for automatic water based suppression systems at LGS. The purpose of the tests and studies performed was to determine the required automatic sprinkler design density necessary to extinguish a developing fire in grouped cable tray installations and oil spill fires.

9A.6.5.1 Cable Tray Fires

Literature reviewed indicated that a "delivered" water application rate of 0.16 gpm/ft$^2$ would control the most severe fire investigated.

Water application rate is generally quantified in terms of discharge density. The discharge density is the average rate of water reaching a unit floor area in unit time and is expressed in units of gpm/ft$^2$ of floor area. In the tests reviewed, the water application rates are referenced as "delivered densities." Specifically, delivered density means the density (gpm/ft$^2$) which was delivered at the (top) surface of the burning test array. The delivered density should not be confused with the "design density" commonly used in sprinkler installation standards which is the density available from the sprinkler system in the absence of a fire. (Note: The LGS Specification for fire sprinkler system (M-49) is based on the "design density" concept) In a fire situation, the actual water reaching the burning fuel is usually less than the "design density" due to phenomena such as evaporation, or entrainment of droplets in the hot gas rising from a fire. A "delivered density" of 0.16 gpm/ft$^2$ is expected to be equivalent to a "design density" of 0.25 gpm/ft$^2$ because test indicates that the overall penetration of water is approximately 65% when ½" orifice standard sprinklers are used. Therefore, a "design density" of 0.25 gpm/ft$^2$ is required to provide the "minimum effective density" for extinguishment of grouped cable tray fires.

9A.6.5.2 Oil Spill Fires

Factory Mutual Research Corporation has conducted a series of fire tests with the purpose of determining whether automatic sprinklers will protect against lubricating oil spill fires. In all the tests, the floor based fires were quickly controlled and the test building was satisfactorily protected

by the sprinkler system. The conclusion of Factory Mutual Research Corporation testing indicated that "automatic sprinklers will stop the spread and extinguish the fire in an oil spill on the floor with a design density of 0.13 gpm/ft$^2$ with some margin of safety."

9A.6.5.3 Conclusion

The design density specified for the systems at LGS is not required to be met to provide control and extinguishment of the anticipated fires at the plant and, therefore, is not required to be met for system(s) to be considered operable. The design density for the sprinkler systems at LGS will continue to be 0.3 gpm/ft$^2$ (as specified specification M-49), however, for a system to be considered operable it needs to provide the minimum effective design densities of 0.25 gpm/ft$^2$ for grouped electrical cable hazards or 0.13 gpm/ft$^2$ for oil spill fire hazards.

## 9A.7 REFERENCES


9A.7.1 Appendix A to BTP APCSP 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants docketed prior to July 1, 1976

9A.7.2 BTP CMEB 9.5-1 “Guidelines for Fire Protection for Nuclear Power Plants", Rev. 2, dated July ,1981

9A.7.3 Appendix R to 10 CFR 50 “Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979”

9A.7.4 NUREG-0991, LGS SER, August 30, 1983.

9A.7.5 NUREG-0991, Supplement 2, October 1984.

9A.7.6 NUREG-0991, Supplement 8, June 1989.

9A.7.7 NUREG-0991, Supplement 9, August 1989.

9A.7.8 Letter from Eugene J. Bradley (PECO) to Dr. Thomas E. Murley (USNRC) dated April 5, 1988 (Revision 10 to FPER).

9A.7.9 Engineering Analysis LEAF-0001 “Smoke Detector Engr Analysis For Fire Areas 1, 2 & 7”.

9A.7.10 Engineering Analysis LEAF-0002 “Suppression System Evaluation”.

9A.7.11 Engineering Analysis LEAF-0009 “Galvanized Steel Cable Tray Covers In CFZ-5”.

9A.7.12 Engineering Analysis LEAF-0010, “Switchgear Room Bus Duct Penetrations”.

9A.7.13 Letter from Darrell G. Eisenhut (NRC) to G. Bauer, Jr. (PECO) dated October 15, 1981, Subject: Appendix R of 10 CFR Part 50 - Fire Protection Rule (Limerick Generating Station, Units 1 and 2).

Table 9A-1

FIRE PROTECTION EVALUATION

Legend for Table 9A-1

The information presented in each column of Table 9A-1 is explained as follows:

| | |
|---|---|
| Area-Zone: | Identification code for fire areas and zones. Fire zones with identification codes beginning with the same number are located in the same fire area. |
| Structure: | Location of the fire area-zone, by structure. Locations are shown on Figures 9A-4 through 9A-12. |
| Elevation: | Elevation of the fire area-zone. |
| Room No.: | The room number as indicated on the Architectural drawings. |
| Fire Area-Zone Description: | Description of compartments included within the fire area or fire zone. |
| SR (Safety-Related): | Indicates whether or not the fire area or zone contains safety-related equipment or electrical cabling. |
| Floor Area (sqft): | Floor area of the fire area or fire zone. |
| Fire Hazard Material: | Type of combustible material located in the fire area-zone. |
| Combustible Loading: | Designator of "Low" (<60,000 BTU/ft$^2$), "Moderate" ($\geq$60,000 BTU/ft$^2$ or < 140,000 BTU/ft$^2$) or "High" ($\geq$140,000 BTU/ft$^2$). |
| Combustible Loading Change Limit (BTU/ ft$^2$) | Combustible loading changes which do not exceed these limits do not require additional documentation/justification by the plant Fire Protection Program Engineer. |
| Detection Type/No.: | Type of fire detectors and number detectors provided in the fire area or zone. Unless indicated otherwise, all smoke detectors are of the ionization type. |
| Suppression Type/Actuation: | Type of fire suppression system and method of actuation in the fire area |

Security Related Information
Figure withheld under 10 CFR 2.390

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Table 9A-1 (Cont'd)

Notes:
(1) These smoke detectors are located below the suspended ceiling in the control room.
(2) These smoke detectors are located above the suspended ceiling in the control room.
(3) These heat detectors are located inside the charcoal filter plenum.
(4) These heat detectors are used to actuate the automatic suppression systems.
(5) Fire zone 113a and 113B are located in a portion of the turbine enclosure that is common to Unit 1 and Unit 2. The detectors identified by this note will be installed east of column line 23 for Unit 2 operation.
(6) These smoke detectors are of the photoelectric-type.
(7) These detectors are located inside offices 467, 568, and 569.
(8) These detectors are located inside offices 552, 553, 570, and 571.
(9) These smoke detectors are located inside the test engineer's workshop.
(10) Deleted
(11) This sprinkler system is installed above and inside facility/laydown area.
(12) This sprinkler system is installed in the Floor Operations Break Facility (Rm 468A, B, C).
(13) This sprinkler system is installed in the Plant Operations Building (Rm 468).
(14) These heat detectors are located inside the Unit 1/2 turbine generator exciter enclosures (2 per unit).
(15) This smoke detectors are located in the Unit 1/2 turbine generator exciter exhaust ductwork (1 per unit). (Detector suitable for high velocity airstream)
(16) This local application CO2 system is manually actuated for the Unit 1/2 turbine generator exciter bearings 11 and 12.
(17) Room 258A floor area is contained in Room 258 floor area.
(18) Room 236A floor area is contained in Room 263 floor area.
(19) Common - Ceiling level.
(20) Unit 1 - PGCC Floor.
(21) Unit 1 - non-PGCC Floor.
(22) Unit - Termination Cabinets.
(23) Unit 2 - PGCC Floor.
(24) Unit 2 - non-PGCC Floor.
(25) Unit 2 - Termination Cabinets.
(26) Ceiling Level.
(27) Raised Floor.
(28) Charcoal enclosed in steel filter plenums has been accepted by NRC.

Table 9A-2

| Heat of Combustion for Specific Materials (All values rounded to nearest 100 BTU/Unit) | | |
|---|---|---|
| Material | Units | Heat of Combustion (BTU/Unit) |
| Acetylene Gas | lb | 21,500 |
| Alcohol (Ethyl) | gal. | 83,800 |
| Alcohol (Methyl) | gal. | 65,500 |
| Alpha Maritex Lead Shielding Blanket | Linear foot | 2404 |
| Battery Cases (Butadiene Acrylonitrile) | lb | 17,200 |
| Battery Spacers (Polystyrene Foam) | lb | 17,100 |
| Cable Insulation | lb | 10,000 |
| Carpet (Nylon) | lb | 13,600 |
| Charcoal | lb | 14,900 |
| Cloth (Cotton) | lb | 8,800 |
| Floor Tiles (Polyester Resin) | lb | 10,000 |
| Fuel Oil | gal. | 135,500 |
| Gasoline | gal. | 120,600 |
| Hydrogen | lb | 61,000 |
| Lube Oil | gal. | 150,900 |
| Lubricant (Grease) | lb | 150,900 |
| Methane Gas | cu. ft. | 23,900 |
| Oxygen | cu. ft. | 0 |
| Paper | lb | 8,500 |
| Plastic (Polyethylene) | lb | 20,000 |
| Propane | lb | 21,700 |
| Rubber (Butyl) | lb | 19,700 |
| Trash (40 lb bag) | ea. | 290,500 |
| Wood (White Pine) | lb | 8,300 |
| R/A Insulation | lb | 8,000 |
| Polycarbonate | lb | 13,300 |
| Thermo-Lag 330-1 | lb | 7,000 |
| Thermo-Lag 770-1 | lb | 4,800 |
| Polyvinyl Chloride (PVC) | lb | 7,730 |

Table 9A-3

INSULATION AND JACKETING MATERIALS
USED FOR ELECTRICAL CABLING

| CABLE APPLICATION | INSULATION | JACKETING |
|---|---|---|
| Communication | Polyvinyl chloride | Polyvinyl chloride |
| Lighting | Thermoplastic (THHN, THWN, or THW) | None |
| Grounding | Thermoplastic (THW) | None |
| Instrumentation | Cross-linked polyethylene | Neoprene |
| | Flamtrol (flame-retardant cross-linked polyolefin) | Flamtrol |
| Coaxial and triaxial | Cross-linked Polyolefin | Cross-linked polyolefin |
| 600 V control | Cross-linked polyethylene | Neoprene |
| | Rubber | Neoprene |
| | Rockbestos "Heatzone I" | Rockbestos "Heatzone I" |
| 600 V power | Cross-linked polyethylene | Neoprene |
| | Ethylene propylene rubber | Hypalon |
| | Cross-linked polyethylene(4) | Polyvinyl chloride |
| | Cross-linked Polyethylene | Chlorinated polyethylene |
| 5 kV and 15 kV power(5) | Ethylene propylene rubber | Hypalon |
| | Ethylene propylene Rubber | Semi-conducting chlorinated polyethylene |
| | Cross-linked polyethylene | Polyvinyl chloride |
| Computer cables | Cross-linked polyethylene | Neoprene |
| | Rayolin F (cross-linked radiation-resistant polyolefin) | Flamtrol |
| Multiconductor(1) | Cross-linked polyethylene | Neoprene |

Table 9A-3 (Cont'd)

| CABLE APPLICATION | INSULATION | JACKETING |
|---|---|---|
| Multiconductor (shielded)[1] | Cross-linked polyethylene or cross-linked modified polyolefin | Neoprene or cross-linked polyolefin |
| Twisted shielded pairs[1] | Cross-linked polyalkene and polyvinylidene fluoride | Cross-linked modified polyolefin |
| Thermocouple[1] | Cross-linked polyethylene | Cross-linked polyethylene |
| Coaxial (RG-type)[1] | Cross-linked polyethylene | Cross-linked polyethylene polyvinyl chloride |
| Coaxial (twin conductor)[1] | Alkaneimide polymer cross-linked polyolefin polyethylene | Cross-linked polyethylene polyvinyl chloride |
| Coaxial (high temperature, radiation resistant)[1] | Cross-linked polyethylene | Cross-linked polyethylene |
| Twisted pairs or twisted triples (high performance)[1] | Polyalkene and polyvinylidene fluoride | Cross-linked polyvinylidene fluoride and cross-linked polyolefin |
| Armored Coaxial Cable for Video signals from Drywell video cameras[6] | Cross-linked polyethylene | Polyvinyl Chloride |
| Armored Multiconductor cable for Drywell video camera control and audio signals[6] | Cross-linked polyethylene | Polyvinyl Chloride |

Table 9A-3 (Cont'd)

(1) These cables are associated with the PGCC and the deep bed demineralizer system.

(2) Insulation for lighting cables and grounding cables is specified as flame retardant in accordance with the National Electric Code. Insulation and jacketing for all other cables, with the exception of communications cables, are specified to meet the IEEE 383 flame test requirements. An insignificant length of data cable which is not IEEE 383 rated is added to the Unit 1 and Unit 2 drywell as a part of the MUR (Measurement Uncertainty Recapture) Project. The cables were evaluated and found to be acceptable. The cables were not routed together with cables associated with other plant systems.

(3) Ignition of electrical cabling, in the absence of a fire source external to the cabling, is extremely unlikely. The consequences of an overload condition are minimized by conservative cable ratings and by the use of overload devices in power circuits and fault current interrupting devices in essentially all circuits. In addition, cable insulation and jacketing materials are chosen for their fire retardant and self-extinguishing properties, such that fuel contribution to a cable fire is minimized and propagation of a fire along cables is self-limiting.

(4) This cable is used in the main condenser areas and condensate pump rooms.

(5) Use of cross-linked polyethylene insulation and polyvinyl chloride applies to 15kV cable only.

(6) These cables are used with the Health Physics temporary video cameras and Remote Console. The cables route video signals, control and audio signals to and from the Remote console, which is located outside the Drywell, to the cameras located inside the Drywell during outages.

Table 9A-4

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 00A119 | 101 SAFEGUARD BUS | APS | 0 | 428<br>429<br>430<br>431<br>432<br>433<br>434<br>435<br>447<br>YARD | 018<br>019<br>016<br>017<br>014<br>015<br>012<br>013<br>113<br>YARD | |
| 00A120 | 201 SAFEGUARD BUS | APS | 0 | 428<br>429<br>430<br>431<br>432<br>433<br>434<br>435<br>465<br>YARD | 018<br>019<br>016<br>017<br>014<br>015<br>012<br>013<br>113<br>YARD | |
| 00B131 | 480V MCC | EPS | C | 619 | 027 | |
| 00B132 | 480V MCC | EPS | D | 619 | 027 | |
| 00B519 | 480V MCC | EPS | A | 1000 | 122 | |
| 00B520 | 480V MCC | EPS | B | 1005 | 123 | |
| 00B521 | 480V MCC | EPS | C | 1000 | 122 | |
| 00B522 | 480V MCC | EPS | D | 1005 | 123 | |
| 01X566 | TRANSFORMER | EPS | A | 1000 | 122 | |
| 01Y501 | 120V AC INST PANEL | EPS | A | 1000 | 122 | |
| 02X566 | TRANSFORMER | EPS | B | 1005 | 123 | |
| 02Y501 | 120V AC INST PANEL | EPS | B | 1005 | 123 | |
| 03X566 | TRANSFORMER | EPS | C | 1000 | 122 | |
| 03Y501 | 120V AC INST PANEL | EPS | C | 1000 | 122 | |
| 04X566 | TRANSFORMER | EPS | D | 1005 | 123 | |
| 04Y501 | 120V AC INST PANEL | EPS | D | 1005 | 123 | |
| 0AP506 | RHRSW PUMP "A" | RHRSW | A | 1000 | 122 | 1-RHRSW-A<br>2-RHRSW-A |
| 0AP548 | ESW PUMP "A" | ESW | A | 1000 | 122 | 0-ESW-A<br>0-ESW-R |
| 0AV543 | SYSTEM "A" FAN CABINET | SPPV | A | 1000 | 122 | 1-RHRSW-A<br>2-RHRSW-A<br>0-ESW-R<br>0-ESW-A |
| 0AX103 | 101 SAFEGUARD XMFR | APS | 0 | YARD | YARD | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 0AX104 | 101 SAFEGUARD XMFR GROUNDING RESISTOR | APS | 0 | YARD | YARD | |
| 0BP506 | RHRSW PUMP "B" | RHRSW | B | 1005 | 123 | 1-RHRSW-B<br>2-RHRSW-B |
| 0BP548 | ESW PUMP "B" | ESW | B | 1005 | 123 | 0-ESW-B |
| 0BV543 | SYSTEM "B" FAN CABINET | SPPV | B | 1005 | 123 | 2-RHRSW-B<br>1-RHRSW-B<br>0-ESW-B |
| 0BX103 | 201 SAFEGUARD XMFR | APS | 0 | YARD | YARD | |
| 0BX104 | 201 SAFEGUARD XMFR GROUNDING RESISTOR | APS | 0 | YARD | YARD | |
| 0CP506 | RHRSW PUMP "C" | RHRSW | A | 1000 | 122 | 1-RHRSW-A<br>2-RHRSW-A |
| 0CP548 | ESW PUMP "C" | ESW | C | 1000 | 122 | 0-ESW-A |
| 0CV543 | SYSTEM "C" FAN CABINET | SPPV | C | 1000 | 122 | 1-RHRSW-A<br>2-RHRSW-A<br>0-ESW-A |
| 0DP506 | RHRSW PUMP "D" | RHRSW | B | 1005 | 123 | 2-RHRSW-B<br>1-RHRSW-B |
| 0DP548 | ESW PUMP "D" | ESW | D | 1005 | 123 | 0-ESW-B |
| 0DV543 | SYSTEM "D" FAN CABINET | SPPV | D | 1005 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| 101D112 | 101 NON-SAFEGUARD BATTERY | APS | 0(D) | 443 | 096 | |
| 101D113 | BATTERY CHARGER | APS | 0(D) | 445 | 095 | |
| 102D112 | 102 NON-SAFEGUARD BATTERY | APS | 0(D) | 443 | 096 | |
| 102D113 | BATTERY CHARGER | APS | 0(D) | 445 | 095 | |
| 105CROM* | 105 CROMBY SUBSTATION BREAKER | APS | 0 | YARD | YARD | |
| 10A103 | 10 STATION AUX BUS 13.2 KV | APS | 0 | 336 | 002 | |
| 10A115 | D11 SAFEGUARD SWGR | EPS | A | 435 | 013 | |
| 10A116 | D12 SAFEGUARD SWGR | EPS | B | 433 | 015 | |
| 10A117 | D13 SAFEGUARD SWGR | EPS | C | 434 | 012 | |
| 10A118 | D14 SAFEGUARD SWGR | EPS | D | 432 | 014 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 10B129 | 480V MCC | EPS | A | 548 | 098 | |
| 10B201 | 480V SAFEGUARD LOAD CTR | EPS | A | 602W | 048W | |
| 10B202 | 480V SAFEGUARD LOAD CTR | EPS | B | 602E | 048E | |
| 10B203 | 480V SAFEGUARD LOAD CTR | EPS | C | 402W | 045W | |
| 10B204 | 480V SAFEGUARD LOAD CTR | EPS | D | 506E | 047E | |
| 10B211 | 480V MCC | EPS | A | 304W | 044W | |
| 10B212 | 480V MCC | EPS | B | 304E | 044E | |
| 10B213 | 480V MCC | EPS | A | 506W | 047W | |
| 10B214 | 480V MCC | EPS | B | 506E | 047E | |
| 10B215 | 480V MCC | EPS | A | 304W | 044W | |
| 10B216 | 480V MCC | EPS | B | 304E | 044E | |
| 10B217 | 480V MCC | EPS | C | 200 | 042 | |
| 10B218 | 480V MCC | EPS | D | 207 | 041 | |
| 10B223 | 480V MCC | EPS | C | 402W | 045W | |
| 10B224 | 480V MCC | EPS | D | 402E | 045E | |
| 10B515 | 480V MCC | EPS | A | 311A | 079 | |
| 10B516 | 480V MCC | EPS | B | 311B | 081 | |
| 10B517 | 480V MCC | EPS | C | 311C | 080 | |
| 10B518 | 480V MCC | EPS | D | 311D | 082 | |
| 10D106 | 125/250V DC GROUND DETECTION CABINET | APS | 0(D) | 445 | 095 | |
| 10D114 | 125/250V DC FUSE BOX | APS | 0(D) | 445 | 095 | |
| 10D115 | 125/250V DC FUSE BOX | APS | 0(D) | 338 | 089 | |
| 10D116 | UNIT CROSS TIE FUSE BOX | APS | 0(D) | 445 | 095 | |
| 10D201 | 250V DC MCC | EPS | A | 304W | 044W | |
| 10D202 | 250V DC MCC | EPS | B | 304E | 044E | |
| 10D203 | 250V DC MCC | EPS | B | 304E | 044E | |
| 10P203 | RCIC PUMP | RCIC | N/A | 108 | 033 | 1-RCIC |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 10P204 | HPCI PUMP | HPCI | N/A | 109 | 034 | 1-HPCI |
| 10P213 | HPCI TURBINE AUXILIARY OIL PUMP | HPCI | B | 109 | 034 | 1-HPCI |
| 10TB-HPCIEGM* | HPCI TURBINE FLOW CONTROL | HPCI | B | 200 | 042 | |
| 10TB-RCICEGM* | RCIC TURBINE FLOW CONTROL | RCIC | A | 108 | 033 | |
| 10X106 | TRANSFORMER | EPS | A | 435 | 013 | |
| 10X107 | TRANSFORMER | EPS | B | 433 | 015 | |
| 10X108 | TRANSFORMER | EPS | C | 434 | 012 | |
| 10X109 | TRANSFORMER | EPS | D | 432 | 014 | |
| 10X110 | TRANSFORMER | EPS | 0(A) | 438 | 088 | |
| 10X182 | TRANSFORMER | EPS | C | 619 | 027 | |
| 10X183 | TRANSFORMER | EPS | D | 619 | 027 | |
| 10X201 | TRANSFORMER | EPS | A | 602W | 048W | |
| 10X202 | TRANSFORMER | EPS | B | 602E | 048E | |
| 10X203 | TRANSFORMER | EPS | C | 402W | 045W | |
| 10X204 | TRANSFORMER | EPS | D | 506E | 047E | |
| 10X281 | TRANSFORMER | EPS | A | 619 | 027 | |
| 10Y101 | 120V AC INST PANEL | EPS | A | 435 | 013 | |
| 10Y102 | 120V AC INST PANEL | EPS | B | 433 | 015 | |
| 10Y103 | 120V AC INST PANEL | EPS | C | 434 | 012 | |
| 10Y104 | 120V AC INST PANEL | EPS | D | 432 | 014 | |
| 10Y105 | 120V AC INST PANEL | EPS | 0(A) | 438 | 088 | |
| 10Y163 | 120V AC DIST PANEL | EPS | C | 619 | 027 | |
| 10Y164 | 120V AC DIST PANEL | EPS | D | 619 | 027 | |
| 10Y206 | 120V AC DIST PANEL | EPS | A | 619 | 027 | |
| 1A1D101 | 125V BATTERY | EPS | A | 436 | 009 | |
| 1A1D103 | BATTERY CHARGER | EPS | A | 436 | 009 | |
| 1A1K513 | 1A1 DG STARTING AIR COMPRESSOR | SDG | A | 311A | 079 | |
| 1A1T558 | A DG STARTING AIR RESERVOIR A1 | SDG | N/A | 311A | 079 | |
| 1A2D101 | 125V BATTERY | EPS | A | 436 | 009 | |
| 1A2D103 | BATTERY CHARGER | EPS | A | 436 | 009 | |
| 1A2T558 | A DG STARTING AIR RESERVOIR A2 | SDG | N/A | 311A | 079 | |
| 1AD102 | 125V DC DIST PANEL | EPS | A | 435 | 013 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 1AD105 | 125/250V DC BUS FUSE BOX | EPS | A | 436 | 009 | |
| 1AD162 | 125V DC DIST PANEL | EPS | A | 435 | 013 | |
| 1AD501 | 125V DC POWER DIST PANEL | EPS | A | 311A | 079 | |
| 1AE205 | 1A RHR HEAT EXCHANGER | RHR | N/A | 203 | 032 | 1-RHRASC-C<br>1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRLPCI-A<br>1-RHRASC-A<br>1-RHRSC-A |
| 1AG501 | DIESEL GENERATOR "A" | SDG | A | 311A | 079 | |
| 1AP202 | RHR PUMP "A" | RHR | A | 102 | 032 | 1-RHRASC-A<br>1-RHRSPC-A<br>1-RHRSC-A<br>1-RHRLPCI-A |
| 1AP514 | DIESEL OIL TRANSFER PUMP | SDG | A | YARD | YARD | |
| 1AS252-1 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B |
| 1AS252-2 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B |
| 1AS252-3 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B |
| 1AT003 | MSRV ACCUMULATOR | MSRV | N/A | 400 | 030 | |
| 1AV208 | RCIC COMPARTMENT UNIT COOLER | REV | A | 108 | 033 | 1-RCIC |
| 1AV209 | HPCI COMPARTMENT UNIT COOLER | REV | B | 109 | 034 | 1-HPCI |
| 1AV210 | RHR COMPARTMENT UNIT COOLER | REV | A | 102 | 032 | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSPC-A |
| 1AV512 | CELL "A" AIR EXHAUST FAN | DGEV | A | 311A | 079 | |
| 1B1D101 | 125V BATTERY | EPS | B | 425 | 008 | |
| 1B1D103 | BATTERY CHARGER | EPS | B | 425 | 008 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 1B1K513 | 1B1 DG STARTING AIR COMPRESSOR | SDG | B | 311B | 081 | |
| 1B1T558 | B DG STARTING AIR RESERVOIR B1 | SDG | N/A | 311B | 081 | |
| 1B2D101 | 125V BATTERY | EPS | B | 425 | 008 | |
| 1B2D103 | BATTERY CHARGER | EPS | B | 425 | 008 | |
| 1B2T558 | B DG STARTING AIR RESERVOIR B2 | SDG | N/A | 311B | 081 | |
| 1BD102 | 125V DC DIST PANEL | EPS | B | 452 | 020 | |
| 1BD105 | 125/250V DC BUS FUSE BOX | EPS | B | 425 | 008 | |
| 1BD501 | 125V DC POWER DIST PANEL | EPS | B | 311B | 081 | |
| 1BE205 | 1B RHR HEAT EXCHANGER | RHR | N/A | 204 | 031 | 1-RHRASC-D<br>1-RHRSPC-D<br>1-RHRSPC-B<br>1-RHRSC-D<br>1-RHRLPCI-B<br>1-RHRASC-B<br>1-RHRSC-B |
| 1BG501 | DIESEL GENERATOR "B" | SDG | B | 311B | 081 | |
| 1BP202 | RHR PUMP "B" | RHR | B | 103 | 031 | 1-RHRSC-B<br>1-RHRLPCI-B<br>1-RHRASC-B<br>1-RHRSPC-B |
| 1BP514 | DIESEL OIL TRANSFER PUMP | SDG | B | YARD | YARD | |
| 1BS252-1 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304E | 044E | 1-RHRASC-A<br>1-RHRASC-B |
| 1BS252-2 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304E | 044E | 1-RHRASC-A<br>1-RHRASC-B |
| 1BS252-3 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 304E | 044E | 1-RHRASC-A<br>1-RHRASC-B |
| 1BV208 | RCIC COMPARTMENT UNIT COOLER | REV | A | 108 | 033 | 1-RCIC |
| 1BV209 | HPCI COMPARTMENT UNIT COOLER | REV | B | 109 | 034 | 1-HPCI |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 1BV210 | RHR COMPARTMENT UNIT COOLER | REV | B | 103 | 031 | 1-RHRASC-B<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSPC-B |
| 1BV512 | CELL "B" AIR EXHAUST FAN | DGEV | B | 311B | 081 | |
| 1C1K513 | 1C1 DG STARTING AIR COMPRESSOR | SDG | C | 311C | 080 | |
| 1C1T558 | C DG STARTING AIR RESERVOIR C1 | SDG | N/A | 311C | 080 | |
| 1C2T558 | C DG STARTING AIR RESERVOIR C2 | SDG | N/A | 311C | 080 | |
| 1CD101 | 125V BATTERY | EPS | C | 324 | 004 | |
| 1CD102 | 125V DC DIST PANEL | EPS | C | 434 | 012 | |
| 1CD103 | BATTERY CHARGER | EPS | C | 324 | 004 | |
| 1CD105 | 125V DC BUS FUSE BOX | EPS | C | 324 | 004 | |
| 1CD108 | 125V DC POWER DIST PANEL | APS | 0(D) | 338 | 089 | |
| 1CD501 | 125V DC POWER DIST PANEL | EPS | C | 311C | 080 | |
| 1CG501 | DIESEL GENERATOR "C" | SDG | C | 311C | 080 | |
| 1CP202 | RHR PUMP "C" | RHR | C | 102 | 032 | 1-RHRSC-C<br>1-RHRSPC-C<br>1-RHRLPCI-C<br>1-RHRASC-C |
| 1CP514 | DIESEL OIL TRANSFER PUMP | SDG | C | YARD | YARD | |
| 1CT003 | MSRV ACCUMULATOR | MSRV | N/A | 400 | 030 | |
| 1CV210 | RHR COMPARTMENT UNIT COOLER "C" | REV | C | 102 | 032 | 1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C<br>1-RHRSPC-C |
| 1CV512 | CELL "C" AIR EXHAUST FAN | DGEV | C | 311C | 080 | |
| 1D1T558 | D DG STARTING AIR RESERVOIR D1 | SDG | N/A | 311D | 082 | |
| 1D2T558 | D DG STARTING AIR RESERVOIR D2 | SDG | N/A | 311D | 082 | |
| 1DD101 | 125V BATTERY | EPS | D | 323 | 003 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 1DD102 | 125V DC DIST PANEL | EPS | D | 452 | 020 | |
| 1DD103 | BATTERY CHARGER | EPS | D | 323 | 003 | |
| 1DD105 | 125V DC BUS FUSE BOX | EPS | D | 323 | 003 | |
| 1DD501 | 125V DC POWER DIST PANEL | EPS | D | 311D | 082 | |
| 1DG501 | DIESEL GENERATOR "D" | SDG | D | 311D | 082 | |
| 1DP202 | RHR PUMP "D" | RHR | D | 103 | 031 | 1-RHRASC-D<br>1-RHRLPCI-D<br>1-RHRSC-D<br>1-RHRSPC-D |
| 1DP514 | DIESEL OIL TRANSFER PUMP | SDG | D | YARD | YARD | |
| 1DV210 | RHR COMPARTMENT UNIT COOLER "D" | REV | D | 103 | 031 | 1-RHRSPC-D<br>1-RHRASC-D<br>1-RHRLPCI-D<br>1-RHRSC-D |
| 1DV512 | CELL "D" AIR EXHAUST FAN | DGEV | D | 311D | 082 | |
| 1ET003 | MSRV ACCUMULATOR | ADS | N/A | 400 | 030 | |
| 1EV210 | RHR COMPARTMENT UNIT COOLER | REV | A | 102 | 032 | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSPC-A |
| 1EV512 | CELL "A" AIR EXHAUST FAN | DGEV | A | 311A | 079 | |
| 1FV210 | RHR COMPARTMENT UNIT COOLER | REV | B | 103 | 031 | 1-RHRASC-B<br>1-RHRSPC-B<br>1-RHRLPCI-B<br>1-RHRSC-B |
| 1FV512 | CELL "B" AIR EXHAUST FAN | DGEV | B | 311B | 081 | |
| 1GV210 | RHR COMPARTMENT UNIT COOLER | REV | C | 102 | 032 | 1-RHRSPC-C<br>1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C |
| 1GV512 | CELL "C" AIR EXHAUST FAN | DGEV | C | 311C | 080 | |
| 1HT003 | MSRV ACCUMULATOR | ADS | N/A | 400 | 030 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 1HV512 | CELL "D" AIR EXHAUST FAN | DGEV | D | 311D | 082 | |
| 1KT003 | MSRV ACCUMULATOR | ADS | N/A | 400 | 030 | |
| 1MT003 | MSRV ACCUMULATOR | ADS | N/A | 400 | 030 | |
| 1NT003 | MSRV ACCUMULATOR | MSRV | N/A | 400 | 030 | |
| 1ST003 | MSRV ACCUMULATOR | ADS | N/A | 400 | 030 | |
| 201D112 | 201 NON-SAFEGUARD BATTERY | APS | 0(D) | 460 | 109 | |
| 201D113 | BATTERY CHARGER | APS | 0(D) | 461 | 108 | |
| 202D112 | 202 NON-SAFEGUARD BATTERY | APS | 0(D) | 460 | 109 | |
| 202D113 | BATTERY CHARGER | APS | 0(D) | 461 | 108 | |
| 205WHIT* | 205 WHITPAIN SUBSTATION BREAKER | APS | 0 | YARD | YARD | |
| 20A103 | 20 STATION AUX BUS 13.2 KV | APS | 0 | 336 | 002 | |
| 20A115 | D21 SAFEGUARD SWITCHGEAR | EPS | A | 429 | 019 | |
| 20A116 | D22 SAFEGUARD SWITCHGEAR | EPS | B | 431 | 017 | |
| 20A117 | D23 SAFEGUARD SWITCHGEAR | EPS | C | 428 | 018 | |
| 20A118 | D24 SAFEGUARD SWITCHGEAR | EPS | D | 430 | 016 | |
| 20A121 | CABLE BUS | APS | 0 | 336<br>346<br>354<br>357A<br>YARD | 002<br>107<br>107<br>107<br>YARD | |
| 20B129 | 480V MCC | EPS | A | 564 | 111 | |
| 20B201 | 480V SAFEGUARD LOAD CTR | EPS | A | 638W | 071W | |
| 20B202 | 480V SAFEGUARD LOAD CTR | EPS | B | 638E | 071E | |
| 20B203 | 480V SAFEGUARD LOAD CTR | EPS | C | 475W | 068W | |
| 20B204 | 480V SAFEGUARD LOAD CTR | EPS | D | 580W | 070W | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 20B211 | 480V MCC | EPS | A | 370W | 067W | |
| 20B212 | 480V MCC | EPS | B | 370E | 067E | |
| 20B213 | 480V MCC | EPS | A | 580W | 070W | |
| 20B214 | 480V MCC | EPS | B | 580E | 070E | |
| 20B215 | 480V MCC | EPS | A | 370W | 067W | |
| 20B216 | 480V MCC | EPS | B | 370E | 067E | |
| 20B217 | 480V MCC | EPS | C | 284 | 064 | |
| 20B218 | 480V MCC | EPS | D | 279 | 065 | |
| 20B223 | 480V MCC | EPS | C | 475W | 068W | |
| 20B224 | 480V MCC | EPS | D | 475E | 068E | |
| 20B515 | 480V MCC | EPS | A | 315A | 083 | |
| 20B516 | 480V MCC | EPS | B | 315B | 085 | |
| 20B517 | 480V MCC | EPS | C | 315C | 084 | |
| 20B518 | 480V MCC | EPS | D | 315D | 086 | |
| 20D106 | 125/250V DC GROUND DETECTION CABINET | APS | 0(D) | 463 | 108 | |
| 20D114 | 125/250V DC FUSE BOX | APS | 0(D) | 461 | 108 | |
| 20D115 | 125/250V DC FUSE BOX | APS | 0(D) | 351 | 102 | |
| 20D201 | 250V DC MCC | EPS | A | 370W | 067W | |
| 20D202 | 250V DC MCC | EPS | B | 370E | 067E | |
| 20D203 | 250V DC MCC | EPS | B | 370E | 067E | |
| 20P203 | RCIC PUMP | RCIC | N/A | 179 | 056 | 2-RCIC |
| 20P204 | HPCI PUMP | HPCI | N/A | 180 | 057 | 2-HPCI |
| 20P213 | HPCI TURBINE AUXILIARY OIL PUMP | HPCI | B | 180 | 057 | 2-HPCI |
| 20TB-HPCIEGM* | HPCI TURBINE FLOW CONTROL | HPCI | B | 279 | 065 | |
| 20TB-RCICEGM* | RCIC TURBINE FLOW CONTROL | RCIC | A | 179 | 056 | |
| 20X106 | TRANSFORMER | EPS | A | 429 | 019 | |
| 20X107 | TRANSFORMER | EPS | B | 431 | 017 | |
| 20X108 | TRANSFORMER | EPS | C | 428 | 018 | |
| 20X109 | TRANSFORMER | EPS | D | 430 | 016 | |
| 20X110 | TRANSFORMER | EPS | 0(A) | 464 | 101 | |
| 20X201 | TRANSFORMER | EPS | A | 638W | 071W | |
| 20X202 | TRANSFORMER | EPS | B | 638E | 071E | |
| 20X203 | TRANSFORMER | EPS | C | 475W | 068W | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 20X204 | TRANSFORMER | EPS | D | 580W | 070W | |
| 20X281 | TRANSFORMER | EPS | A | 625 | 028 | |
| 20X282 | TRANSFORMER | EPS | B | 619 | 027 | |
| 20X283 | TRANSFORMER | EPS | C | 625 | 028 | |
| 20X284 | TRANSFORMER | EPS | D | 619 | 027 | |
| 20Y101 | 120V AC INST PANEL | EPS | A | 429 | 019 | |
| 20Y102 | 120V AC INST PANEL | EPS | B | 431 | 017 | |
| 20Y103 | 120V AC INST PANEL | EPS | C | 428 | 018 | |
| 20Y104 | 120V AC INST PANEL | EPS | D | 430 | 016 | |
| 20Y105 | 120V AC INST PANEL | EPS | 0(A) | 464 | 101 | |
| 20Y163 | 120V AC DIST PANEL | EPS | C | 625 | 028 | |
| 20Y164 | 120V AC DIST PANEL | EPS | D | 619 | 027 | |
| 20Y206 | 120V AC DIST PANEL | EPS | A | 625 | 028 | |
| 20Y207 | 120V AC DIST PANEL | EPS | B | 619 | 027 | |
| 2A1D101 | 125V BATTERY | EPS | A | 427 | 011 | |
| 2A1D103 | BATTERY CHARGER | EPS | A | 427 | 011 | |
| 2A1K513 | 2A1 DG STARTING AIR COMPRESSOR | SDG | A | 315A | 083 | |
| 2A1T558 | A DG STARTING AIR RESERVOIR A1 | SDG | N/A | 315A | 083 | |
| 2A2D101 | 125V BATTERY | EPS | A | 427 | 011 | |
| 2A2D103 | BATTERY CHARGER | EPS | A | 427 | 011 | |
| 2A2T558 | A DG STARTING AIR RESERVOIR A2 | SDG | N/A | 315A | 083 | |
| 2AD102 | 125V DC DIST PANEL | EPS | A | 429 | 019 | |
| 2AD105 | 125/250V DC BUS FUSE BOX | EPS | A | 427 | 011 | |
| 2AD501 | 125V DC POWER DIST PANEL | EPS | A | 315A | 083 | |
| 2AE205 | 2A RHR HEAT EXCHANGER | RHR | N/A | 280 | 054 | 2-RHRSC-A<br>2-RHRSPC-C<br>2-RHRSC-C<br>2-RHRLPCI-A<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRSPC-A |
| 2AG501 | DIESEL GENERATOR "A" | SDG | A | 315A | 083 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 2AP202 | RHR PUMP "A" | RHR | A | 173 | 054 | 2-RHRSPC-A<br>2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSC-A |
| 2AP514 | DIESEL OIL TRANSFER PUMP | SDG | A | YARD | YARD | |
| 2AS252-1 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2AS252-2 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2AS252-3 | A PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2AT003 | MSRV ACCUMULATOR | MSRV | N/A | 473 | 053 | |
| 2AV208 | RCIC COMPARTMENT UNIT COOLER | REV | A | 179 | 056 | 2-RCIC |
| 2AV209 | HPCI COMPARTMENT UNIT COOLER | REV | B | 180 | 057 | 2-HPCI |
| 2AV210 | RHR COMPARTMENT UNIT COOLER | REV | A | 173 | 054 | 2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSPC-A |
| 2AV512 | CELL "A" AIR EXHAUST FAN | DGEV | A | 315A | 083 | |
| 2B1D101 | 125V BATTERY | EPS | B | 426 | 010 | |
| 2B1D103 | BATTERY CHARGER | EPS | B | 426 | 010 | |
| 2B1K513 | 2B1 DG STARTING AIR COMPRESSOR | SDG | B | 315B | 085 | |
| 2B1T558 | B DG STARTING AIR RESERVOIR B1 | SDG | N/A | 315B | 085 | |
| 2B2D101 | 125V BATTERY | EPS | B | 426 | 010 | |
| 2B2D103 | BATTERY CHARGER | EPS | B | 426 | 010 | |
| 2B2T558 | B DG STARTING AIR RESERVOIR B2 | SDG | N/A | 315B | 085 | |
| 2BD102 | 125V DC DIST | EPS PANEL | B | 453 | 021 | |
| 2BD105 | 125/250V DC BUS FUSE BOX | EPS | B | 426 | 010 | |
| 2BD501 | 125V DC POWER DIST PANEL | EPS | B | 315B | 085 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 2BE205 | 2B RHR HEAT EXCHANGER | RHR | N/A | 281 | 055 | 2-RHRSC-B<br>2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRLPCI-B<br>2-RHRASC-D<br>2-RHRASC-B<br>2-RHRSPC-B |
| 2BG501 | DIESEL GENERATOR "B" | SDG | B | 315B | 085 | |
| 2BP202 | RHR PUMP "B" | RHR | B | 174 | 055 | 2-RHRSPC-B<br>2-RHRASC-B<br>2-RHRLPCI-B<br>2-RHRSC-B |
| 2BP514 | DIESEL OIL TRANSFER PUMP | SDG | B | YARD | YARD | |
| 2BS252-1 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2BS252-2 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2BS252-3 | B PCIG/ADS LONG TERM NITROGEN BOTTLE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B |
| 2BV208 | RCIC COMPARTMENT UNIT COOLER | REV | A | 179 | 056 | 2-RCIC |
| 2BV209 | HPCI COMPARTMENT UNIT COOLER | REV | B | 180 | 057 | 2-HPCI |
| 2BV210 | RHR COMPARTMENT UNIT COOLER | REV | B | 174 | 055 | 2-RHRLPCI-B<br>2-RHRSC-B<br>2-RHRASC-B<br>2-RHRSPC-B |
| 2BV512 | CELL "B" AIR EXHAUST FAN | DGEV | B | 315B | 085 | |
| 2C1T558 | C DG STARTING AIR RESERVOIR C1 | SDG | N/A | 315C | 084 | |
| 2C2T558 | C DG STARTING AIR RESERVOIR C2 | SDG | N/A | 315C | 084 | |
| 2CD101 | 125V BATTERY | EPS | C | 361 | 006 | |
| 2CD102 | 125V DC DIST PANEL | EPS | C | 428 | 018 | |
| 2CD103 | BATTERY CHARGER | EPS | C | 361 | 006 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 2CD105 | 125V DC BUS FUSE BOX | EPS | C | 361 | 006 | |
| 2CD108 | 125V DC POWER DIST PANEL | APS | 0(D) | 351 | 102 | |
| 2CD162 | 125V DC DIST PANEL | EPS | C | 428 | 018 | |
| 2CD501 | 125V DC POWER DIST PANEL | EPS | C | 315C | 084 | |
| 2CG501 | DIESEL GENERATOR "C" | SDG | C | 315C | 084 | |
| 2CP202 | RHR PUMP "C" | RHR | C | 173 | 054 | 2-RHRASC-C<br>2-RHRLPCI-C<br>2-RHRSC-C<br>2-RHRSPC-C |
| 2CP514 | DIESEL OIL TRANSFER PUMP | SDG | C | YARD | YARD | |
| 2CT003 | MSRV ACCUMULATOR | MSRV | N/A | 473 | 053 | |
| 2CV210 | RHR COMPARTMENT UNIT COOLER "C" | REV | C | 173 | 054 | 2-RHRLPCI-C<br>2-RHRSC-C<br>2-RHRSPC-C<br>2-RHRASC-C |
| 2CV512 | CELL "C" AIR EXHAUST FAN | DGEV | C | 315C | 084 | |
| 2D1T558 | D DG STARTING AIR RESERVOIR D1 | SDG | N/A | 315D | 086 | |
| 2D2T558 | D DG STARTING AIR RESERVOIR D2 | SDG | N/A | 315D | 086 | |
| 2DD101 | 125V BATTERY | EPS | D | 360 | 005 | |
| 2DD102 | 125V DC DIST PANEL | EPS | D | 453 | 021 | |
| 2DD103 | BATTERY CHARGER | EPS | D | 360 | 005 | |
| 2DD105 | 125V DC BUS FUSE BOX | EPS | D | 360 | 005 | |
| 2DD501 | 125V DC POWER DIST PANEL | EPS | D | 315D | 086 | |
| 2DG501 | DIESEL GENERATOR "D" | SDG | D | 315D | 086 | |
| 2DP202 | RHR PUMP "D" | RHR | D | 174 | 055 | 2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D |
| 2DP514 | DIESEL OIL TRANSFER PUMP | SDG | D | YARD | YARD | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 2DV210 | RHR COMPARTMENT UNIT COOLER "D" | REV | D | 174 | 055 | 2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D |
| 2DV512 | CELL "D" AIR EXHAUST FAN | DGEV | D | 315D | 086 | |
| 2ET003 | MSRV ACCUMULATOR | ADS | N/A | 473 | 053 | |
| 2EV210 | RHR COMPARTMENT UNIT COOLER | REV | A | 173 | 054 | 2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSPC-A<br>2-RHRASC-A |
| 2EV512 | CELL "A" AIR EXHAUST FAN | DGEV | A | 315A | 083 | |
| 2FV210 | RHR COMPARTMENT UNIT COOLER | REV | B | 174 | 055 | 2-RHRASC-B<br>2-RHRLPCI-B<br>2-RHRSC-B<br>2-RHRSPC-B |
| 2FV512 | CELL "B" AIR EXHAUST FAN | DGEV | B | 315B | 085 | |
| 2GV210 | RHR COMPARTMENT UNIT COOLER | REV | C | 173 | 054 | 2-RHRSPC-C<br>2-RHRASC-C<br>2-RHRLPCI-C<br>2-RHRSC-C |
| 2GV512 | CELL "C" AIR EXHAUST FAN | DGEV | C | 315C | 084 | |
| 2HT003 | MSRV ACCUMULATOR | ADS | N/A | 473 | 053 | |
| 2HV210 | RHR COMPARTMENT UNIT COOLER | REV | D | 174 | 055 | 2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D |
| 2HV512 | CELL "D" AIR EXHAUST FAN | DGEV | D | 315D | 086 | |
| 2KT003 | MSRV ACCUMULATOR | ADS | N/A | 473 | 053 | |
| 2MT003 | MSRV ACCUMULATOR | ADS | N/A | 473 | 053 | |
| 2NT003 | MSRV ACCUMULATOR | MSRV | N/A | 473 | 053 | |
| 2ST003 | MSRV ACCUMULATOR | ADS | N/A | 473 | 053 | |
| 51-1F067A | RHR PUMP SHUTDOWN COOLING SUCTION VALVE | RHR | N/A | 203 | 032 | 1-RHRSC-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| 51-1F067B | RHR PUMP SHUTDOWN COOLING SUCTION VALVE | RHR | N/A | 204 | 031 | 1-RHRSC-D |
| 51-2F067A | RHR PUMP SHUTDOWN COOLING SUCTION VALVE | RHR | N/A | 280 | 054 | 2-RHRSC-C |
| 51-2F067B | RHR PUMP SHUTDOWN COOLING SUCTION VALVE | RHR | N/A | 281 | 055 | 2-RHRSC-D |
| FC-55-1R600 | FLOW CONTROLLER | HPCI | B | 533 | 024 | |
| FC-55-2R600 | FLOW CONTROLLER | HPCI | B | 533 | 024 | |
| FI-11-013A | ESW LOOP A SUPPLY | ESW | A | 533 | 024 | 0-ESW-A |
| FI-11-013B | ESW LOOP B SUPPLY | ESW | B | 533 | 024 | 0-ESW-B |
| FI-49-1R001-1 | PUMP DISCHARGE LINE FLOW INDICATOR | RCIC | A | 540 | 026 | 1-RCIC |
| FI-49-1R600-1 | PUMP DISCHARGE LINE FLOW INDICATOR | RCIC | A | 533 | 024 | 1-RCIC |
| FI-49-2R001-1 | PUMP DISCHARGE LINE FLOW INDICATOR | RCIC | A | 540 | 026 | 2-RCIC |
| FI-49-2R600-1 | PUMP DISCHARGE LINE FLOW INDICATOR | RCIC | A | 533 | 024 | 2-RCIC |
| FI-51-1R005 | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | A | 540 | 026 | 1-RHRSC-A<br>1-RHRSPC-A |
| FI-51-1R602A | RHR HEAT EXCHANGER "A" SHELL SIDE INLET FLOW INDICATOR | RHRSW | A | 533 | 024 | 1-RHRSW-A |
| FI-51-1R602B | RHR HEAT EXCHANGER "B" SHELL SIDE INLET FLOW INDICATOR | RHRSW | B | 533 | 024 | 1-RHRSW-B |
| FI-51-1R603A | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | A | 533 | 024 | 1-RHRSC-C<br>1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRLPCI-A<br>1-RHRASC-C<br>1-RHRASC-A<br>1-RHRSC-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| FI-51-1R603B | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | B | 533 | 024 | 1-RHRSC-B<br>1-RHRSPC-D<br>1-RHRSC-D<br>1-RHRLPCI-B<br>1-RHRASC-D<br>1-RHRASC-B<br>1-RHRSPC-B |
| FI-51-1R603C | LOOP "C" DISCHARGE LINE FLOW INDICATOR | RHR | C | 533 | 024 | 1-RHRLPCI-C |
| FI-51-1R603D | LOOP "D" DISCHARGE LINE FLOW INDICATOR | RHR | D | 533 | 024 | 1-RHRLPCI-D |
| FI-51-2R005 | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | A | 540 | 026 | 2-RHRSC-A<br>2-RHRSPC-A |
| FI-51-2R602A | RHR HEAT EXCHANGER "A" SHELL SIDE INLET FLOW INDICATOR | RHRSW | A | 533 | 024 | 2-RHRSW-A |
| FI-51-2R602B | RHR HEAT EXCHANGER "B" SHELL SIDE INLET FLOW INDICATOR | RHRSW | B | 533 | 024 | 2-RHRSW-B |
| FI-51-2R603A | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | A | 533 | 024 | 2-RHRSPC-C<br>2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRASC-A |
| FI-51-2R603B | HEAT EXCHANGER DISCHARGE LINE FLOW INDICATOR | RHR | B | 533 | 024 | 2-RHRSPC-D<br>2-RHRSPC-B<br>2-RHRSC-D<br>2-RHRSC-B<br>2-RHRLPCI-B<br>2-RHRASC-B<br>2-RHRASC-D |
| FI-51-2R603C | LOOP "C" DISCHARGE LINE FLOW INDICATOR | RHR | C | 533 | 024 | 2-RHRLPCI-C |
| FI-51-2R603D | LOOP "D" DISCHARGE LINE FLOW INDICATOR | RHR | D | 533 | 024 | 2-RHRLPCI-D |
| FI-55-1R600-1 | PUMP DISCHARGE LINE FLOW INDICATOR | HPCI | B | 533 | 024 | 1-HPCI |
| FI-55-2R600-1 | PUMP DISCHARGE LINE FLOW INDICATOR | HPCI | B | 533 | 024 | 2-HPCI |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| FIC-49-1R001 | FLOW INDICATING CONTROLLER | RCIC | A | 540 | 026 | |
| FIC-49-1R600 | FLOW INDICATING CONTROLLER | RCIC | A | 533 | 024 | |
| FIC-49-2R001 | FLOW INDICATING CONTROLLER | RCIC | A | 540 | 026 | |
| FIC-49-2R600 | FLOW INDICATING CONTROLLER | RCIC | A | 533 | 024 | |
| FIS-49-1N651 | FLOW INDICATING SWITCH | RCIC | A | 542 | 025 | |
| FIS-49-2N651 | FLOW INDICATING SWITCH | RCIC | A | 542 | 025 | |
| FIS-55-1N651 | PUMP DISCHARGE LINE FLOW INDICATING SWITCH | HPCI | B | 542 | 025 | |
| FIS-55-2N651 | PUMP DISCHARGE LINE FLOW INDICATING SWITCH | HPCI | B | 542 | 025 | |
| FISL-51-1N652A | FLOW INDICATING SWITCH | RHR | A | 542 | 025 | |
| FISL-51-1N652B | FLOW INDICATING SWITCH | RHR | B | 542 | 025 | |
| FISL-51-1N652C | FLOW INDICATING SWITCH | RHR | C | 542 | 025 | |
| FISL-51-1N652D | FLOW INDICATING SWITCH | RHR | D | 542 | 025 | |
| FISL-51-2N652A | FLOW INDICATING SWITCH | RHR | A | 542 | 025 | |
| FISL-51-2N652B | FLOW INDICATING SWITCH | RHR | B | 542 | 025 | |
| FISL-51-2N652C | FLOW INDICATING SWITCH | RHR | C | 542 | 025 | |
| FISL-51-2N652D | FLOW INDICATING SWITCH | RHR | D | 542 | 025 | |
| FS-49-1N659 | FLOW SWITCH | RCIC | A | 542 | 025 | |
| FS-49-2N659 | FLOW SWITCH | RCIC | A | 542 | 025 | |
| FS-55-1N659 | FLOW SWITCH | HPCI | B | 542 | 025 | |
| FS-55-2N659 | FLOW SWITCH | HPCI | B | 542 | 025 | |
| FT-49-2N051 | FLOW TRANSMITTER | RCIC | A | 279 | 065 | |
| FT-51-1N001 | FLOW TRANSMITTER | RHR | A | 304W | 044W | |
| FT-51-1N007A | FLOW TRANSMITTER | RHRSW | A | 200 | 042 | |
| FT-51-1N007B | FLOW TRANSMITTER | RHRSW | B | 207 | 041 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| FT-51-1N015A | FLOW TRANSMITTER | RHR | A | 304W | 044W | |
| FT-51-1N015B | FLOW TRANSMITTER | RHR | B | 304E | 044E | |
| FT-51-1N015C | FLOW TRANSMITTER | RHR | C | 304W | 044W | |
| FT-51-1N015D | FLOW TRANSMITTER | RHR | D | 304E | 044E | |
| FT-51-1N052A | FLOW TRANSMITTER | RHR | A | 304W | 044W | |
| FT-51-1N052B | FLOW TRANSMITTER | RHR | B | 304E | 044E | |
| FT-51-1N052C | FLOW TRANSMITTER | RHR | C | 304W | 044W | |
| FT-51-1N052D | FLOW TRANSMITTER | RHR | D | 304E | 044E | |
| FT-51-2N001 | FLOW TRANSMITTER | RHR | A | 370W | 067W | |
| FT-51-2N007A | FLOW TRANSMITTER | RHRSW | A | 189 | 062 | |
| FT-51-2N007B | FLOW TRANSMITTER | RHRSW | B | 279 | 065 | |
| FT-51-2N015A | FLOW TRANSMITTER | RHR | A | 370W | 067W | |
| FT-51-2N015B | FLOW TRANSMITTER | RHR | B | 370E | 067E | |
| FT-51-2N015C | FLOW TRANSMITTER | RHR | C | 370W | 067W | |
| FT-51-2N015D | FLOW TRANSMITTER | RHR | D | 370E | 067E | |
| FT-51-2N052A | FLOW TRANSMITTER | RHR | A | 370W | 067W | |
| FT-51-2N052B | FLOW TRANSMITTER | RHR | B | 370E | 067E | |
| FT-51-2N052C | FLOW TRANSMITTER | RHR | C | 370W | 067W | |
| FT-51-2N052D | FLOW TRANSMITTER | RHR | D | 370E | 067E | |
| FT-55-1N008 | FLOW TRANSMITTER | HPCI | B | 111 | 040 | |
| FT-55-1N051 | FLOW TRANSMITTER | HPCI | B | 111 | 040 | |
| FT-55-2N008 | FLOW TRANSMITTER | HPCI | B | 182 | 063 | |
| FT-55-2N051 | FLOW TRANSMITTER | HPCI | B | 182 | 063 | |
| FV-50-113 | TURBINE CONTROL VALVE | RCIC | N/A | 108 | 033 | 1-RCIC |
| FV-50-213 | TURBINE CONTROL VALVE | RCIC | N/A | 179 | 056 | 2-RCIC |
| FV-56-111 | TURBINE CONTROL VALVE | HPCI | N/A | 109 | 034 | 1-HPCI |
| FV-56-112 | TURBINE STOP VALVE | HPCI | B | 109 | 034 | 1-HPCI |
| FV-56-112 | TURBINE STOP VALVE | HPCI | B | 109 | 034 | 1-HPCITRIP |
| FV-56-211 | TURBINE CONTROL VALVE | HPCI | N/A | 180 | 057 | 2-HPCI |
| FV-56-212 | TURBINE STOP VALVE | HPCI | B | 180 | 057 | 2-HPCI |
| FV-56-212 | TURBINE STOP VALVE | HPCI | B | 180 | 057 | 2-HPCITRIP |
| FY-11-013A | ESW LOOP A SUPPLY | ESW | A | 533 | 024 | |
| FY-11-013B | ESW LOOP B SUPPLY | ESW | B | 533 | 024 | |
| FY-11-060B | ESW LOOP B SUPPLY | ESW | B | 533 | 024 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| FY-49-1K001 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-1K013 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-1K014 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-1K015 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-1K601 | SIGNAL ISOLATOR - FLOW | RCIC | A | 533 | 024 | |
| FY-49-2K001 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-2K013 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-2K014 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-2K015 | SIGNAL ISOLATOR - FLOW | RCIC | A | 540 | 026 | |
| FY-49-2K601 | SIGNAL ISOLATOR - FLOW | RCIC | A | 533 | 024 | |
| FY-51-114A | SQUARE ROOT CONVERTER | RHRSW | A | 542 | 025 | |
| FY-51-114B | SQUARE ROOT CONVERTER | RHRSW | B | 542 | 025 | |
| FY-51-1K600A | SQUARE ROOT CONVERTER | RHR | A | 542 | 025 | |
| FY-51-1K600B | SQUARE ROOT CONVERTER | RHR | B | 542 | 025 | |
| FY-51-1K600C | SQUARE ROOT CONVERTER | RHR | C | 542 | 025 | |
| FY-51-1K600D | SQUARE ROOT CONVERTER | RHR | D | 542 | 025 | |
| FY-51-1K011 | SQUARE ROOT CONVERTER-RHR LOOP A FLOW | RHR | A | 540 | 026 | |
| FY-51-214A | SQUARE ROOT CONVERTER | RHRSW | A | 542 | 025 | |
| FY-51-214B | SQUARE ROOT CONVERTER | RHRSW | B | 542 | 025 | |
| FY-51-2K600A | SQUARE ROOT CONVERTER | RHR | A | 542 | 025 | |
| FY-51-2K600B | SQUARE ROOT CONVERTER | RHR | B | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| FY-51-2K600C | SQUARE ROOT CONVERTER | RHR | C | 542 | 025 | |
| FY-51-2K600D | SQUARE ROOT CONVERTER | RHR | D | 542 | 025 | |
| FY-55-1K601 | SQUARE ROOT CONVERTER | HPCI | B | 533 | 024 | |
| FY-55-2K601 | SQUARE ROOT CONVERTER | HPCI | B | 533 | 024 | |
| HD-81-041A | SYSTEM "A" OUTSIDE AIR INLET DAMPER | SPPV | A | 1000 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HD-81-041B | SYSTEM "B" OUTSIDE AIR INLET DAMPER | SPPV | B | 1005 | 123 | 2-RHRSW-B<br>1-RHRSW-B<br>0-ESW-B |
| HD-81-041C | SYSTEM "C" OUTSIDE AIR INLET DAMPER | SPPV | C | 1000 | 122 | 1-RHRSW-A<br>2-RHRSW-A<br>0-ESW-A |
| HD-81-041D | SYSTEM "D" OUTSIDE AIR INLET DAMPER | SPPV | D | 1005 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HD-81-042A | SYSTEM "A" RECIRCULATION AIR DAMPER | SPPV | A | 1000 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HD-81-042B | SYSTEM "B" RECIRCULATION AIR DAMPER | SPPV | B | 1005 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HD-81-042C | SYSTEM "C" RECIRCULATION AIR DAMPER | SPPV | C | 1000 | 122 | 0-ESW-A<br>2-RHRSW-A<br>1-RHRSW-A |
| HD-81-042D | SYSTEM "D" RECIRCULATION AIR DAMPER | SPPV | D | 1005 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HV-11-011A | LOOP "A" DISCHARGE VALVE TO RHRSW RETURN HEADERS | ESW | A | 202 | 075 | 0-ESW-A<br>0-ESW-R |
| HV-11-011B | LOOP "B" DISCHARGE VALVE TO RHRSW RETURN HEADERS | ESW | B | 202 | 075 | 0-ESW-B |
| HV-11-015A | LOOP "A" DISCHARGE VALVE TO RHRSW RETURN HEADERS | ESW | C | 202 | 075 | 0-ESW-A<br>0-ESW-R |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-015B | LOOP "B" DISCHARGE VALVE TO RHRSW RETURN HEADERS | ESW | D | 202 | 075 | 0-ESW-B |
| HV-11-041 | LOOP "A" EQUIPMENT HEADER RETURN VALVE | ESW | A | 203 | 032 | 0-ESW-A<br>0-ESW-R |
| HV-11-042 | HPCI COMPARTMENT UNIT COOLER RETURN VALVE | HPCI | B | 109 | 034 | 1-HPCI |
| HV-11-043 | SERVICE WATER INTERTIE VALVE FOR HPCI UNIT COOLER | ESW | B | 109 | 034 | 0-ESW-B |
| HV-11-044 | LOOP "B" EQUIPMENT HEADER RETURN VALVE | ESW | B | 207 | 041 | 0-ESW-B |
| HV-11-046 | LOOP "A" EQUIPMENT HEADER RETURN VALVE | ESW | A | 281 | 055 | 0-ESW-R<br>0-ESW-A |
| HV-11-047 | LOOP "B" EQUIPMENT HEADER RETURN VALVE | ESW | B | 281 | 055 | 0-ESW-B |
| HV-11-048 | SERVICE WATER INTERTIE VALVE FOR RCIC UNIT COOLER | ESW | A | 279 | 065 | 0-ESW-A<br>0-ESW-R |
| HV-11-049 | RCIC COMPARTMENT UNIT COOLER RETURN VALVE | RCIC | A | 279 | 065 | 2-RCIC<br>0-ESW-R |
| HV-11-051A | SERVICE WATER INTERTIE VALVE FOR CONTROL STRUCTURE CHILLER | ESW | | 258 | 001 | 0-ESW-A<br>0-ESW-R |
| HV-11-051B | SERVICE WATER INTERTIE VALVE FOR CONTROL STRUCTURE CHILLER | ESW | | 263 | 001 | 0-ESW-B |
| HV-11-055A | SERVICE WATER INTERTIE FOR CONTROL STRUCTURE CHILLER | ESW | | 258 | 001 | 0-ESW-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-055B | SERVICE WATER INTERTIE VALVE FOR CONTROL STRUCTURE CHILLER | ESW | | 263 | 001 | 0-ESW-B |
| HV-11-071 | LOOP "A" EQUIPMENT HEADER RETURN VALVE | ESW | C | 203 | 032 | 0-ESW-A |
| HV-11-072 | HPCI COMPARTMENT UNIT COOLER RETURN VALVE | HPCI | D | 109 | 034 | 1-HPCI |
| HV-11-073 | SERVICE WATER INTERTIE FOR HPCI UNIT COOLER | ESW | D | 109 | 034 | 0-ESW-B |
| HV-11-074 | LOOP "B" EQUIPMENT HEADER RETURN VALVE | ESW | D | 207 | 041 | 0-ESW-B |
| HV-11-076 | LOOP "A" EQUIPMENT HEADER RETURN VALVE | ESW | C | 284 | 064 | 0-ESW-A |
| HV-11-077 | LOOP "B" EQUIPMENT HEADER RETURN VALVE | ESW | D | 281 | 055 | 0-ESW-B |
| HV-11-078 | SERVICE WATER INTERTIE VALVE FOR RCIC UNIT COOLER | ESW | C | 279 | 065 | 0-ESW-A |
| HV-11-079 | RCIC COMPARTMENT UNIT COOLER RETURN VALVE | RCIC | C | 279 | 065 | 2-RCIC |
| HV-11-103A | HPCI COMPARTMENT UNIT COOLER INLET VALVE | ESW | B | 109 | 034 | 1-HPCI |
| HV-11-103B | HPCI COMPARTMENT UNIT COOLER INLET VALVE | ESW | B | 109 | 034 | 1-HPCI |
| HV-11-104A | RHR COMPARTMENT UNIT COOLER "A" INLET VALVE | ESW | A | 102 | 032 | 1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRASC-A<br>1-RHRSPC-A |
| HV-11-104B | RHR COMPARTMENT UNIT COOLER "B" INLET VALVE | ESW | B | 103 | 031 | 1-RHRASC-B<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSPC-B |
| HV-11-104C | RHR COMPARTMENT UNIT COOLER "C" INLET VALVE | ESW | C | 102 | 032 | 1-RHRASC-C<br>1-RHRSPC-C<br>1-RHRSC-C<br>1-RHRLPCI-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-104D | RHR COMPARTMENT UNIT COOLER "D" INLET VALVE | ESW | D | 103 | 031 | 1-RHRASC-D<br>1-RHRLPCI-D<br>1-RHRSC-D<br>1-RHRSPC-D |
| HV-11-104E | RHR COMPARTMENT UNIT COOLER "E" INLET VALVE | ESW | A | 102 | 032 | 1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRASC-A<br>1-RHRSPC-A |
| HV-11-104F | RHR COMPARTMENT UNIT COOLER "F" INLET VALVE | ESW | B | 103 | 031 | 1-RHRASC-B<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSPC-B |
| HV-11-104G | RHR COMPARTMENT UNIT COOLER "G" INLET VALVE | ESW | C | 102 | 032 | 1-RHRASC-C<br>1-RHRSPC-C<br>1-RHRLPCI-C<br>1-RHRSC-C |
| HV-11-104H | RHR COMPARTMENT UNIT COOLER "H" INLET VALVE | ESW | D | 103 | 031 | 1-RHRASC-D<br>1-RHRLPCI-D<br>1-RHRSC-D<br>1-RHRSPC-D |
| HV-11-105 | ESW TO TECW HX INTERTIE SHUTOFF VALVE | ESW | A | YARD | YARD | 0-ESW-A<br>0-ESW-R |
| HV-11-106A | RCIC COMPARTMENT UNIT COOLER INLET VALVE | ESW | A | 108 | 033 | 1-RCIC |
| HV-11-106B | RCIC COMPARTMENT UNIT COOLER INLET VALVE | ESW | A | 108 | 033 | 1-RCIC |
| HV-11-107 | ESW TO TECW HX INTERTIE SHUTOFF VALVE | ESW | C | YARD | YARD | 0-ESW-A<br>0-ESW-R |
| HV-11-121 | SERVICE WATER INTERTIE VALVE FOR LOOP "A" EQUIPMENT | ESW | A | 203 | 032 | 0-ESW-R<br>0-ESW-A |
| HV-11-123 | SERVICE WATER INTERTIE VALVE FOR LOOP "A" EQUIPMENT | ESW | C | 203 | 032 | 0-ESW-A |
| HV-11-124 | SHUT OFF VALVE FOR ESW TO RECW HEAT EXCHANGER INTERTIE LINE | ESW | B | 207 | 041 | 0-ESW-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-125 | SERVICE WATER INTERTIE VALVE FOR LOOP "B" EQUIPMENT | ESW | B | 207 | 041 | 0-ESW-B |
| HV-11-126 | SERVICE WATER INTERTIE VALVE FOR "B" LOOP EQUIPMENT | ESW | D | 207 | 041 | 0-ESW-B |
| HV-11-128 | SHUTOFF VALVE FOR ESW TO RHRSW HEAT EXCHANGER INTERTIE LINE | ESW | D | 207 | 041 | 0-ESW-B |
| 11-1131A | DIESEL GENERATOR "A" COOLING LOOP INLET VALVE | ESW | A | 311A | 079 | |
| HV-11-131B | DIESEL GENERATOR "B" COOLING LOOP INLET VALVE | ESW | B | 311B | 081 | 0-ESW-A<br>0-ESW-R |
| 11-1131C | DIESEL GENERATOR "C" COOLING LOOP INLET VALVE | ESW | C | 311C | 080 | |
| HV-11-131D | DIESEL GENERATOR "D" COOLING LOOP INLET VALVE | ESW | D | 311D | 082 | 0-ESW-A<br>0-ESW-R |
| HV-11-132A | DIESEL GENERATOR "A" COOLING LOOP OUTLET VALVE | ESW | A | 311A | 079 | |
| HV-11-132B | DIESEL GENERATOR "B" COOLING LOOP OUTLET VALVE | ESW | B | 311B | 081 | |
| HV-11-132C | DIESEL GENERATOR "C" COOLING LOOP OUTLET VALVE | ESW | C | 311C | 080 | |
| HV-11-132D | DIESEL GENERATOR "D" COOLING LOOP OUTLET VALVE | ESW | D | 311D | 082 | |
| HV-11-133A | DIESEL GENERATOR "A" COOLING LOOP INLET VALVE | ESW | A | 311A | 079 | 0-ESW-B |
| 11-1133B | DIESEL GENERATOR "B" COOLING LOOP INLET VALVE | ESW | B | 311B | 081 | |
| HV-11-133C | DIESEL GENERATOR "C" COOLING LOOP INLET VALVE | ESW | C | 311C | 080 | 0-ESW-B |
| 11-1133D | DIESEL GENERATOR "D" COOLING LOOP INLET VALVE | ESW | D | 311D | 082 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-134A | DIESEL GENERATOR "A" COOLING LOOP OUTLET VALVE | ESW | A | 311A | 079 | |
| HV-11-134B | DIESEL GENERATOR "B" COOLING LOOP OUTLET VALVE | ESW | B | 311B | 081 | |
| HV-11-134C | DIESEL GENERATOR "C" COOLING LOOP OUTLET VALVE | ESW | C | 311C | 080 | |
| HV-11-134D | DIESEL GENERATOR "D" COOLING LOOP OUTLET VALVE | ESW | D | 311D | 082 | |
| HV-11-203A | HPCI COMPARTMENT UNIT COOLER INLET VALVE | ESW | B | 180 | 057 | 2-HPCI |
| HV-11-203B | HPCI COMPARTMENT UNIT COOLER INLET VALVE | ESW | B | 180 | 057 | 2-HPCI |
| HV-11-204A | RHR COMPARTMENT UNIT COOLER "A" INLET VALVE | ESW | A | 173 | 054 | 2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSPC-A |
| HV-11-204B | RHR COMPARTMENT UNIT COOLER "B" INLET VALVE | ESW | B | 174 | 055 | 2-RHRSC-B<br>2-RHRSPC-B<br>2-RHRASC-B<br>2-RHRLPCI-B |
| HV-11-204C | RHR COMPARTMENT UNIT COOLER "C" INLET VALVE | ESW | C | 173 | 054 | 2-RHRASC-C<br>2-RHRLPCI-C<br>2-RHRSC-C<br>2-RHRSPC-C |
| HV-11-204D | RHR COMPARTMENT UNIT COOLER "D" INLET VALVE | ESW | D | 174 | 055 | 2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRASC-D<br>2-RHRSPC-D |
| HV-11-204H | RHR COMPARTMENT UNIT COOLER "H" INLET VALVE | ESW | D | 174 | 055 | 2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D |
| HV-11-205 | ESW TO TECW HX INTERTIE SHUTOFF VALVE | ESW | B | YARD | YARD | 0-ESW-B |
| HV-11-206A | RCIC COMPARTMENT UNIT COOLER INLET VALVE | ESW | A | 179 | 056 | 2-RCIC |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-206B | RCIC COMPARTMENT UNIT COOLER INLET VALVE | ESW | A | 179 | 056 | 2-RCIC |
| HV-11-207 | ESW TO TECW HX INTERTIE SHUTOFF VALVE | ESW | D | YARD | YARD | 0-ESW-B |
| HV-11-221 | SERVICE WATER INTERTIE VALVE FOR LOOP "A" EQUIPMENT | ESW | A | 284 | 064 | 0-ESW-A<br>0-ESW-R |
| HV-11-223 | SERVICE WATER INTERTIE VALVE FOR LOOP "A" EQUIPMENT | ESW | C | 284 | 064 | 0-ESW-A |
| HV-11-224 | SHUTOFF VALVE FOR ESW TO RECW HEAT EXCHANGER INTERTIE LINE | ESW | A | 284 | 064 | 0-ESW-A<br>0-ESW-R |
| HV-11-225 | SERVICE WATER INTERTIE VALVE FOR LOOP "B" EQUIPMENT | ESW | B | 281 | 055 | 0-ESW-B |
| HV-11-226 | SERVICE WATER INTERTIE VALVE FOR LOOP "B" EQUIPMENT | ESW | D | 281 | 055 | 0-ESW-B |
| HV-11-228 | SHUTOFF VALVE FOR ESW TO RECW HEAT EXCHANGER INTERTIE LINE | ESW | C | 284 | 064 | 0-ESW-R<br>0-ESW-A |
| 11-2231A | DIESEL GENERATOR "A" COOLING LOOP INLET VALVE | ESW | A | 315A | 083 | |
| HV-11-231B | DIESEL GENERATOR "B" COOLING LOOP INLET VALVE | ESW | B | 315B | 085 | 0-ESW-R<br>0-ESW-A |
| 11-2231C | DIESEL GENERATOR "C" COOLING LOOP INLET VALVE | ESW | C | 315C | 084 | |
| HV-11-231D | DIESEL GENERATOR "D" COOLING LOOP INLET VALVE | ESW | D | 315D | 086 | 0-ESW-A<br>0-ESW-R |
| HV-11-232A | DIESEL GENERATOR "A" COOLING LOOP OUTLET VALVE | ESW | A | 315A | 083 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-11-232B | DIESEL GENERATOR "B" COOLING LOOP OUTLET VALVE | ESW | B | 315B | 085 | |
| HV-11-232C | DIESEL GENERATOR "C" COOLING LOOP OUTLET VALVE | ESW | C | 315C | 084 | |
| HV-11-232D | DIESEL GENERATOR "D" COOLING LOOP OUTLET VALVE | ESW | D | 315D | 086 | |
| HV-11-233A | DIESEL GENERATOR "A" COOLING LOOP INLET VALVE | ESW | A | 315A | 083 | 0-ESW-B |
| 11-2233B | DIESEL GENERATOR "B" COOLING LOOP INLET VALVE | ESW | B | 315B | 085 | |
| HV-11-233C | DIESEL GENERATOR "C" COOLING LOOP INLET VALVE | ESW | C | 315C | 084 | 0-ESW-B |
| 11-2233D | DIESEL GENERATOR "D" COOLING LOOP INLET VALVE | ESW | D | 315D | 086 | |
| HV-11-234A | DIESEL GENERATOR "A" COOLING LOOP OUTLET VALVE | ESW | A | 315A | 083 | |
| HV-11-234B | DIESEL GENERATOR "B" COOLING LOOP OUTLET VALVE | ESW | B | 315B | 085 | |
| HV-11-234C | DIESEL GENERATOR "C" COOLING LOOP OUTLET VALVE | ESW | C | 315C | 084 | |
| HV-11-234D | DIESEL GENERATOR "D" COOLING LOOP OUTLET VALVE | ESW | D | 315D | 086 | |
| HV-12-003A | WET PIT SLUICE GATE | RHRSW | A | 1000 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-003B | WET PIT SLUICE GATE | RHRSW | B | 1005 | 123 | 1-RHRSW-B<br>2-RHRSW-B<br>0-ESW-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-12-003C | WET PIT SLUICE GATE | RHRSW | C | 1000 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-003D | WET PIT SLUICE GATE | RHRSW | D | 1005 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HV-12-017A | LOOP "A" TO UNIT 2 COOLING TOWER CROSS-TIE VALVE | RHRSW | A | YARD | YARD | 0-ESW-A<br>2-RHRSW-B<br>1-RHRSW-B<br>2-RHRSW-A<br>1-RHRSW-A<br>0-ESW-B<br>0-ESW-R |
| HV-12-017B | LOOP "B" TO UNIT 1 COOLING TOWER CROSS-TIE VALVE | RHRSW | B | YARD | YARD | 0-ESW-A<br>2-RHRSW-B<br>1-RHRSW-B<br>2-RHRSW-A<br>0-ESW-B<br>1-RHRSW-A |
| HV-12-031A | SPRAY NETWORK BYPASS VALVE | RHRSW | A | 1010 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-031B | SPRAY NETWORK BYPASS VALVE | RHRSW | B | 1015 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HV-12-031C | SPRAY NETWORK BYPASS VALVE | RHRSW | C | 1010 | 122 | 2-RHRSW-A<br>0-ESW-A<br>0-ESW-R<br>1-RHRSW-A |
| HV-12-031D | SPRAY NETWORK BYPASS VALVE | RHRSW | D | 1015 | 123 | 2-RHRSW-B<br>1-RHRSW-B<br>0-ESW-B |
| HV-12-032A | SPRAY NETWORK INLET VALVE | RHRSW | A | 1010 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-032B | SPRAY NETWORK INLET VALVE | RHRSW | B | 1015 | 123 | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-12-032C | SPRAY NETWORK INLET VALVE | RHRSW | C | 1010 | 122 | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-032D | SPRAY NETWORK INLET VALVE | RHRSW | D | 1015 | 123 | 1-RHRSW-B<br>2-RHRSW-B<br>0-ESW-B |
| HV-12-034A | RHR SERVICE WATER SPRAY NOZZLE CROSS TIE VALVE | ESW | A | 1010 | 122 | 2-RHRSW-B<br>0-ESW-B<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A<br>1-RHRSW-B<br>0-ESW-A |
| HV-12-034B | RHR SERVICE WATER SPRAY NOZZLE CROSS TIE VALVE | ESW | B | 1015 | 123 | 1-RHRSW-B<br>2-RHRSW-A<br>1-RHRSW-A<br>0-ESW-A<br>2-RHRSW-B<br>0-ESW-B |
| HV-12-111 | RHRSW TO COOLING TOWER INTERTIE SHUTOFF VALVE | RHRSW | A | YARD | YARD | 2-RHRSW-A<br>1-RHRSW-A<br>0-ESW-R<br>0-ESW-A |
| HV-12-113 | RHRSW TO COOLING TOWER INTERTIE SHUTOFF VALVE | RHRSW | C | YARD | YARD | 0-ESW-A<br>0-ESW-R<br>1-RHRSW-A<br>2-RHRSW-A |
| HV-12-211 | RHRSW TO COOLING TOWER INTERTIE SHUTOFF VALVE | RHRSW | B | YARD | YARD | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HV-12-213 | RHRSW TO COOLING TOWER INTERTIE SHUTOFF VALVE | RHRSW | D | YARD | YARD | 0-ESW-B<br>1-RHRSW-B<br>2-RHRSW-B |
| HV-41-109A | REACTOR FEEDWATER BYPASS VALVE | HI/LOW | A | 518 | 046 | 1-HI/LOW<br>1-HPCI |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-41-109B | REACTOR FEEDWATER BYPASS VALVE | HI/LOW | B | 518 | 046 | 1-HI/LOW<br>1-RCIC |
| HV-41-110 | RX FW STARTUP FLUSHING SHUTOFF | HI/LOW | C | 407 | 046 | 1-HI/LOW |
| HV-41-140 | BYPASS LEAKAGE BARRIER VENT MAIN STEAM LINE BLEED DRAIN | HI/LOW | C | 407 | 046 | 1-HI/LOW |
| HV-41-141 | BYPASS LEAKAGE BARRIER VENT MAIN STEAM LINE BLEED DRAIN | HI/LOW | D | 407 | 046 | 1-HI/LOW |
| HV-41-1F001 | NUCLEAR BOILER SYS HEAD VENT VALVE | HI/LOW | 0 | 400 | 030 | 1-HI/LOW |
| HV-41-1F002 | NUCLEAR BOILER SYS HEAD VENT VALVE | HI/LOW | 0 | 400 | 030 | 1-HI/LOW |
| HV-41-1F011A | FEEDWATER LINE "A" INBD MAINT ISO VALVE | HPCI | A | 400 | 030 | 1-HPCI |
| HV-41-1F011B | FEEDWATER LINE "B" INBD MAINT ISO VALVE | RCIC | C | 400 | 030 | 1-RCIC |
| HV-41-1F016 | MAIN STEAM LINE DRAIN INBD PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-41-1F019 | MAIN STEAM LINE DRAIN OUTBD PCIV | HI/LOW | B | 407 | 046 | 1-HI/LOW |
| HV-41-1F021 | NUCLEAR BOILER SYSTEM MSL DRAIN TO COND. | HI/LOW | B | 407 | 046 | 1-HI/LOW |
| HV-41-1F022A | A MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 400 | 030 | 1-HI/LOW |
| HV-41-1F022B | B MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 400 | 030 | 1-HI/LOW |
| HV-41-1F022C | C MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 400 | 030 | 1-HI/LOW |
| HV-41-1F022D | D MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 400 | 030 | 1-HI/LOW |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-41-1F028A | A MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 407 | 046 | 1-HI/LOW |
| HV-41-1F028B | B MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 407 | 046 | 1-HI/LOW |
| HV-41-1F028C | C MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 407 | 046 | 1-HI/LOW |
| HV-41-1F028D | D MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 407 | 046 | 1-HI/LOW |
| HV-41-1F084 | MAIN STEAM LINE C INBD SAMPLE PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-41-1F085 | MAIN STEAM LINE C OUTBD SAMPLE PCIV | HI/LOW | B | 510 | 047W | 1-HI/LOW |
| HV-41-209A | REACTOR FEEDWATER BYPASS VALV | HI/LOW | A | 587 | 069 | 2-HI/LOW<br>2-HPCI |
| HV-41-209B | REACTOR FEEDWATER BYPASS VALVE | HI/LOW | B | 587 | 069 | 2-HI/LOW<br>2-RCIC |
| HV-41-210 | RX FW STARTUP FLUSHING SHUTOFF | HI/LOW | C | 480 | 069 | 2-HI/LOW |
| HV-41-240 | BYPASS LEAKAGE BARRIER VENT MAIN STEAM LINE BLEED DRAIN | HI/LOW | C | 480 | 069 | 2-HI/LOW |
| HV-41-241 | BYPASS LEAKAGE BARRIER VENT MAIN STEAM LINE BLEED DRAIN | HI/LOW | D | 480 | 069 | 2-HI/LOW |
| HV-41-2F001 | NUCLEAR BOILER SYS HEAD VENT VALVE | HI/LOW | 0 | 473 | 053 | 2-HI/LOW |
| HV-41-2F002 | NUCLEAR BOILER SYS HEAD VENT VALVE | HI/LOW | 0 | 473 | 053 | 2-HI/LOW |
| HV-41-2F011A | FEEDWATER LINE "A" INBD MAINT ISO VALVE | HPCI | A | 473 | 053 | 2-HPCI |
| HV-41-2F011B | FEEDWATER LINE "B" INBD MAINT ISO VALVE | RCIC | C | 473 | 053 | 2-RCIC |
| HV-41-2F016 | MAIN STEAM LINE DRAIN INBD PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-41-2F019 | MAIN STEAM LINE DRAIN OUTBD PCIV | HI/LOW | B | 480 | 069 | 2-HI/LOW |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-41-2F021 | NUCLEAR BOILER SYSTEM MSL DRAIN TO COND. | HI/LOW | B | 480 | 069 | 2-HI/LOW |
| HV-41-2F022A | A MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 473 | 053 | 2-HI/LOW |
| HV-41-2F022B | B MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 473 | 053 | 2-HI/LOW |
| HV-41-2F022C | C MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 473 | 053 | 2-HI/LOW |
| HV-41-2F022D | D MAIN STEAM ISO VALVE INBD PCIV | HI/LOW | A,W | 473 | 053 | 2-HI/LOW |
| HV-41-2F028A | A MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 480 | 069 | 2-HI/LOW |
| HV-41-2F028B | B MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 480 | 069 | 2-HI/LOW |
| HV-41-2F028C | C MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 480 | 069 | 2-HI/LOW |
| HV-41-2F028D | D MAIN STEAM ISO VALVE OUTBD PCIV | HI/LOW | B,X | 480 | 069 | 2-HI/LOW |
| HV-41-2F084 | MAIN STEAM LINE C INBD SAMPLE PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-41-2F085 | MAIN STEAM LINE C OUTBD SAMPLE PCIV | HI/LOW | B | 584 | 070E | 2-HI/LOW |
| HV-43-1F019 | RECIRC LOOP SAMPLE INBD PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-43-1F020 | RECIRC LOOP SAMPLE OUTBD PCIV | HI/LOW | B | 501 | 047E | 1-HI/LOW |
| HV-43-2F019 | RECIRC LOOP SAMPLE INBD PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-43-2F020 | RECIRC LOOP SAMPLE OUTBD PCIV | HI/LOW | B | 575 | 070W | 2-HI/LOW |
| HV-44-1F031 | RWCU RESTRICTED ORFICE BYPASS VALVE | HI/LOW | 0 | 510 | 047W | 1-HI/LOW |
| HV-44-1F034 | RWCU DISCHARGE TO MAIN CONDENSER | HI/LOW | 0 | 510 | 047W | 1-HI/LOW |
| HV-44-1F035 | RWCU DISCHARGE TO EQUIP DRAIN COLLECTION TANK | HI/LOW | 0 | 510 | 047W | 1-HI/LOW |
| HV-44-2F031 | RWCU RESTRICTED ORFICE BYPASS VALVE | HI/LOW | 0 | 584 | 070E | 2-HI/LOW |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-44-2F034 | RWCU DISCHARGE TO MAIN CONDENSER | HI/LOW | 0 | 584 | 070E | 2-HI/LOW |
| HV-44-2F035 | RWCU DISCHARGE TO EQUIP DRAIN COLLECTION TANK | HI/LOW | 0 | 584 | 070E | 2-HI/LOW |
| HV-49-1F007 | STEAM SUPPLY LINE INBD CTMT ISO VALVE | RCIC | C | 400 | 030 | 1-RCIC<br>1-RCICTRIP |
| HV-49-1F008 | STEAM SUPPLY LINE OUTBD CTMT ISO VALVE | RCIC | A | 309E | 043E | 1-RCIC<br>1-RCICTRIP |
| HV-49-1F010 | PUMP SUCTION VALVE FROM CONDENSATE STORAGE TANK | RCIC | A | 108 | 033 | 1-RCIC |
| HV-49-1F012 | RCIC PUMP DISCHARGE VALVE | RCIC | A | 200 | 042 | 1-RCIC |
| HV-49-1F013 | INJECTION VALVE TO FEEDWATER LINE | RCIC | A | 518 | 046 | 1-RCIC |
| HV-49-1F019 | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RCIC | A | 108 | 033 | 1-RCIC |
| HV-49-1F022 | SHUTOFF VALVE IN DISCHARGE LINE TO CONDENSATE STORAGE TANK | RCIC | A | 200 | 042 | 1-RCIC |
| HV-49-1F029 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RCIC | A | 108 | 033 | 1-RCIC |
| HV-49-1F031 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER CTMT ISO VALVE | RCIC | A | 108 | 033 | 1-RCIC |
| HV-49-1F060 | TURBINE EXHAUST LINE CTMT ISO VALVE | RCIC | A | 289 | 033 | 1-RCIC |
| HV-49-1F080 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | RCIC | A | 203 | 032 | 1-RCIC |
| HV-49-1F084 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | RCIC | C | 203 | 032 | 1-RCIC |
| HV-49-2F007 | STEAM SUPPLY LINE INBD CTMT ISO VALVE | RCIC | C | 473 | 053 | 2-RCIC<br>2-RCICTRIP |
| HV-49-2F008 | STEAM SUPPLY LINE OUTBD CTMT ISO VALVE | RCIC | A | 376E | 066E | 2-RCIC<br>2-RCICTRIP |
| HV-49-2F010 | PUMP SUCTION VALVE FROM CONDENSATE STORAGE TANK | RCIC | A | 179 | 056 | 2-RCIC |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-49-2F012 | RCIC PUMP DISCHARGE VALVE | RCIC | A | 279 | 065 | 2-RCIC |
| HV-49-2F013 | INJECTION VALVE TO FEEDWATER LINE | RCIC | A | 587 | 069 | 2-RCIC |
| HV-49-2F019 | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RCIC | A | 281 | 055 | 2-RCIC |
| HV-49-2F022 | SHUTOFF VALVE IN DISCHARGE LINE TO CONDENSATE STORAGE TANK | RCIC | A | 279 | 065 | 2-RCIC |
| HV-49-2F029 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RCIC | A | 179 | 056 | 2-RCIC |
| HV-49-2F031 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER CTMT ISO VALVE | RCIC | A | 179 | 056 | 2-RCIC |
| HV-49-2F060 | TURBINE EXHAUST LINE CTMT ISO VALVE | RCIC | A | 285 | 056 | 2-RCIC |
| HV-49-2F080 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | RCIC | A | 281 | 055 | 2-RCIC |
| HV-49-2F084 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | RCIC | C | 281 | 055 | 2-RCIC |
| HV-50-112 | TURBINE STOP VALVE | RCIC | A | 108 | 033 | 1-RCIC<br>1-RCICTRIP |
| HV-50-1F045 | STEAM SUPPLY LINE INLET VALVE TO TURBINE | RCIC | A | 108 | 033 | 1-RCIC<br>1-RCICTRIP |
| HV-50-1F046 | COOLING WATER LINE SHUTOFF VALVE | RCIC | A | 108 | 033 | 1-RCIC |
| HV-50-212 | TURBINE STOP VALVE | RCIC | A | 179 | 056 | 2-RCIC<br>2-RCICTRIP |
| HV-50-2F045 | STEAM SUPPLY LINE INLET VALVE TO TURBINE | RCIC | A | 179 | 056 | 2-RCIC<br>2-RCICTRIP |
| HV-50-2F046 | COOLING WATER LINE SHUTOFF VALVE | RCIC | A | 179 | 056 | 2-RCIC |
| HV-51-105A | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RHR | C | 203 | 032 | 1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C<br>1-RHRSPC-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-105B | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RHR | D | 204 | 031 | 1-RHRLPCI-D<br>1-RHRSC-D<br>1-RHRASC-D<br>1-RHRSPC-D |
| HV-51-125A | SUPPRESSION POOL COOLING LINE CTMT ISO VALVE | RHR | A | 304W | 044W | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSPC-A<br>1-RHRSPC-C |
| HV-51-125B | SUPPRESSION POOL COOLING LINE CTMT ISO VALVE | RHR | B | 304E | 044E | 1-RHRSC-B<br>1-RHRSPC-B<br>1-RHRASC-B<br>1-RHRLPCI-B<br>1-RHRSPC-D |
| HV-51-142A | 1A LPCI INJECTION HEADER INBD PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-51-142B | 1B LPCI INJECTION HEADER INBD PCIV | HI/LOW | B | 400 | 030 | 1-HI/LOW |
| HV-51-142C | 1C LPCI INJECTION HEADER INBD PCIV | HI/LOW | C | 400 | 030 | 1-HI/LOW |
| HV-51-142D | 1D LPCI INJECTION HEADER INBD PCIV | HI/LOW | D | 400 | 030 | 1-HI/LOW |
| HV-51-151A | 1A RHR SHUTDOWN COOLING INJ HDR INLET PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-51-151B | 1B RHR SHUTDOWN COOLING INJ HDR INLET PCIV | HI/LOW | B | 400 | 030 | 1-HI/LOW |
| HV-51-182A | RHR LOOP A/LOOP C INTERTIE ISO VALVE | RHR | A | 309W | 043W | 1-RHRASC-A<br>1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRSC-A<br>1-RHRLPCI-C<br>1-RHRASC-C<br>1-RHRSPC-C<br>1-RHRLPCI-A |
| HV-51-182B | RHR LOOP B/LOOP D INTERTIE ISO VALVE | RHR | B | 309E | 043E | 1-RHRSC-B<br>1-RHRSPC-D<br>1-RHRSPC-B<br>1-RHRSC-D<br>1-RHRLPCI-D<br>1-RHRLPCI-B<br>1-RHRASC-B<br>1-RHRASC-D |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F003A | HEAT EXCHANGER SHELL SIDE DISCHARGE VALVE | RHR | A | 203 | 032 | 1-RHRASC-A<br>1-RHRASC-C<br>1-RHRSC-A<br>1-RHRSC-C<br>1-RHRSPC-A<br>1-RHRSPC-C |
| HV-51-1F003B | HEAT EXCHANGER SHELL SIDE DISCHARGE VALVE | RHR | B | 204 | 031 | 1-RHRASC-B<br>1-RHRSPC-D<br>1-RHRSPC-B<br>1-RHRASC-D<br>1-RHRSC-D<br>1-RHRSC-B |
| HV-51-1F004A | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | A | 102 | 032 | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSPC-A |
| HV-51-1F004B | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | B | 103 | 031 | 1-RHRASC-B<br>1-RHRSPC-B<br>1-RHRLPCI-B<br>1-RHRSC-B |
| HV-51-1F004C | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | C | 102 | 032 | 1-RHRSPC-C<br>1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C |
| HV-51-1F004D | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | D | 103 | 031 | 1-RHRSPC-D<br>1-RHRSC-D<br>1-RHRASC-D<br>1-RHRLPCI-D |
| HV-51-1F006A | PUMP SUCTION VALVE FROM SHUTDOWN COOLING HEADER | RHR | A | 102 | 032 | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSC-B<br>1-RHRSC-C<br>1-RHRSC-D<br>1-RHRSPC-A |
| HV-51-1F006B | PUMP SUCTION VALVE FROM SHUTDOWN COOLING HEADER | RHR | B | 103 | 031 | 1-RHRSC-B<br>1-RHRASC-B<br>1-RHRLPCI-B<br>1-RHRSC-C<br>1-RHRSC-D<br>1-RHRSPC-B<br>1-RHRSC-A |
| HV-51-1F007A | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | A | 102 | 032 | 1-RHRASC-A<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSPC-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F007B | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | B | 103 | 031 | 1-RHRASC-B<br>1-RHRSPC-B<br>1-RHRLPCI-B<br>1-RHRSC-B |
| HV-51-1F007C | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | C | 102 | 032 | 1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C<br>1-RHRSPC-C |
| HV-51-1F007D | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | D | 103 | 031 | 1-RHRSC-D<br>1-RHRSPC-D<br>1-RHRASC-D<br>1-RHRLPCI-D |
| HV-51-1F008 | SHUTDOWN COOLING SUCTION LINE OUTBD CTMT ISO VALVE | RHR/ HILOW | B | 309E<br>309W | 043E<br>043W | 1-HI/LOW<br>1-RHRSC-A<br>1-RHRSC-B<br>1-RHRSC-C<br>1-RHRSC-D |
| HV-51-1F009 | SHUTDOWN COOLING SUCTION LINE INBD CTMT ISO VALVE | RHR/ HILOW | A | 400 | 030 | 1-HI/LOW<br>1-RHRSC-A<br>1-RHRSC-B<br>1-RHRSC-C<br>1-RHRSC-D |
| HV-51-1F010A | PUMP DISCHARGE FULL FLOW BYPASS VALVE | RHR | C | 304W | 044W | 1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRLPCI-C<br>1-RHRASC-C<br>1-RHRSPC-C |
| HV-51-1F010B | PUMP DISCHARGE FULL FLOW BYPASS VALVE | RHR | D | 304E | 044E | 1-RHRSPC-D<br>1-RHRASC-D<br>1-RHRLPCI-D<br>1-RHRSC-D<br>1-RHRSPC-B |
| HV-51-1F011A | HEAT EXCHANGER DISCH LINE TO SUPPRESSION CHAMBER SHUTOFF VALVE | RHR | N/A | 203 | 032 | 1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRLPCI-A<br>1-RHRSC-A |
| HV-51-1F011B | HEAT EXCHANGER DISCH LINE TO SUPPRESSION CHAMBER SHUTOFF VALVE | RHR | N/A | 204 | 031 | 1-RHRSC-D<br>1-RHRSPC-D<br>1-RHRLPCI-B<br>1-RHRASC-D<br>1-RHRASC-B<br>1-RHRSPC-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F014A | RHR HEAT EXCHANGER TUBE SIDE INLET VALVE | RHRSW | A | 203 | 032 | 1-RHRSW-A |
| HV-51-1F014B | RHR HEAT EXCHANGER TUBE SIDE INLET VALVE | RHRSW | B | 204 | 031 | 1-RHRSW-B |
| HV-51-1F015A | SHUTDOWN COOLING RETURN LINE OUTBD CTMT ISO VALVE | RHR | B | 309W | 043W | 1-RHRASC-C<br>1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRLPCI-A<br>1-RHRASC-A<br>1-HI/LOW<br>1-RHRSC-A |
| HV-51-1F015B | SHUTDOWN COOLING RETURN LINE OUTBD CTMT ISO VALVE | RHR | B | 309E<br>309W | 043E<br>043W | 1-RHRASC-B<br>1-RHRSC-D<br>1-RHRSPC-D<br>1-RHRSPC-B<br>1-HI/LOW<br>1-RHRASC-D<br>1-RHRLPCI-B<br>1-RHRSC-B |
| HV-51-1F016A | DRYWELL SPRAY LINE OUTBD CTMT ISO VALVE | RHR | A | 501 | 047E | 1-RHRASC-A<br>1-RHRASC-C<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSC-C<br>1-RHRSPC-A<br>1-RHRSPC-C |
| HV-51-1F016B | DRYWELL SPRAY LINE OUTBD CTMT ISO VALVE | RHR | B | 523 | 047W | 1-RHRSC-B<br>1-RHRSPC-D<br>1-RHRSC-D<br>1-RHRLPCI-B<br>1-RHRASC-D<br>1-RHRASC-B<br>1-RHRSPC-B |
| HV-51-1F017A | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | A | 510 | 047W | 1-RHRLPCI-A<br>1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRSC-A<br>1-RHRASC-C<br>1-RHRASC-A<br>1-HI/LOW<br>1-RHRSC-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F017B | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | B | 599 | 047E | 1-RHRLPCI-B<br>1-RHRSPC-B<br>1-RHRSPC-D<br>1-RHRSC-B<br>1-RHRASC-B<br>1-HI/LOW<br>1-RHRSC-D<br>1-RHRASC-D |
| HV-51-1F017C | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | C | 510 | 047W | 1-RHRSPC-C<br>1-HI/LOW<br>1-RHRASC-C<br>1-RHRLPCI-C<br>1-RHRSC-C |
| HV-51-1F017D | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | D | 599 | 047E | 1-RHRSPC-D<br>1-RHRSC-D<br>1-RHRLPCI-D<br>1-HI/LOW<br>1-RHRASC-D |
| HV-51-1F021A | DRYWELL SPRAY LINE INBD CTMT ISO VALVE | RHR | A | 400 | 030 | 1-RHRASC-A<br>1-RHRASC-C<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSC-C<br>1-RHRSPC-A<br>1RHRSPC-C |
| HV-51-1F021B | DRYWELL SPRAY LINE INBD CTMT ISO VALVE | RHR | B | 400 | 030 | 1-RHRASC-B<br>1-RHRASC-D<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSC-D<br>1-RHRSPC-B<br>1-RHRSPC-D |
| HV-51-1F024A | SUPPRESSION POOL COOLING LINE SHUTOFF VALVE | RHR | A | 304W | 044W | 1-RHRSC-C<br>1-RHRASC-A<br>1-RHRSPC-A<br>1-RHRSPC-C<br>1-RHRSC-A<br>1-RHRASC-C<br>1-RHRLPCI-A |
| HV-51-1F024B | SUPPRESSION POOL COOLING LINE SHUTOFF VALVE | RHR | B | 304E | 044E | 1-RHRASC-B<br>1-RHRASC-D<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSC-D<br>1-RHRSPC-B<br>1-RHRSPC-D |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F026A | HEAT EXCHANGER DISCHARGE LINE TO RCIC SHUTOFF VALVE | RHR | N/A | 102 | 032 | 1-RHRSC-C<br>1-RHRSPC-A<br>1-RHRSC-A<br>1-RHRLPCI-A<br>1-RHRSPC-C |
| HV-51-1F026B | HEAT EXCHANGER DISCHARGE LINE TO RCIC SHUTOFF VALVE | RHR | N/A | 103 | 031 | 1-RHRSPC-B<br>1-RHRSPC-D<br>1-RHRSC-D<br>1-RHRLPCI-B<br>1-RHRASC-D<br>1-RHRASC-B |
| HV-51-1F027A | SUPPRESSION POOL SPRAY LINE CTMT ISO VALVE | RHR | A | 304W | 044W | 1-RHRASC-C<br>1-RHRLPCI-A<br>1-RHRSC-A<br>1-RHRSC-C<br>1-RHRASC-A |
| HV-51-1F027B | SUPPRESSION POOL SPRAY LINE CTMT ISO VALVE | RHR | B | 304E | 044E | 1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRASC-D<br>1-RHRASC-B<br>1-RHRSC-D |
| HV-51-1F040 | HEAT EXCHANGER DISCHARGE LINE TO RADWASTE SHUTOFF VALVE | RHR | A | 203 | 032 | 1-RHRSPC-A<br>1-RHRSPC-C<br>1-RHRSC-C<br>1-RHRSC-A<br>1-RHRLPCI-A<br>1-RHRASC-C<br>1-RHRASC-A |
| HV-51-1F047A | HEAT EXCHANGER INLET VALVE FROM PUMP DISCHARGE | RHR | A | 309W | 043W | 1-RHRSPC-C<br>1-RHRASC-C<br>1-RHRSC-A<br>1-RHRSC-C<br>1-RHRSPC-A<br>1-RHRASC-A |
| HV-51-1F047B | HEAT EXCHANGER INLET VALVE FROM PUMP DISCHARGE | RHR | B | 309E | 043E | 1-RHRSPC-D<br>1-RHRSPC-B<br>1-RHRSC-D<br>1-RHRASC-B<br>1-RHRSC-B<br>1-RHRASC-D |
| HV-51-1F049 | HEAT EXCHANGER DISCHARGE LINE TO RADWASTE SHUTOFF VALVE | RHR | B | 203 | 032 | 1-RHRSC-C<br>1-RHRSPC-A<br>1-RHRSC-A<br>1-RHRLPCI-A<br>1-RHRASC-C<br>1-RHRASC-A<br>1-RHRSPC-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-1F068A | RHR HEAT EXCHANGER TUBE SIDE OUTLET VALVE | RHRSW | C | 203 | 032 | 1-RHRSW-A |
| HV-51-1F068B | RHR HEAT EXCHANGER TUBE SIDE OUTLET VALVE | RHRSW | D | 204 | 031 | 1-RHRSW-B |
| HV-51-1F073 | RHRSW TO RHR INTERTIE LINE SHUTOFF VALVE | RHR | B | 204 | 031 | 1-RHRSW-B |
| HV-51-1F068A | RHR HEAT EXCHANGER | RHRSW | C | 203 | 032 | 1-RHRSW-A |
| HV-51-1F074 | RHR SW CROSSTIE DRAIN VALVE | RHR | B | 103 | 031 | 1-RHRSW-B |
| HV-51-1F075 | RHRSW TO RHR INTERTIE SHUTOFF VALVE | RHR | B | 204 | 031 | 1-RHRSW-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-205A | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RHR | C | 280 | 054 | 2-RHRSPC-C |
| HV-51-205A | MINIMUM FLOW BYPASS | RHR | C | 280 | 054 | 2-RHRSC-C<br>2-RHRASC-C<br>2-RHRLPCI-C |
| HV-51-205B | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | RHR | D | 281 | 055 | 2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D |
| HV-51-225A | SUPPRESSION POOL COOLING LINE CTMT ISO VALVE | RHR | A | 370W | 067W | 2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSPC-A |
| HV-51-225A | SUPPRESSION POOL | RHR | A | 370W | 067W | 2-RHRSPC-C |
| HV-51-225B | SUPPRESSION POOL COOLING LINE CTMT ISO VALVE | RHR | B | 370E | 067E | 2-RHRASC-B<br>2-RHRSPC-D<br>2-RHRSPC-B<br>2-RHRLPCI-B<br>2-RHRSC-B |
| HV-51-242A | 2A LPCI INJECTION HEADER INBD PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-51-242B | 2B LPCI INJECTION HEADER INBD PCIV | HI/LOW | B | 473 | 053 | 2-HI/LOW |
| HV-51-242C | 2C LPCI INJECTION HEADER INBD PCIV | HI/LOW | C | 473 | 053 | 2-HI/LOW |
| HV-51-242D | 2D LPCI INJECTION HEADER INBD PCIV | HI/LOW | D | 473 | 053 | 2-HI/LOW |
| HV-51-251A | 2A RHR SHUTDOWN COOLING INJ HDR INLET PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-51-251B | 2B RHR SHUTDOWN COOLING INJ HDR INLET PCIV | HI/LOW | B | 473 | 053 | 2-HI/LOW |
| HV-51-282A | RHR LOOP A/LOOP C INTERTIE ISO VALVE | RHR | A | 376W | 066W | 2-RHRASC-C<br>2-RHRSPC-A<br>2-RHRSC-C<br>2-RHRSC-A<br>2-RHRLPCI-A<br>2-RHRSPC-C<br>2-RHRASC-A<br>2-RHRLPCI-C |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-282B | RHR LOOP B/LOOP D INTERTIE ISO VALVE | RHR | B | 376E | 066E | 2-RHRSC-B<br>2-RHRSPC-D<br>2-RHRSPC-B<br>2-RHRSC-D<br>2-RHRLPCI-D<br>2-RHRLPCI-B<br>2-RHRASC-B<br>2-RHRASC-D |
| HV-51-2F003A | HEAT EXCHANGER SHELL SIDE DISCHARGE VALVE | RHR | A | 280 | 054 | 2-RHRASC-A<br>2-RHRASC-C<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C |
| HV-51-2F003B | HEAT EXCHANGER SHELL SIDE DISCHARGE VALVE | RHR | B | 281 | 055 | 2-RHRASC-B<br>2-RHRSPC-D<br>2-RHRSPC-B<br>2-RHRASC-D<br>2-RHRSC-B<br>2-RHRSC-D |
| HV-51-2F004A | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | A | 173 | 054 | 2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSPC-A |
| HV-51-2F004B | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | B | 174 | 055 | 2-RHRASC-B<br>2-RHRLPCI-B<br>2-RHRSC-B<br>2-RHRSPC-B |
| HV-51-2F004C | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | C | 173 | 054 | 2-RHRSC-C<br>2-RHRSPC-C<br>2-RHRASC-C<br>2-RHRLPCI-C |
| HV-51-2F004D | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | RHR | D | 174 | 055 | 2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-D<br>2-RHRASC-D |
| HV-51-2F006A | PUMP SUCTION VALVE FROM SHUTDOWN COOLING HEADER | RHR | A | 173 | 054 | 2-RHRLPCI-A<br>2-RHRSPC-A<br>2-RHRSC-D<br>2-RHRSC-C<br>2-RHRSC-A<br>2-RHRASC-A<br>2-RHRSC-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-2F006B | PUMP SUCTION VALVE FROM SHUTDOWN COOLING HEADER | RHR | B | 174 | 055 | 2-RHRSC-A<br>2-RHRSC-D<br>2-RHRSPC-B<br>2-RHRASC-B<br>2-RHRSC-C<br>2-RHRLPCI-B<br>2-RHRSC-B |
| HV-51-2F007A | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | A | 173 | 054 | 2-RHRASC-A<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSPC-A |
| HV-51-2F007B | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | B | 174 | 055 | 2-RHRASC-B<br>2-RHRSPC-B<br>2-RHRLPCI-B<br>2-RHRSC-B |
| HV-51-2F007C | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | C | 173 | 054 | 2-RHRASC-C<br>2-RHRLPCI-C<br>2-RHRSC-C<br>2-RHRSPC-C |
| HV-51-2F007D | PUMP DISCHARGE MINIMUM FLOW BYPASS VALVE | RHR | D | 174 | 055 | 2-RHRSC-D<br>2-RHRSPC-D<br>2-RHRASC-D<br>2-RHRLPCI-D |
| HV-51-2F008 | SHUTDOWN COOLING SUCTION LINE OUTBD CTMT ISO VALVE | RHR/ HILOW | B | 376E<br>376W | 066E<br>066W | 2-HI/LOW<br>2-RHRSC-A<br>2-RHRSC-B<br>2-RHRSC-C<br>2-RHRSC-D |
| HV-51-2F009 | SHUTDOWN COOLING SUCTION LINE INBD CTMT ISO VALVE | RHR/ HILOW | A | 473 | 053 | 2-HI/LOW<br>2-RHRSC-A<br>2-RHRSC-B<br>2-RHRSC-C<br>2-RHRSC-D |
| HV-51-2F010A | PUMP DISCHARGE FULL FLOW BYPASS VALVE | RHR | C | 370W | 067W | 2-RHRSPC-C<br>2-RHRLPCI-C<br>2-RHRASC-C<br>2-RHRSPC-A<br>2-RHRSC-C |
| HV-51-2F010B | PUMP DISCHARGE FULL FLOW BYPASS VALVE | RHR | D | 370E | 067E | 2-RHRSPC-D<br>2-RHRASC-D<br>2-RHRLPCI-D<br>2-RHRSC-D<br>2-RHRSPC-B |
| HV-51-2F011A | HEAT EXCHANGER DISCH LINE TO SUPPRESSION CHAMBER SHUTOFF VALVE | RHR | N/A | 280 | 054 | 2-RHRSPC-C<br>2-RHRSPC-A<br>2-RHRSC-C<br>2-RHRLPCI-A<br>2-RHRSC-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-2F011B | HEAT EXCHANGER DISCH LINE TO SUPPRESSION CHAMBER SHUTOFF VALVE | RHR | N/A | 281 | 055 | 2-RHRLPCI-B<br>2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRASC-B<br>2-RHRASC-D<br>2-RHRSPC-B |
| HV-51-2F014A | RHR HEAT EXCHANGER TUBE SIDE INLET VALVE | RHRSW | A | 280 | 054 | 2-RHRSW-A |
| HV-51-2F014B | RHR HEAT EXCHANGER TUBE SIDE INLET VALVE | RHRSW | B | 281 | 055 | 2-RHRSW-B |
| HV-51-2F015A | SHUTDOWN COOLING RETURN LINE OUTBD CTMT ISO VALVE | RHR | B | 376W | 066W | 2-RHRASC-C<br>2-RHRSPC-C<br>2-RHRSPC-A<br>2-RHRSC-C<br>2-RHRLPCI-A<br>2-RHRASC-A<br>2-HI/LOW<br>2-RHRSC-A |
| HV-51-2F015B | SHUTDOWN COOLING RETURN LINE OUTBD CTMT ISO VALVE | RHR | B | 376E | 066E | 2-HI/LOW<br>2-RHRSPC-D<br>2-RHRSPC-B<br>2-RHRSC-D<br>2-RHRLPCI-B<br>2-RHRASC-B<br>2-RHRASC-D<br>2-RHRSC-B |
| HV-51-2F016A | DRYWELL SPRAY LINE OUTBD CTMT ISO VALVE | RHR | A | 575 | 070W | 2-RHRASC-A<br>2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C |
| HV-51-2F016B | DRYWELL SPRAY LINE OUTBD CTMT ISO VALVE | RHR | B | 593 | 070E | 2-RHRSC-B<br>2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRLPCI-B<br>2-RHRASC-D<br>2-RHRASC-B<br>2-RHRSPC-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-2F017A | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | A | 589 | 070W | 2-RHRLPCI-A<br>2-RHRSPC-C<br>2-RHRSPC-A<br>2-RHRSC-A<br>2-RHRASC-C<br>2-RHRASC-A<br>2-HI/LOW<br>2-RHRSC-C |
| HV-51-2F017B | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | B | 584 | 070E | 2-RHRLPCI-B<br>2-RHRSPC-B<br>2-RHRSPC-D<br>2-RHRSC-B<br>2-RHRASC-B<br>2-HI/LOW<br>2-RHRSC-D<br>2-RHRASC-D |
| HV-51-2F017C | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | C | 589 | 070W | 2-RHRSPC-C<br>2-HI/LOW<br>2-RHRASC-C<br>2-RHRLPCI-C<br>2-RHRSC-C |
| HV-51-2F017D | LPCI INJECTION LINE OUTBD CTMT ISO VALVE | RHR | D | 584 | 070E | 2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRLPCI-D<br>2-HI/LOW<br>2-RHRASC-D |
| HV-51-2F021A | DRYWELL SPRAY LINE INBD CTMT ISO VALVE | RHR | A | 473 | 053 | 2-RHRASC-A<br>2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C |
| HV-51-2F021B | DRYWELL SPRAY LINE INBD CTMT ISO VALVE | RHR | B | 473 | 053 | 2-RHRASC-B<br>2-RHRASC-D<br>2-RHRLPCI-B<br>2-RHRSC-B<br>2-RHRSC-D<br>2-RHRSPC-B<br>2-RHRSPC-D |
| HV-51-2F024A | SUPPRESSION POOL COOLING LINE SHUTOFF VALVE | RHR | A | 370W | 067W | 2-RHRSC-C<br>2-RHRASC-A<br>2-RHRSPC-A<br>2-RHRSPC-C<br>2-RHRSC-A<br>2-RHRASC-C<br>2-RHRLPCI-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-2F024B | SUPPRESSION POOL COOLING LINE SHUTOFF VALVE | RHR | B | 370E | 067E | 2-RHRASC-B<br>2-RHRASC-D<br>2-RHRLPCI-B<br>2-RHRSC-B<br>2-RHRSC-D<br>2-RHRSPC-B<br>2-RHRSPC-D |
| HV-51-2F026A | HEAT EXCHANGER DISCHARGE LINE TO RCIC SHUTOFF VALVE | RHR | N/A | 173 | 054 | 2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRLPCI-A<br>2-RHRSPC-C<br>2-RHRSC-A |
| HV-51-2F026B | HEAT EXCHANGER DISCHARGE LINE TO RCIC SHUTOFF VALVE | RHR | N/A | 174 | 055 | 2-RHRSPC-B<br>2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRLPCI-B<br>2-RHRASC-D<br>2-RHRASC-B |
| HV-51-2F027A | SUPPRESSION POOL SPRAY LINE CTMT ISO VALVE | RHR | A | 370W | 067W | 2-RHRSC-C<br>2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRASC-A |
| HV-51-2F027B | SUPPRESSION POOL SPRAY LINE CTMT ISO VALVE | RHR | B | 370E | 067E | 2-RHRSC-B<br>2-RHRSC-D<br>2-RHRLPCI-B<br>2-RHRASC-B<br>2-RHRASC-D |
| HV-51-2F040 | HEAT EXCHANGER DISCHARGE LINE TO RADWASTE SHUTOFF VALVE | RHR | A | 280 | 054 | 2-RHRASC-A<br>2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C |
| HV-51-2F047A | HEAT EXCHANGER INLET VALVE FROM PUMP DISCHARGE | RHR | A | 376W | 066W | 2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C<br>2-RHRSC-A<br>2-RHRASC-C<br>2-RHRASC-A |
| HV-51-2F047B | HEAT EXCHANGER INLET VALVE FROM PUMP DISCHARGE | RHR | B | 376E | 066E | 2-RHRSPC-B<br>2-RHRSPC-D<br>2-RHRSC-D<br>2-RHRSC-B<br>2-RHRASC-D<br>2-RHRASC-B |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-51-2F049 | HEAT EXCHANGER DISCHARGE LINE TO RADWASTE SHUTOFF VALVE | RHR | B | 280 | 054 | 2-RHRASC-C<br>2-RHRLPCI-A<br>2-RHRSC-A<br>2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSPC-C<br>2-RHRASC-A |
| HV-51-2F068A | RHR HEAT EXCHANGER TUBE SIDE OUTLET VALVE | RHRSW | C | 280 | 054 | 2-RHRSW-A |
| HV-51-2F068B | RHR HEAT EXCHANGER TUBE SIDE OUTLET VALVE | RHRSW | D | 281 | 055 | 2-RHRSW-B |
| HV-51-2F073 | RHRSW TO RHR INTERTIE LINE SHUTOFF VALVE | RHR | A | 280 | 054 | 2-RHRSW-A |
| HV-51-2F074 | RHR SW CROSS TIE DRAIN VALVE | RHR | A | 173 | 054 | 2-RHRSW-A |
| HV-51-2F075 | RHRSW TO RHR INTERTIE SHUTOFF VALVE | RHR | A | 280 | 054 | 2-RHRSW-A |
| HV-52-139 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 118 | 039 | |
| HV-52-1F005 | CORE SPRAY INBD ISO VALVE "A" LOOP | CS/ HILOW | A | 523 | 047W | 1-HI/LOW |
| HV-52-1F037 | CORE SPRAY INBD ISO VALVE "B" LOOP | CS/ HPCI | B | 523 | 047W | 1-HPCI |
| HV-52-1F039A | 1A LOOP CHECK EQUALIZING PCIV | HI/LOW | A | 400 | 030 | 1-HI/LOW |
| HV-52-239 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 189 | 062 | |
| HV-52-2F005 | CORE SPRAY INBD ISO VALVE "A" LOOP | CS/ HILOW | A | 593 | 070E | 2-HI/LOW |
| HV-52-2F037 | CORE SPRAY INBD ISO VALVE "B" LOOP | CS/ HPCI | B | 593 | 070E | 2-HPCI |
| HV-52-2F039A | 2A LOOP CHECK EQUALIZING PCIV | HI/LOW | A | 473 | 053 | 2-HI/LOW |
| HV-55-120 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 204 | 031 | |
| HV-55-121 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 204 | 031 | |
| HV-55-124 | CST TO SAFEGUARD SYSTEM ISOLATING VALVE (OUTLET) | HPCI RCIC | A | CST DIKED AREA | YARD | 1-HPCI<br>1-RCIC |
| HV-55-125 | CST TO SAFEGUARD SYSTEM ISOLATING VALVE (OUTLET) | HPCI RCIC | B | CST DIKED | YARD | 1-HPCI<br>1-RCIC |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-55-126 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 204 | 031 | |
| HV-55-1F001 | STEAM SUPPLY LINE INLET VALVE TO TURBINE | HPCI | B | 109 | 034 | 1-HPCITRIP<br>1-HPCI |
| HV-55-1F002 | STEAM SUPPLY LINE INBD CTMT ISO VALVE | HPCI | D | 400 | 030 | 1-HPCITRIP<br>1-HPCI |
| HV-55-1F003 | STEAM SUPPLY LINE OUTBD CTMT ISO VALVE | HPCI | B | 309W | 043W | 1-HPCI<br>1-HPCITRIP |
| HV-55-1F004 | PUMP SUCTION VALVE FROM CONDENSATE STORAGE TANK | HPCI | B | 109 | 034 | 1-HPCI |
| HV-55-1F006 | INJECTION VALVE TO CORE SPRAY LINE | HPCI | B | 500 | 047E | 1-HPCI |
| HV-55-1F007 | PUMP DISCHARGE VALVE | HPCI | B | 200 | 042 | 1-HPCI |
| HV-55-1F008 | FULL FLOW TEST THROTTLE VALVE | HPCI | B | 200 | 042 | 1-HPCI |
| HV-55-1F012 | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | HPCI | B | 288 | 034 | 1-HPCI |
| HV-55-1F041 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | HPCI | B | 109 | 034 | 1-HPCI |
| HV-55-1F042 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER CTMT ISO VALVE | HPCI | B | 109 | 034 | 1-HPCI |
| HV-55-1F072 | TURBINE EXHAUST LINE CTMT ISO VALVE | HPCI | B | 288 | 034 | 1-HPCI |
| HV-55-1F093 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | HPCI | B | 200 | 042 | 1-HPCI |
| HV-55-1F095 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | HPCI | D | 288 | 034 | 1-HPCI |
| HV-55-1F105 | HPCI PUMP DISCHARGE VALVE TO FEEDWATER | HPCI | B | 518 | 046 | 1-HPCI |
| HV-55-220 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 280 | 054 | |
| HV-55-221 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | B | 280 | 054 | |
| HV-55-224 | CST TO SAFEGUARD SYSTEM ISOLATING VALVE (OUTLET) | HPCI<br>RCIC | A | CST DIKED AREA | YARD | 2-HPCI<br>2-RCIC |
| HV-55-225 | CST TO SAFEGUARD SYSTEM ISOLATING VALVE (OUTLET) | HPCI<br>RCIC | B | CST DIKED AREA | YARD | 2-HPCI<br>2-RCIC |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-55-2F001 | STEAM SUPPLY LINE INLET VALVE TO TURBINE | HPCI | B | 180 | 057 | 2-HPCI<br>2-RCICTRIP |
| HV-55-2F002 | STEAM SUPPLY LINE INBD CTMT ISO VALVE | HPCI | D | 473 | 053 | 2-HPCI<br>2-HPCITRIP |
| HV-55-2F003 | STEAM SUPPLY LINE OUTBD CTMT ISO VALVE | HPCI | B | 376W | 066W | 2-HPCI<br>2-HPCITRIP |
| HV-55-2F004 | PUMP SUCTION VALVE FROM CONDENSATE STORAGE TANK | HPCI | B | 180 | 057 | 2-HPCI |
| HV-55-2F006 | INJECTION VALVE TO CORE SPRAY LINE | HPCI | B | 580E | 070E | 2-HPCI |
| HV-55-2F007 | PUMP DISCHARGE VALVE | HPCI | B | 279 | 065 | 2-HPCI |
| HV-55-2F008 | FULL FLOW TEST THROTTLE VALVE | HPCI | B | 279 | 065 | 2-HPCI |
| HV-55-2F012 | MINIMUM FLOW BYPASS LINE CTMT ISO VALVE | HPCI | B | 283 | 057 | 2-HPCI |
| HV-55-2F041 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER | HPCI | B | 180 | 057 | 2-HPCI |
| HV-55-2F042 | PUMP SUCTION VALVE FROM SUPPRESSION CHAMBER CTMT ISO VALVE | HPCI | B | 180 | 057 | 2-HPCI |
| HV-55-2F072 | TURBINE EXHAUST LINE CTMT ISO VALVE | HPCI | B | 283 | 057 | 2-HPCI |
| HV-55-2F093 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | HPCI | B | 279 | 065 | 2-HPCI |
| HV-55-2F095 | TURBINE EXHAUST LINE VACUUM BREAKER VALVE | HPCI | D | 283 | 057 | 2-HPCI |
| HV-55-2F105 | HPCI PUMP DISCHARGE VALVE TO FEEDWATER | HPCI | B | 587 | 069 | 2-HPCI |
| HV-56-1F059 | COOLING WATER LINE SHUTOFF VALVE | HPCI | B | 109 | 034 | 1-HPCI |
| HV-56-2F059 | COOLING WATER LINE SHUTOFF VALVE | HPCI | B | 180 | 057 | 2-HPCI |
| HV-59-129B | INST GAS OUTBD PCIV | PCIG | B | 306 | 043W | 1-MSRV |
| HV-59-151A | CTMT ISO VALVE | PCIG | C | 306 | 043W | 1-RHRASC-C<br>1-RHRASC-D<br>1-RHRASC-B<br>1-RHRASC-A |
| HV-59-151B | CTMT ISO VALVE | PCIG | D | 307 | 043E | 1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D<br>1-RHRASC-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| HV-59-229B | INST GAS OUTBD PCIV | PCIG | B | 375 | 066W | 2-MSRV |
| HV-59-251A | CTMT ISO VALVE | PCIG | C | 375 | 066W | 2-RHRASC-D<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRASC-B |
| HV-59-251B | CTMT ISO VALVE | PCIG | D | 374 | 066E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D |
| HV-C41-1F020 | MAIN STEAM LINE PRESSURE EQUALIZING VALVE | HI/LOW | A | 407 | 046 | 1-HI/LOW |
| HV-C41-2F020 | MAIN STEAM LINE PRESSURE EQUALIZING VALVE | HI/LOW | A | 480 | 069 | 2-HI/LOW |
| HV-C44-1F033 | RWCU DUMP FLOW CONTROL VALVE | HI/LOW | 0 | 510 | 047W | 1-HI/LOW |
| HV-C44-2F033 | RWCU DUMP FLOW CONTROL VALVE | HI/LOW | 0 | 584 | 070E | 2-HI/LOW |
| HV-C51-1F048A | HEAT EXCHANGER BYPASS VALVE FROM PUMP DISCHARGE | RHR | A | 309W | 043W | 1-RHRASC-A<br>1-RHRSPC-C<br>1-RHRSPC-A<br>1-RHRSC-C<br>1-RHRASC-C<br>1-RHRLPCI-A<br>1-RHRSC-A |
| HV-C51-1F048B | HEAT EXCHANGER BYPASS VALVE FROM PUMP DISCHARGE | RHR | B | 309E | 043E | 1-RHRASC-B<br>1-RHRASC-D<br>1-RHRLPCI-B<br>1-RHRSC-B<br>1-RHRSC-D<br>1-RHRSPC-B<br>1-RHRSPC-D |
| HV-C51-2F048A | HEAT EXCHANGER BYPASS VALVE FROM PUMP DISCHARGE | RHR | A | 376W | 066W | 2-RHRSC-C<br>2-RHRSPC-A<br>2-RHRSC-A<br>2-RHRSPC-C<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRLPCI-A |
| HV-C51-2F048B | HEAT EXCHANGER BYPASS VALVE FROM PUMP DISCHARGE | RHR | B | 376E | 066E | 2-RHRSC-D<br>2-RHRSPC-B<br>2-RHRSC-B<br>2-RHRLPCI-B<br>2-RHRASC-D<br>2-RHRASC-B<br>2-RHRSPC-D |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| KS-81-101A | CELL "A" TIMER | DGEV | A | 311A | 079 | |
| KS-81-101B | CELL "B" TIMER | DGEV | B | 311B | 081 | |
| KS-81-101C | CELL "C" TIMER | DGEV | C | 311C | 080 | |
| KS-81-101D | CELL "D" TIMER | DGEV | D | 311D | 082 | |
| KS-81-101E | CELL "A" TIMER | DGEV | A | 311A | 079 | |
| KS-81-101F | CELL "B" TIMER | DGEV | B | 311B | 081 | |
| KS-81-101G | CELL "C" TIMER | DGEV | C | 311C | 080 | |
| KS-81-101H | CELL "D" TIMER | DGEV | D | 311D | 082 | |
| KS-81-201A | CELL "A" TIMER | DGEV | A | 315A | 083 | |
| KS-81-201B | CELL "B" TIMER | DGEV | B | 315B | 085 | |
| KS-81-201C | CELL "C" TIMER | DGEV | C | 315C | 084 | |
| KS-81-201D | CELL "D" TIMER | DGEV | D | 315D | 086 | |
| KS-81-201E | CELL "A" TIMER | DGEV | A | 315A | 083 | |
| KS-81-201F | CELL "B" TIMER | DGEV | B | 315B | 085 | |
| KS-81-201G | CELL "C" TIMER | DGEV | C | 315C | 084 | |
| KS-81-201H | CELL "D" TIMER | DGEV | D | 315D | 086 | |
| LI-42-1R010 | REACTOR VESSEL WATER LEVEL INDICATOR | RVI | A | 540 | 026 | 1-RVI |
| LI-42-2R010 | REACTOR VESSEL WATER LEVEL INDICATOR | RVI | A | 540 | 026 | 2-RVI |
| LI-52-140A | SUPPRESSION POOL LEVEL INDICATOR | SPI | A | 533 | 024 | 1-SPI |
| LI-52-140B | SUPPRESSION POOL LEVEL INDICATOR | SPI | B | 533 | 024 | 1-SPI |
| LI-52-240A | SUPPRESSION POOL LEVEL INDICATOR | SPI | A | 533 | 024 | 2-SPI |
| LI-52-240B | SUPPRESSION POOL LEVEL INDICATOR | SPI | B | 533 | 024 | 2-SPI |
| LI-52-241 | SUPPRESSION POOL LEVEL INDICATOR | SPI | A | 540 | 026 | 2-SPI |
| LI-55-115-1 | SUPPRESSION POOL LEVEL INDICATOR | SPI | 0(A) | 533 | 024 | 1-SPI |
| LI-55-115-2 | SUPPRESSION POOL LEVEL INDICATOR | SPI | 0(A) | 540 | 026 | 1-SPI |
| LI-55-141 | SUPPRESSION POOL LEVEL INDICATOR | SPI | A | 540 | 026 | 1-SPI |
| LI-55-215-2 | SUPPRESSION POOL LEVEL INDICATOR | SPI | 0(A) | 540 | 026 | 2-SPI |
| LI-55-217 | SUPPRESSION POOL LEVEL INDICATOR | SPI | B | 533 | 024 | 2-SPI |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| LIS-42-1N691A | LEVEL INDICATING SWITCH | CS | A | 542 | 025 | |
| LIS-42-1N691B | LEVEL INDICATING SWITCH | CS | B | 542 | 025 | |
| LIS-42-1N691C | LEVEL INDICATING SWITCH | CS | C | 542 | 025 | |
| LIS-42-1N691D | LEVEL INDICATING SWITCH | CS | D | 542 | 025 | |
| LIS-42-1N691E | LEVEL INDICATING SWITCH | CS | A | 542 | 025 | |
| LIS-42-1N691F | LEVEL INDICATING SWITCH | CS | B | 542 | 025 | |
| LIS-42-1N691G | LEVEL INDICATING SWITCH | CS | C | 542 | 025 | |
| LIS-42-1N691H | LEVEL INDICATING SWITCH | CS | D | 542 | 025 | |
| LIS-42-1N695A | LEVEL INDICATING SWITCH | ADS | A | 542 | 025 | |
| LIS-42-1N695C | LEVEL INDICATING SWITCH | ADS | C | 542 | 025 | |
| LIS-42-1N697A | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-42-1N697E | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-42-2N691A | LEVEL INDICATING SWITCH | CS | A | 542 | 025 | |
| LIS-42-2N691B | LEVEL INDICATING SWITCH | CS | B | 542 | 025 | |
| LIS-42-2N691C | LEVEL INDICATING SWITCH | CS | C | 542 | 025 | |
| LIS-42-2N691D | LEVEL INDICATING SWITCH | CS | D | 542 | 025 | |
| LIS-42-2N691E | LEVEL INDICATING SWITCH | CS | A | 542 | 025 | |
| LIS-42-2N691F | LEVEL INDICATING SWITCH | CS | B | 542 | 025 | |
| LIS-42-2N691G | LEVEL INDICATING SWITCH | CS | C | 542 | 025 | |
| LIS-42-2N691H | LEVEL INDICATING SWITCH | CS | D | 542 | 025 | |
| LIS-42-2N695A | LEVEL INDICATING SWITCH | ADS | A | 542 | 025 | |
| LIS-42-2N695C | LEVEL INDICATING SWITCH | ADS | C | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| LIS-42-2N697A | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-42-2N697E | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-49-1N635A | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-49-1N635E | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-49-2N635A | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-49-2N635E | LEVEL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| LIS-55-1N661B | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-1N661F | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-1N662B | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-1N662F | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-2N661B | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-2N661F | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-2N662B | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LIS-55-2N662F | LEVEL INDICATING SWITCH | HPCI | B | 542 | 025 | |
| LS-42-1N692A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-1N692B | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-1N692D | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-1N692E | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-1N692F | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-1N692H | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-1N693A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-1N693B | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-1N693D | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-1N693E | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-1N693F | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-1N693H | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-1N698A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-1N698E | LEVEL SWITCH | RCIC | A | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| LS-42-2N692A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-2N692B | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-2N692D | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-2N692E | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-2N692F | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-2N692H | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-2N693A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-2N693B | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-2N693D | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-2N693E | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-2N693F | LEVEL SWITCH | HPCI | B | 542 | 025 | |
| LS-42-2N693H | LEVEL SWITCH | HPCI | D | 542 | 025 | |
| LS-42-2N698A | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LS-42-2N698E | LEVEL SWITCH | RCIC | A | 542 | 025 | |
| LSHL-20-121A | LEVEL SWITCH | SDG | A | 312A | 079 | |
| LSHL-20-121B | LEVEL SWITCH | SDG | B | 312B | 081 | |
| LSHL-20-121C | LEVEL SWITCH | SDG | C | 312C | 080 | |
| LSHL-20-121D | LEVEL SWITCH | SDG | D | 312D | 082 | |
| LSHL-20-122A | LEVEL SWITCH | SDG | A | 312A | 079 | |
| LSHL-20-122B | LEVEL SWITCH | SDG | B | 312B | 081 | |
| LSHL-20-122C | LEVEL SWITCH | SDG | C | 312C | 080 | |
| LSHL-20-122D | LEVEL SWITCH | SDG | D | 312D | 082 | |
| LSHL-20-221A | LEVEL SWITCH | SDG | A | 316A | 083 | |
| LSHL-20-221B | LEVEL SWITCH | SDG | B | 316B | 085 | |
| LSHL-20-221C | LEVEL SWITCH | SDG | C | 316C | 084 | |
| LSHL-20-221D | LEVEL SWITCH | SDG | D | 316D | 086 | |
| LSHL-20-222A | LEVEL SWITCH | SDG | A | 316A | 083 | |
| LSHL-20-222B | LEVEL SWITCH | SDG | B | 316B | 085 | |
| LSHL-20-222C | LEVEL SWITCH | SDG | C | 316C | 084 | |
| LSHL-20-222D | LEVEL SWITCH | SDG | D | 316D | 086 | |
| LSL-20-127A | LEVEL SWITCH | SDG | A | 311A | 079 | |
| LSL-20-127B | LEVEL SWITCH | SDG | B | 311B | 081 | |
| LSL-20-127C | LEVEL SWITCH | SDG | C | 311C | 080 | |
| LSL-20-127D | LEVEL SWITCH | SDG | D | 311D | 082 | |
| LSL-20-227A | LEVEL SWITCH | SDG | A | 315A | 083 | |
| LSL-20-227B | LEVEL SWITCH | SDG | B | 315B | 085 | |
| LSL-20-227C | LEVEL SWITCH | SDG | C | 315C | 084 | |
| LSL-20-227D | LEVEL SWITCH | SDG | D | 315D | 086 | |
| LT-42-115A | LEVEL TRANSMITTER | RVI | A | 402W | 045W | |
| LT-42-115B | LEVEL TRANSMITTER | RVI | B | 402E | 045E | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| LT-42-1N010 | LEVEL TRANSMITTER | RVI | A | 402W | 045W | |
| LT-42-1N091A | LEVEL TRANSMITTER | CS | A | 402W | 045W | |
| LT-42-1N091B | LEVEL TRANSMITTER | HPCI | B | 402E | 045E | |
| LT-42-1N091C | LEVEL TRANSMITTER 402W | CS 045W | C | 402E | 045E | |
| LT-42-1N091D | LEVEL TRANSMITTER 402W | CS 045W | D | 402E | 045E | |
| LT-42-1N091E | LEVEL TRANSMITTER | CS | A | 402W | 045W | |
| LT-42-1N091F | LEVEL TRANSMITTER | HPCI | B | 402E | 045E | |
| LT-42-1N091G | LEVEL TRANSMITTER 402W | CS 045W | C | 402E | 045E | |
| LT-42-1N091H | LEVEL TRANSMITTER 402W | CS 045W | D | 402E | 045E | |
| LT-42-1N095A | LEVEL TRANSMITTER | ADS | A | 402W | 045W | |
| LT-42-1N095C | LEVEL TRANSMITTER 402W | ADS 045W | C | 402E | 045E | |
| LT-42-1N097A | LEVEL TRANSMITTER | RCIC | A | 402W | 045W | |
| LT-42-1N097E | LEVEL TRANSMITTER | RCIC | A | 402W | 045W | |
| LT-42-215A | LEVEL TRANSMITTER | RVI | A | 475W | 068W | |
| LT-42-215B | LEVEL TRANSMITTER | RVI | B | 475E | 068E | |
| LT-42-2N010 | LEVEL TRANSMITTER | RVI | A | 475W | 068W | |
| LT-42-2N091A | LEVEL TRANSMITTER | CS | A | 475W | 068W | |
| LT-42-2N091B | LEVEL TRANSMITTER | CS | B | 475E | 068E | |
| LT-42-2N091C | LEVEL TRANSMITTER 475W | CS 068W | C | 475E | 068E | |
| LT-42-2N091D | LEVEL TRANSMITTER 475W | CS 068W | D | 475E | 068E | |
| LT-42-2N091E | LEVEL TRANSMITTER | CS | A | 475W | 068W | |
| LT-42-2N091F | LEVEL TRANSMITTER | CS | B | 475E | 068E | |
| LT-42-2N091G | LEVEL TRANSMITTER 475W | CS 068W | C | 475E | 068E | |
| LT-42-2N091H | LEVEL TRANSMITTER 475W | CS 068W | D | 475E | 068E | |
| LT-42-2N095A | LEVEL TRANSMITTER | ADS | A | 475W | 068W | |
| LT-42-2N095C | LEVEL TRANSMITTER 475W | ADS 068W | C | 475E | 068E | |
| LT-42-2N097A | LEVEL TRANSMITTER | RCIC | A | 475W | 068W | |
| LT-42-2N097E | LEVEL TRANSMITTER | RCIC | A | 475W | 068W | |
| LT-49-1N035A | LEVEL TRANSMITTER | RCIC | A | 200 | 042 | |
| LT-49-1N035E | LEVEL TRANSMITTER | RCIC | A | 200 | 042 | |
| LT-49-2N035A | LEVEL TRANSMITTER | RCIC | A | 279 | 065 | |
| LT-49-2N035E | LEVEL TRANSMITTER | RCIC | A | 279 | 065 | |
| LT-52-140A | LEVEL TRANSMITTER | SPI | A | 118 | 039 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| LT-52-140B | LEVEL TRASNMITTER | SPI | B | 118 | 039 | |
| LT-52-240A | LEVEL TRANSMITTER | SPI | A | 189 | 062 | |
| LT-52-240B | LEVEL TRANSMITTER | SPI | B | 189 | 062 | |
| LT-52-241 | LEVEL TRANSMITTER | SPI | A | 189 | 062 | |
| LT-55-115 | LEVEL TRANSMITTER | SPI | 0(A) | 204 | 031 | |
| LT-55-141 | LEVEL TRANSMITTER | SPI | A | 203 | 032 | |
| LT-55-1N061B | LEVEL TRANSMITTER | HPCI | B | 200 | 042 | |
| LT-55-1N061F | LEVEL TRANSMITTER | HPCI | B | 200 | 042 | |
| LT-55-1N062B | LEVEL TRANSMITTER | HPCI | B | 204 | 031 | |
| LT-55-1N062F | LEVEL TRANSMITTER | HPCI | B | 204 | 031 | |
| LT-55-215 | LEVEL TRANSMITTER | SPI | 0(A) | 280 | 054 | |
| LT-55-217 | LEVEL TRANSMITTER | SPI | B | 174 | 055 | |
| LT-55-2N061B | LEVEL TRANSMITTER | HPCI | B | 279 | 065 | |
| LT-55-2N061F | LEVEL TRANSMITTER | HPCI | B | 279 | 065 | |
| LT-55-2N062B | LEVEL TRANSMITTER | HPCI | B | 280 | 054 | |
| LT-55-2N062F | LEVEL TRANSMITTER | HPCI | B | 280 | 054 | |
| PCV-59-152A-1 | PRESSURE CONTROL VALVE | PCIG | N/A | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D |
| PCV-59-152A-2 | PRESSURE CONTROL VALVE | PCIG | N/A | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D |
| PCV-59-152A-3 | PRESSURE CONTROL VALVE | PCIG | N/A | 304W | 044W | 1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-A<br>1-RHRASC-D |
| PCV-59-152B-1 | PRESSURE CONTROL VALVE | PCIG | N/A | 304E | 044E | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D |
| PCV-59-152B-2 | PRESSURE CONTROL VALVE | PCIG | N/A | 304E | 044E | 1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-A<br>1-RHRASC-D |
| PCV-59-152B-3 | PRESSURE CONTROL VALVE | PCIG | N/A | 304E | 044E | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D |
| PCV-59-252A-1 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRASC-D |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PCV-59-252A-2 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D |
| PCV-59-252A-3 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRASC-D |
| PCV-59-252B-1 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D |
| PCV-59-252B-2 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-D<br>2-RHRASC-B<br>2-RHRASC-C |
| PCV-59-252B-3 | PRESSURE CONTROL VALVE | PCIG | N/A | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D |
| PDIS-49-1N657A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PDIS-49-1N657C | PRESSURE DIFFERENTIAL INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PDIS-49-2N657A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PDIS-49-2N657C | PRESSURE DIFFERENTIAL INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PDIS-55-1N657B | STEAM SUPPLY LINE DIFFERENTIAL PRESURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PDIS-55-1N657D | STEAM SUPPLY LINE DIFFERENTIAL PRESURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PDIS-55-2N657B | STEAM SUPPLY LINE DIFFERENTIAL PRESURE INDICATING SWITCH | HPCI | B | 533 | 024 | |
| PDIS-55-2N657D | STEAM SUPPLY LINE DIFFERENTIAL PRESURE INDICATING SWITCH | HPCI | D | 533 | 024 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PDISH-51-1N660A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | A | 542 | 025 | |
| PDISH-51-1N660B | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | B | 542 | 025 | |
| PDISH-51-2N660A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | A | 542 | 025 | |
| PDISH-51-2N660B | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | B | 542 | 025 | |
| PDISL-51-1N658A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | A | 542 | 025 | |
| PDISL-51-1N658B | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | B | 542 | 025 | |
| PDISL-51-1N658C | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | C | 542 | 025 | |
| PDISL-51-1N658D | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | D | 542 | 025 | |
| PDISL-51-2N658A | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | A | 542 | 025 | |
| PDISL-51-2N658B | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | B | 542 | 025 | |
| PDISL-51-2N658C | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | C | 542 | 025 | |
| PDISL-51-2N658D | PRESSURE DIFFERENTIAL INDICATING SWITCH | RHR | D | 542 | 025 | |
| PDS-49-1N660A | PRESSURE DIFFERENTIAL SWITCH | RCIC | A | 542 | 025 | |
| PDS-49-1N660C | PRESSURE DIFFERENTIAL SWITCH | RCIC | C | 542 | 025 | |
| PDS-49-2N660A | PRESSURE DIFFERENTIAL SWITCH | RCIC | A | 542 | 025 | |
| PDS-49-2N660C | PRESSURE DIFFERENTIAL SWITCH | RCIC | C | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PDS-55-1N660B | DIFFERENTIAL PRESSURE SWITCH | HPCI | B | 542 | 025 | |
| PDS-55-1N660D | DIFFERENTIAL PRESSURE SWITCH | HPCI | D | 542 | 025 | |
| PDS-55-2N660B | DIFFERENTIAL PRESSURE SWITCH | HPCI | B | 542 | 025 | |
| PDS-55-2N660D | PRESSURE DIFFERENTIAL SWITCH | HPCI | D | 542 | 025 | |
| PDS-59-106A | PRESSURE DIFFERENTIAL SWITCH | PCIG | C | 402W | 045W | |
| PDS-59-106B | PRESSURE DIFFERENTIAL SWITCH | PCIG | D | 402E | 045E | |
| PDS-59-206A | PRESSURE DIFFERENTIAL SWITCH | PCIG | C | 475W | 068W | |
| PDS-59-206B | PRESSURE DIFFERENTIAL SWITCH | PCIG | D | 475E | 068E | |
| PDSH-20-122A | PRESSURE DIFFERENTIAL SWITCH | SDG | A | 311A | 079 | |
| PDSH-20-122B | PRESSURE DIFFERENTIAL SWITCH | SDG | B | 311B | 081 | |
| PDSH-20-122C | PRESSURE DIFFERENTIAL SWITCH | SDG | C | 311C | 080 | |
| PDSH-20-122D | PRESSURE DIFFERENTIAL SWITCH | SDG | D | 311D | 082 | |
| PDSH-20-222A | PRESSURE DIFFERENTIAL SWITCH | SDG | A | 315A | 083 | |
| PDSH-20-222B | PRESSURE DIFFERENTIAL SWITCH | SDG | B | 315B | 085 | |
| PDSH-20-222C | PRESSURE DIFFERENTIAL SWITCH | SDG | C | 315C | 084 | |
| PDSH-20-222D | PRESSURE DIFFERENTIAL SWITCH | SDG | D | 315D | 086 | |
| PDSH-50-101 | PRESSURE DIFFERENTIAL SWITCH | RCIC | A | 108 | 033 | |
| PDSH-50-201 | PRESSURE DIFFERENTIAL SWITCH | RCIC | A | 179 | 056 | |
| PDSL-51-1N661A | PRESSURE DIFFERENTIAL SWITCH | RHR | A | 542 | 025 | |
| PDSL-51-1N661B | PRESSURE DIFFERENTIAL SWITCH | RHR | B | 542 | 025 | |
| PDSL-51-2N661A | PRESSURE DIFFERENTIAL SWITCH | RHR | A | 542 | 025 | |
| PDSL-51-2N661B | PRESSURE DIFFERENTIAL SWITCH | RHR | B | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PDT-49-1N057A | DIFFERENTIAL PRESSURE TRANSMITTER | RCIC | A | 304E | 044E | |
| PDT-49-1N057C | DIFFERENTIAL PRESSURE TRANSMITTER | RCIC | C | 304E | 044E | |
| PDT-49-2N057A | DIFFERENTIAL PRESSURE TRANSMITTER | RCIC | A | 370E | 067E | |
| PDT-49-2N057C | DIFFERENTIAL PRESSURE TRANSMITTER | RCIC | C | 370E | 067E | |
| PDT-51-1N058A | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | A | 402W | 045W | |
| PDT-51-1N058B | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | B | 402E | 045E | |
| PDT-51-1N058C | DIFFERENTIAL PRESSURE TRANSMITTER | RHR 402W | C 045W | 402E | 045E | |
| PDT-51-1N058D | DIFFERENTIAL PRESSURE TRANSMITTER | RHR 402W | D 045W | 402E | 045E | |
| PDT-51-1N060A | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | A | 506E | 047E | |
| PDT-51-1N060B | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | B | 402E | 045E | |
| PDT-51-2N058A | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | A | 475W | 068W | |
| PDT-51-2N058B | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | B | 475E | 068E | |
| PDT-51-2N058C | DIFFERENTIAL PRESSURE TRANSMITTER | RHR 475W | C 068W | 475E | 068E | |
| PDT-51-2N058D | DIFFERENTIAL PRESSURE TRANSMITTER | RHR 475W | D 068W | 475E | 068E | |
| PDT-51-2N060A | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | A | 580W | 070W | |
| PDT-51-2N060B | DIFFERENTIAL PRESSURE TRANSMITTER | RHR | B | 475E | 068E | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PDT-55-1N057B | DIFFERENTIAL PRESSURE TRANSMITTER | HPCI | B | 304W | 044W | |
| PDT-55-1N057D | DIFFERENTIAL PRESSURE TRANSMITTER | HPCI | D | 304W | 044W | |
| PDT-55-2N057B | DIFFERENTIAL PRESSURE TRANSMITTER | HPCI | B | 370W | 067W | |
| PDT-55-2N057D | DIFFERENTIAL PRESSURE TRANSMITTER | HPCI | D | 370W | 067W | |
| PI-11-003A-1 | ESW PUMP A DISCHARGE HEADER | ESW | A | 533 | 024 | 0-ESW-A |
| PI-11-003A-2 | ESW PUMP A DISCHARGE HEADER | ESW | A | 540 | 026 | 0-ESW-R |
| PI-11-003B | ESW PUMP B DISCHARGE HEADER | ESW | B | 533 | 024 | 0-ESW-B |
| PI-12-001A-1 | RHRSW LOOP A HEADER PRESSURE | RHRSW | A | 533 | 024 | 2-RHRSW-A<br>1-RHRSW-A |
| PI-12-001A-2 | RHRSW LOOP A HEADER PRESSURE | RHRSW | A | 540 | 026 | 1-RHRSW-A |
| PI-12-001A-3 | RHRSW LOOP A HEADER PRESSURE | RHRSW | A | 540 | 026 | 2-RHRSW-A |
| PI-12-001B | RHRSW LOOP B HEADER PRESSURE | RHRSW | B | 533 | 024 | 1-RHRSW-B<br>2-RHRSW-B |
| PI-42-1R011 | REACTOR VESSEL PRESSURE INDICATOR | RVI | A | 540 | 026 | 1-RVI |
| PI-42-2R011 | REACTOR VESSEL PRESSURE INDICATOR | RVI | A | 540 | 026 | 2-RVI |
| PI-51-105A-1 | RHR HEAT EXCHANGER 1AE205 SERVICE WATER DISCHARGE | RHRSW | A | 533 | 024 | 1-RHRSW-A |
| PI-51-105A-2 | RHR HEAT EXCHANGER 1AE205 SERVICE WATER DISCHARGE | RHRSW | A | 540 | 026 | 1-RHRSW-A |
| PI-51-105B | RHR HEAT EXCHANGER 1BE205 SERVICE WATER DISCHARGE | RHRSW | B | 533 | 024 | 1-RHRSW-B |
| PI-51-1R003A | RHR PUMP A DISCHARGE PRESSURE (LOCAL) | RHR | N/A | 200 | 042 | 1-RHRSC-A<br>1-RHRSPC-A |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PI-51-205A-1 | RHR HEAT EXCHANGER 2AE205 SERVICE WATER DISCHARGE | RHRSW | A | 533 | 024 | 2-RHRSW-A |
| PI-51-205A-2 | RHR HEAT EXCHANGER 2AE205 SERVICE WATER DISCHARGE | RHRSW | A | 540 | 026 | 2-RHRSW-A |
| PI-51-205B | RHR HEAT EXCHANGER 2BE205 SERVICE WATER DISCHARGE | RHRSW | B | 533 | 024 | 2-RHRSW-B |
| PI-55-1R601 | PUMP DISCHARGE LINE PRESSURE INDICATOR | HPCI | B | 533 | 024 | 1-HPCI |
| PI-55-2R601 | PUMP DISCHARGE LINE PRESSURE INDICATOR | HPCI | B | 533 | 024 | 2-HPCI |
| PIS-42-1N690A | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-1N690B | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-1N690C | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-1N690D | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-1N690E | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-1N690F | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-1N690G | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-1N690H | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-1N694A | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-1N694B | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-1N694C | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-1N694D | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-1N694E | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-1N694F | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-1N694G | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PIS-42-1N694H | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-2N690A | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-2N690B | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-2N690C | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-2N690D | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-2N690E | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-2N690F | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-2N690G | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-2N690H | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-2N694A | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-2N694B | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-2N694C | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-2N694D | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-42-2N694E | PRESSURE INDICATING SWITCH | CS | A | 542 | 025 | |
| PIS-42-2N694F | PRESSURE INDICATING SWITCH | CS | B | 542 | 025 | |
| PIS-42-2N694G | PRESSURE INDICATING SWITCH | CS | C | 542 | 025 | |
| PIS-42-2N694H | PRESSURE INDICATING SWITCH | CS | D | 542 | 025 | |
| PIS-49-1N650 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-1N658A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-1N658C | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-49-1N658E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-1N658G | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PIS-49-2N650 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-2N658A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-2N658C | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-49-2N658E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-49-2N658G | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-50-1N652 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-1N653 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-1N655A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-1N655C | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-50-1N655E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-1N655G | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-50-1N656A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-1N656E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N652 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N653 | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N655A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N655C | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-50-2N655E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N655G | PRESSURE INDICATING SWITCH | RCIC | C | 542 | 025 | |
| PIS-50-2N656A | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-50-2N656E | PRESSURE INDICATING SWITCH | RCIC | A | 542 | 025 | |
| PIS-51-1N655A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PIS-51-1N655C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-1N655E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-1N655G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-1N656A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-1N656C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-1N656E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-1N656G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-2N655A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-2N655C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-2N655E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-2N655G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-2N656A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-2N656C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-51-2N656E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-51-2N656G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-52-1N655A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-52-1N655C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-52-1N655E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-52-1N655G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-52-2N655A | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |
| PIS-52-2N655C | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-52-2N655E | PRESSURE INDICATING SWITCH | ADS | A | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PIS-52-2N655G | PRESSURE INDICATING SWITCH | ADS | C | 542 | 025 | |
| PIS-55-1N650 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-1N658B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-1N658D | PRESSURE DIFFERENTIAL INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-55-1N658F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-1N658H | PRESSURE DIFFERENTIAL INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-55-2N650 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-2N658B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-2N658D | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-55-2N658F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-55-2N658H | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-56-1N652 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-1N653 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-1N655B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-1N655D | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-56-1N655F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-1N655H | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-56-1N656B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-1N656F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-2N652 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-2N653 | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PIS-56-2N655B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-2N655D | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-56-2N655F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-2N655H | PRESSURE INDICATING SWITCH | HPCI | D | 542 | 025 | |
| PIS-56-2N656B | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PIS-56-2N656F | PRESSURE INDICATING SWITCH | HPCI | B | 542 | 025 | |
| PISH-51-1N653A | PRESSURE INDICATING SWITCH | RHR | A | 542 | 025 | |
| PISH-51-1N653B | PRESSURE INDICATING SWITCH | RHR | B | 542 | 025 | |
| PISH-51-1N653C | PRESSURE INDICATING SWITCH | RHR | C | 542 | 025 | |
| PISH-51-1N653D | PRESSURE SWITCH INDICATING | RHR | D | 542 | 025 | |
| PISH-51-1N657 | PRESSURE INDICATING SWITCH | RHR | B | 542 | 025 | |
| PISH-51-2N653A | PRESSURE INDICATING SWITCH | RHR | A | 542 | 025 | |
| PISH-51-2N653B | PRESSURE INDICATING SWITCH | RHR | B | 542 | 025 | |
| PISH-51-2N653C | PRESSURE INDICATING SWITCH | RHR | C | 542 | 025 | |
| PISH-51-2N657 | PRESSURE INDICATING SWITCH | RHR | B | 542 | 025 | |
| PIT-51-105A | RHR HEAT EXCHANGER 1AE205 SERVICE WATER DISCHARGE | RHRSW | A | 200 | 042 | |
| PIT-51-105B | RHR HEAT EXCHANGER 1BE205 SERVICE WATER DISCHARGE | RHRSW | B | 207 | 041 | |
| PIT-51-205A | RHR HEAT EXCHANGER 2AE205 SERVICE WATER DISCHARGE | RHRSW | A | 284 | 064 | |
| PIT-51-205B | RHR HEAT EXCHANGER 2BE205 SERVICE WATER DISCHARGE | RHRSW | B | 179 | 056 | |
| PSH-12-004A | PRESSURE SWITCH - HIGH | RHRSW | A | 1000 | 122 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PSH-12-004B | PRESSURE SWITCH - HIGH | RHRSW | B | 1005 | 123 | |
| PSH-12-004C | PRESSURE SWITCH - HIGH | RHRSW | A | 1000 | 122 | |
| PSH-12-004D | PRESSURE SWITCH - HIGH | RHRSW | B | 1005 | 123 | |
| PSL-11-002A | PRESSURE SWITCH - LOW | ESW | A | 1000 | 122 | |
| PSL-11-002B | PRESSURE SWITCH - LOW | ESW | B | 1005 | 123 | |
| PSL-11-002C | PRESSURE SWITCH - LOW | ESW | C | 1000 | 122 | |
| PSL-11-002D | PRESSURE SWITCH - LOW | ESW | D | 1005 | 123 | |
| PSL-12-001A | PRESSURE SWITCH - LOW | RHRSW | A | 1000 | 122 | |
| PSL-12-001B | PRESSURE SWITCH - LOW | RHRSW | B | 1005 | 123 | |
| PSL-12-001C | PRESSURE SWITCH - LOW | RHRSW | A | 1000 | 122 | |
| PSL-12-001D | PRESSURE SWITCH - LOW | RHRSW | B | 1005 | 123 | |
| PSL-12-102A | PRESSURE SWITCH - LOW | RHRSW | A | 202 | 075 | |
| PSL-12-102B | PRESSURE SWITCH - LOW | RHRSW | B | 202 | 075 | |
| PSL-12-202A | PRESSURE SWITCH - LOW | RHRSW | A | 202 | 075 | |
| PSL-12-202B | PRESSURE SWITCH - LOW | RHRSW | B | 202 | 075 | |
| PSL-42-101 | PRESSURE SWITCH - LOW | RHR/ HILOW | B | 402E | 045E | |
| PSL-42-201 | PRESSURE SWITCH - LOW | RHR/ HILOW | B | 475E | 068E | |
| PSL-50-101 | PRESSURE SWITCH - LOW | RCIC | A | 108 | 033 | |
| PSL-50-201 | PRESSURE SWITCH - LOW | RCIC | A | 179 | 056 | |
| PSL-51-1N654A | PRESSURE SWITCH - LOW | RHR | A | 542 | 025 | |
| PSL-51-1N654B | PRESSURE SWITCH - LOW | RHR | B | 542 | 025 | |
| PSL-51-1N654C | PRESSURE SWITCH - LOW | RHR | C | 542 | 025 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PSL-51-1N654D | PRESSURE SWITCH - LOW | RHR | D | 542 | 025 | |
| PSL-51-2N653D | PRESSURE SWITCH - LOW | RHR | D | 542 | 025 | |
| PSL-51-2N654A | PRESSURE SWITCH - LOW | RHR | A | 542 | 025 | |
| PSL-51-2N654B | PRESSURE SWITCH - LOW | RHR | B | 542 | 025 | |
| PSL-51-2N654C | PRESSURE SWITCH - LOW | RHR | C | 542 | 025 | |
| PSL-51-2N654D | PRESSURE SWITCH - LOW | RHR | D | 542 | 025 | |
| PSV-41-1F013A | MAIN STEAM RELIEF VALVE "A" | MSRV | A | 400 | 030 | 1-MSRV |
| PSV-41-1F013C | MAIN STEAM RELIEF VALVE "C" | MSRV | A | 400 | 030 | 1-MSRV |
| PSV-41-1F013E | MAIN STEAM RELIEF VALVE "E" (ADS) | ADS | A,C | 400 | 030 | 1-ADS |
| PSV-41-1F013H | MAIN STEAM RELIEF VALVE "H" (ADS) | ADS | A,C | 400 | 030 | 1-ADS |
| PSV-41-1F013K | MAIN STEAM RELIEF VALVE "K" (ADS) | ADS | A,C | 400 | 030 | 1-ADS |
| PSV-41-1F013M | MAIN STEAM RELIEF VALVE "M" (ADS) | ADS | A,C | 400 | 030 | 1-ADS |
| PSV-41-1F013N | MAIN STEAM RELIEF VALVE "N" | MSRV | A | 400 | 030 | 1-MSRV |
| PSV-41-1F013S | MAIN STEAM RELIEF VALVE "S" (ADS) | ADS | A,C | 400 | 030 | 1-ADS |
| PSV-41-2F013A | MAIN STEAM RELIEF VALVE "A" | MSRV | A | 473 | 053 | 2-MSRV |
| PSV-41-2F013C | MAIN STEAM RELIEF VALVE "C" | MSRV | A | 473 | 053 | 2-MSRV |
| PSV-41-2F013E | MAIN STEAM RELIEF VALVE "E" (ADS) | ADS | A,C | 473 | 053 | 2-ADS |
| PSV-41-2F013H | MAIN STEAM RELIEF VALVE "H" (ADS) | ADS | A,C | 473 | 053 | 2-ADS |
| PSV-41-2F013K | MAIN STEAM RELIEF VALVE "K" (ADS) | ADS | A,C | 473 | 053 | 2-ADS |
| PSV-41-2F013M | MAIN STEAM RELIEF VALVE "M" (ADS) | ADS | A,C | 473 | 053 | 2-ADS |
| PSV-41-2F013N | MAIN STEAM RELIEF VALVE "N" | MSRV | A | 473 | 053 | 2-MSRV |
| PSV-41-2F013S | MAIN STEAM RELIEF VALVE "S" (ADS) | ADS | A,C | 473 | 053 | 2-ADS |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-11-003A | ESW PUMP A DISCHARGE HEADER | ESW | A | 1011 | 122 | |
| PT-11-003B | ESW PUMP B DISCHARGE HEADER | ESW | B | 1016 | 123 | |
| PT-12-001A | RHRSW LOOP A HEADER PRESSURE | RHRSW | A | 1011 | 122 | |
| PT-12-001B | RHRSW LOOP B HEADER PRESSURE | RHRSW | B | 1016 | 123 | |
| PT-42-103A | PRESSURE TRANSMITTER | RVI | A | 402W | 045W | |
| PT-42-103B | PRESSURE TRANSMITTER | RVI | B | 402E | 045E | |
| PT-42-1N006 | PRESSURE TRANSMITTER | RVI | A | 402W | 045W | |
| PT-42-1N090A | PRESSURE TRANSMITTER | CS | A | 402W | 045W | |
| PT-42-1N090B | PRESSURE TRANSMITTER | CS | B | 402E | 045E | |
| PT-42-1N090C | PRESSURE TRANSMITTER | CS | C | 402E<br>402W | 045E<br>045W | |
| PT-42-1N090D | PRESSURE TRANSMITTER | CS | D | 402E<br>402W | 045E<br>045W | |
| PT-42-1N090E | PRESSURE TRANSMITTER | CS | A | 402W | 045W | |
| PT-42-1N090F | PRESSURE TRANSMITTER | CS | B | 402E | 045E | |
| PT-42-1N090G | PRESSURE TRANSMITTER | CS | C | 402E<br>402W | 045E<br>045W | |
| PT-42-1N090H | PRESSURE TRANSMITTER | CS | D | 402E<br>402W | 045E<br>045W | |
| PT-42-1N094A | PRESSURE TRANSMITTER | CS | A | 402W | 045W | |
| PT-42-1N094B | PRESSURE TRANSMITTER | CS | B | 402E | 045E | |
| PT-42-1N094C | PRESSURE TRANSMITTER | CS | C | 402E<br>402W | 045E<br>045W | |
| PT-42-1N094D | PRESSURE TRANSMITTER | CS | D | 402E<br>402W | 045E<br>045W | |
| PT-42-1N094E | PRESSURE TRANSMITTER | CS | A | 402W | 045W | |
| PT-42-1N094F | PRESSURE TRANSMITTER | CS | B | 402E | 045E | |
| PT-42-1N094G | PRESSURE TRANSMITTER | CS | C | 402E<br>402W | 045E<br>045W | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-42-1N094H | PRESSURE TRANSMITTER | CS | D | 402E<br>402W | 045E<br>045W | |
| PT-42-203A | PRESSURE TRANSMITTER | RVI | A | 475W | 068W | |
| PT-42-203B | PRESSURE TRANSMITTER | RVI | B | 475E | 068E | |
| PT-42-2N006 | PRESSURE TRANSMITTER | RVI | A | 475W | 068W | |
| PT-42-2N090A | PRESSURE TRANSMITTER | CS | A | 475W | 068W | |
| PT-42-2N090B | PRESSURE TRANSMITTER | CS | B | 475E | 068E | |
| PT-42-2N090C | PRESSURE TRANSMITTER | CS | C | 475E<br>475W | 068E<br>068W | |
| PT-42-2N090D | PRESSURE TRANSMITTER | CS | D | 475E<br>475W | 068E<br>068W | |
| PT-42-2N090E | PRESSURE TRANSMITTER | CS | A | 475W | 068W | |
| PT-42-2N090F | PRESSURE TRANSMITTER | CS | B | 475E | 068E | |
| PT-42-2N090G | PRESSURE TRANSMITTER | CS | C | 475E<br>475W | 068E<br>068W | |
| PT-42-2N090H | PRESSURE TRANSMITTER | CS | D | 475E<br>475W | 068E<br>068W | |
| PT-42-2N094A | PRESSURE TRANSMITTER | CS | A | 475W | 068W | |
| PT-42-2N094B | PRESSURE TRANSMITTER | CS | B | 475E | 068E | |
| PT-42-2N094C | PRESSURE TRANSMITTER | CS | C | 475E<br>475W | 068E<br>068W | |
| PT-42-2N094D | PRESSURE TRANSMITTER | CS | D | 475E<br>475W | 068E<br>068W | |
| PT-42-2N094E | PRESSURE TRANSMITTER | CS | A | 475W | 068W | |
| PT-42-2N094F | PRESSURE TRANSMITTER | CS | B | 475E | 068E | |
| PT-42-2N094G | PRESSURE TRANSMITTER | CS | C | 475E<br>475W | 068E<br>068W | |
| PT-42-2N094H | PRESSURE TRANSMITTER | CS | D | 475E<br>475W | 068E<br>068W | |
| PT-49-1N050 | PRESSURE TRANSMITTER | RCIC | A | 200 | 042 | |
| PT-49-1N058A | PRESSURE TRANSMITTER | RCIC | A | 304E | 044E | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-49-1N058C | PRESSURE TRANSMITTER | RCIC | C | 304E | 044E | |
| PT-49-1N058E | PRESSURE TRANSMITTER | RCIC | A | 304E | 044E | |
| PT-49-1N058G | PRESSURE TRANSMITTER | RCIC | C | 304E | 044E | |
| PT-49-2N050 | PRESSURE TRANSMITTER | RCIC | A | 279 | 065 | |
| PT-49-2N058A | PRESSURE TRANSMITTER | RCIC | A | 370E | 067E | |
| PT-49-2N058C | PRESSURE TRANSMITTER | RCIC | C | 370E | 067E | |
| PT-49-2N058E | PRESSURE TRANSMITTER | RCIC | A | 370E | 067E | |
| PT-49-2N058G | PRESSURE TRANSMITTER | RCIC | C | 370E | 067E | |
| PT-50-1N052 | PRESSURE TRANSMITTER | RCIC | A | 108 | 033 | |
| PT-50-1N053 | PRESSURE TRANSMITTER | RCIC | A | 108 | 033 | |
| PT-50-1N055A | PRESSURE TRANSMITTER | RCIC | A | 200 | 042 | |
| PT-50-1N055C | PRESSURE TRANSMITTER | RCIC | C | 108 | 033 | |
| PT-50-1N055E | PRESSURE TRANSMITTER | RCIC | A | 200 | 042 | |
| PT-50-1N055G | PRESSURE TRANSMITTER | RCIC | C | 108 | 033 | |
| PT-50-1N056A | PRESSURE TRANSMITTER | RCIC | A | 200 | 042 | |
| PT-50-1N056E | PRESSURE TRANSMITTER | RCIC | A | 200 | 042 | |
| PT-50-2N052 | PRESSURE TRANSMITTER | RCIC | A | 179 | 056 | |
| PT-50-2N053 | PRESSURE TRANSMITTER | RCIC | A | 179 | 056 | |
| PT-50-2N055A | PRESSURE TRANSMITTER | RCIC | A | 279 | 065 | |
| PT-50-2N055C | PRESSURE TRANSMITTER | RCIC | C | 179 | 056 | |
| PT-50-2N055E | PRESSURE TRANSMITTER | RCIC | A | 279 | 065 | |
| PT-50-2N055G | PRESSURE TRANSMITTER | RCIC | C | 179 | 056 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-50-2N056A | PRESSURE TRANSMITTER | RCIC | A | 279 | 065 | |
| PT-50-2N056E | PRESSURE TRANSMITTER | RCIC | A | 279 | 065 | |
| PT-51-1N053A | PRESSURE TRANSMITTER | RHR | A | 200 | 042 | |
| PT-51-1N053B | PRESSURE TRANSMITTER | RHR | B | 118 | 039 | |
| PT-51-1N053C | PRESSURE TRANSMITTER | RHR | C | 200 | 042 | |
| PT-51-1N053D | PRESSURE TRANSMITTER | RHR | D | 118 | 039 | |
| PT-51-1N055A | PRESSURE TRANSMITTER | ADS | A | 200 | 042 | |
| PT-51-1N055C | PRESSURE TRANSMITTER | ADS | C | 118 | 039 | |
| PT-51-1N055E | PRESSURE TRANSMITTER | ADS | A | 200 | 042 | |
| PT-51-1N055G | PRESSURE TRANSMITTER | ADS | C | 118 | 039 | |
| PT-51-1N056A | PRESSURE TRANSMITTER | ADS | A | 200 | 042 | |
| PT-51-1N056C | PRESSURE TRANSMITTER | ADS | C | 118 | 039 | |
| PT-51-1N056E | PRESSURE TRANSMITTER | ADS | A | 200 | 042 | |
| PT-51-1N056G | PRESSURE TRANSMITTER | ADS | C | 118 | 039 | |
| PT-51-1N057 | PRESSURE TRANSMITTER | RHR | B | 304E | 044E | |
| PT-51-2N053A | PRESSURE TRANSMITTER | RHR | A | 189 | 062 | |
| PT-51-2N053B | PRESSURE TRANSMITTER | RHR | B | 279 | 065 | |
| PT-51-2N053C | PRESSURE TRANSMITTER | RHR | C | 189 | 062 | |
| PT-51-2N053D | PRESSURE TRANSMITTER | RHR | D | 279 | 065 | |
| PT-51-2N055A | PRESSURE TRANSMITTER | ADS | A | 189 | 062 | |
| PT-51-2N055C | PRESSURE TRANSMITTER | ADS | C | 279 | 065 | |
| PT-51-2N055E | PRESSURE TRANSMITTER | ADS | A | 189 | 062 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-51-2N055G | PRESSURE TRANSMITTER | ADS | C | 279 | 065 | |
| PT-51-2N056A | PRESSURE TRANSMITTER | ADS | A | 189 | 062 | |
| PT-51-2N056C | PRESSURE TRANSMITTER | ADS | C | 279 | 065 | |
| PT-51-2N056E | PRESSURE TRANSMITTER | ADS | A | 189 | 062 | |
| PT-51-2N056G | PRESSURE TRANSMITTER | ADS | C | 279 | 065 | |
| PT-51-2N057 | PRESSURE TRANSMITTER | RHR | B | 370W | 067W | |
| PT-52-1N055A | PRESSURE TRANSMITTER | ADS | A | 110 | 035 | |
| PT-52-1N055C | PRESSURE TRANSMITTER | ADS | C | 117 | 038 | |
| PT-52-1N055E | PRESSURE TRANSMITTER | ADS | A | 113 | 036 | |
| PT-52-1N055G | PRESSURE TRANSMITTER | ADS | C | 114 | 037 | |
| PT-52-2N055A | PRESSURE TRANSMITTER | ADS | A | 188 | 061 | |
| PT-52-2N055C | PRESSURE TRANSMITTER | ADS | C | 181 | 058 | |
| PT-52-2N055E | PRESSURE TRANSMITTER | ADS | A | 185 | 060 | |
| PT-52-2N055G | PRESSURE TRANSMITTER | ADS | C | 184 | 059 | |
| PT-55-1N050 | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-55-1N058B | PRESSURE TRANSMITTER | HPCI | B | 304W | 044W | |
| PT-55-1N058D | PRESSURE TRANSMITTER | HPCI | D | 304W | 044W | |
| PT-55-1N058F | PRESSURE TRANSMITTER | HPCI | B | 304W | 044W | |
| PT-55-1N058H | PRESSURE TRANSMITTER | HPCI | D | 304W | 044W | |
| PT-55-2N050 | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-55-2N058B | PRESSURE TRANSMITTER | HPCI | B | 370W | 067W | |
| PT-55-2N058D | PRESSURE TRANSMITTER | HPCI | D | 370W | 067W | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| PT-55-2N058F | PRESSURE TRANSMITTER | HPCI | B | 370W | 067W | |
| PT-55-2N058H | PRESSURE TRANSMITTER | HPCI | D | 370W | 067W | |
| PT-56-1N052 | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-1N053 | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-1N055B | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-1N055D | PRESSURE TRANSMITTER | HPCI | D | 200 | 042 | |
| PT-56-1N055F | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-1N055H | PRESSURE TRANSMITTER | HPCI | D | 200 | 042 | |
| PT-56-1N056B | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-1N056F | PRESSURE TRANSMITTER | HPCI | B | 109 | 034 | |
| PT-56-2N052 | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-56-2N053 | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-56-2N055B | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-56-2N055D | PRESSURE TRANSMITTER | HPCI | D | 279 | 065 | |
| PT-56-2N055F | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-56-2N055H | PRESSURE TRANSMITTER | HPCI | D | 279 | 065 | |
| PT-56-2N056B | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| PT-56-2N056F | PRESSURE TRANSMITTER | HPCI | B | 180 | 057 | |
| SI-50-101 | SPEED INDICATOR | RCIC | A | 533 | 024 | |
| SI-50-1R003 | SPEED INDICATOR | RCIC | A | 540 | 026 | |
| SI-50-201 | SPEED INDICATOR | RCIC | A | 533 | 024 | |
| SI-50-2R003 | SPEED INDICATOR | RCIC | A | 540 | 026 | |
| SI-56-161 | SPEED INDICATOR | HPCI | B | 533 | 024 | |
| SI-56-261 | SPEED INDICATOR | HPCI | B | 533 | 024 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| SV-52-139 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 118 | 039 | |
| SV-52-239 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 189 | 062 | |
| SV-57-101 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 207 | 041 | |
| SV-57-183 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 309W | 043W | |
| SV-57-201 | CTMT ISO VALVE FOR LEVEL SENSING LINES | SPI | A | 284 | 064 | |
| SV-59-150A | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | C | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D |
| SV-59-150B | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | D | 304E | 044E | 1-RHRASC-B<br>1-RHRASC-A<br>1-RHRASC-D<br>1-RHRASC-C |
| SV-59-152A | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | C | 304W | 044W | 1-RHRASC-A<br>1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-D<br>1-MSRV |
| SV-59-152B | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | D | 304E | 044E | 1-RHRASC-B<br>1-RHRASC-C<br>1-RHRASC-A<br>1-RHRASC-D |
| SV-59-250A | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | C | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D |
| SV-59-250B | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | D | 370E | 067E | 2-RHRASC-B<br>2-RHRASC-A<br>2-RHRASC-D<br>2-RHRASC-C |
| SV-59-252A | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | C | 370E | 067E | 2-RHRASC-A<br>2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-D<br>2-MSRV |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| SV-59-252B | COMPRESSED GAS SUPPLY SELECT VALVE | PCIG | D | 370E | 067E | 2-RHRASC-B<br>2-RHRASC-C<br>2-RHRASC-A<br>2-RHRASC-D |
| TD-81-102A | CELL "A" AIR EXHAUST DAMPER | DGEV | A | 311A | 079 | |
| TD-81-102B | CELL "B" AIR EXHAUST DAMPER | DGEV | B | 311B | 081 | |
| TD-81-102C | CELL "C" AIR EXHAUST DAMPER | DGEV | C | 311C | 080 | |
| TD-81-102D | CELL "D" AIR EXHAUST DAMPER | DGEV | D | 311D | 082 | |
| TD-81-102E | CELL "A" AIR EXHAUST DAMPER | DGEV | A | 311A | 079 | |
| TD-81-102F | CELL "B" AIR EXHAUST DAMPER | DGEV | B | 311B | 081 | |
| TD-81-102G | CELL "C" AIR EXHAUST DAMPER | DGEV | C | 311C | 080 | |
| TD-81-102H | CELL "D" AIR EXHAUST DAMPER | DGEV | D | 311D | 082 | |
| TD-81-202A | CELL "A" AIR EXHAUST DAMPER | DGEV | A | 315A | 083 | |
| TD-81-202B | CELL "B" AIR EXHAUST DAMPER | DGEV | B | 315B | 085 | |
| TD-81-202C | CELL "C" AIR EXHAUST DAMPER | DGEV | C | 315C | 084 | |
| TD-81-202D | CELL "D" AIR EXHAUST DAMPER | DGEV | D | 315D | 086 | |
| TD-81-202E | CELL "A" AIR EXHAUST DAMPER | DGEV | A | 315A | 083 | |
| TD-81-202F | CELL "B" AIR EXHAUST DAMPER | DGEV | B | 315B | 085 | |
| TD-81-202G | CELL "C" AIR EXHAUST DAMPER | DGEV | C | 315C | 084 | |
| TD-81-202H | CELL "D" AIR EXHAUST DAMPER | DGEV | D | 315D | 086 | |
| TE-41-101A | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101B | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101C | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101D | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101E | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101F | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TE-41-101G | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-101H | TEMPERATURE ELEMENT | SPI | A | 101 | 029 | |
| TE-41-103A | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103B | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103C | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103D | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103E | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103F | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103G | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-103H | TEMPERATURE ELEMENT | SPI | B | 101 | 029 | |
| TE-41-201A | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201B | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201C | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201D | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201E | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201F | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201G | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-201H | TEMPERATURE ELEMENT | SPI | A | 172 | 052 | |
| TE-41-203A | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203B | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203C | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203D | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203E | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203F | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203G | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-41-203H | TEMPERATURE ELEMENT | SPI | B | 172 | 052 | |
| TE-76-121A | TEMPERATURE ELEMENT | REV | A | 108 | 033 | |
| TE-76-121B | TEMPERATURE ELEMENT | REV | A | 108 | 033 | |
| TE-76-122A | TEMPERATURE ELEMENT | REV | B | 109 | 034 | |
| TE-76-122B | TEMPERATURE ELEMENT | REV | B | 109 | 034 | |
| TE-76-123A | TEMPERATURE ELEMENT | REV | A | 102 | 032 | |
| TE-76-123B | TEMPERATURE ELEMENT | REV | B | 103 | 031 | |
| TE-76-123C | TEMPERATURE ELEMENT | REV | C | 102 | 032 | |
| TE-76-123D | TEMPERATURE ELEMENT | REV | D | 103 | 031 | |
| TE-76-123E | TEMPERATURE ELEMENT | REV | A | 102 | 032 | |
| TE-76-123F | TEMPERATURE ELEMENT | REV | B | 103 | 031 | |
| TE-76-123G | TEMPERATURE ELEMENT | REV | C | 102 | 032 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TE-76-123H | TEMPERATURE ELEMENT | REV | D | 103 | 031 | |
| TE-76-221A | TEMPERATURE ELEMENT | REV | A | 179 | 056 | |
| TE-76-221B | TEMPERATURE ELEMENT | REV | A | 179 | 056 | |
| TE-76-222A | TEMPERATURE ELEMENT | REV | B | 180 | 057 | |
| TE-76-222B | TEMPERATURE ELEMENT | REV | B | 180 | 057 | |
| TE-76-223A | TEMPERATURE ELEMENT | REV | A | 173 | 054 | |
| TE-76-223B | TEMPERATURE ELEMENT | REV | B | 174 | 055 | |
| TE-76-223C | TEMPERATURE ELEMENT | REV | C | 173 | 054 | |
| TE-76-223D | TEMPERATURE ELEMENT | REV | D | 174 | 055 | |
| TE-76-223E | TEMPERATURE ELEMENT | REV | A | 173 | 054 | |
| TE-76-223F | TEMPERATURE ELEMENT | REV | B | 174 | 055 | |
| TE-76-223G | TEMPERATURE ELEMENT | REV | C | 173 | 054 | |
| TE-76-223H | TEMPERATURE ELEMENT | REV | D | 174 | 055 | |
| TE-81-040A | TEMPERATURE ELEMENT | SPPV | A | 1000 | 122 | |
| TE-81-040B | TEMPERATURE ELEMENT | SPPV | B | 1005 | 123 | |
| TE-81-040C | TEMPERATURE ELEMENT | SPPV | C | 1000 | 122 | |
| TE-81-040D | TEMPERATURE ELEMENT | SPPV | D | 1005 | 123 | |
| TE-81-041A | TEMPERATURE ELEMENT | SPPV | A | 1000 | 122 | |
| TE-81-041B | TEMPERATURE ELEMENT | SPPV | B | 1005 | 123 | |
| TE-81-041C | TEMPERATURE ELEMENT | SPPV | C | 1000 | 122 | |
| TE-81-041D | TEMPERATURE ELEMENT | SPPV | D | 1005 | 123 | |
| TE-81-101A | TEMPERATURE ELEMENT | DGEV | A | 311A | 079 | |
| TE-81-101B | TEMPERATURE ELEMENT | DGEV | B | 311B | 081 | |
| TE-81-101C | TEMPERATURE ELEMENT | DGEV | C | 311C | 080 | |
| TE-81-101D | TEMPERATURE ELEMENT | DGEV | D | 311D | 082 | |
| TE-81-101E | TEMPERATURE ELEMENT | DGEV | A | 311A | 079 | |
| TE-81-101F | TEMPERATURE ELEMENT | DGEV | B | 311B | 081 | |
| TE-81-101G | TEMPERATURE ELEMENT | DGEV | C | 311C | 080 | |
| TE-81-101H | TEMPERATURE ELEMENT | DGEV | D | 311D | 082 | |
| TE-81-201A | TEMPERATURE ELEMENT | DGEV | A | 315A | 083 | |
| TE-81-201B | TEMPERATURE ELEMENT | DGEV | B | 315B | 085 | |
| TE-81-201C | TEMPERATURE ELEMENT | DGEV | C | 315C | 084 | |
| TE-81-201D | TEMPERATURE ELEMENT | DGEV | D | 315D | 086 | |
| TE-81-201E | TEMPERATURE ELEMENT | DGEV | A | 315A | 083 | |
| TE-81-201F | TEMPERATURE ELEMENT | DGEV | B | 315B | 085 | |
| TE-81-201G | TEMPERATURE ELEMENT | DGEV | C | 315C | 084 | |
| TE-81-201H | TEMPERATURE ELEMENT | DGEV | D | 315D | 086 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TI-41-101 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | A | 533 | 024 | 1-SPI |
| TI-41-102 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | A | 540 | 026 | 1-SPI |
| TI-41-103 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | B | 533 | 024 | 1-SPI |
| TI-41-201 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | A | 533 | 024 | 2-SPI |
| TI-41-202 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | A | 540 | 026 | 2-SPI |
| TI-41-203 | SUPPRESSION POOL TEMPERATURE INDICATOR | SPI | B | 533 | 024 | 2-SPI |
| TI-50-140B | TEMPERATURE INDICATOR | RCIC | A | 108 | 033 | |
| TI-50-240B | TEMPERATURE INDICATOR | RCIC | A | 179 | 056 | |
| TISH-20-121A | TEMPERATURE INDICATING SWITCH | SDG | A | 312A | 079 | |
| TISH-20-121B | TEMPERATURE INDICATING SWITCH | SDG | B | 312B | 081 | |
| TISH-20-121C | TEMPERATURE INDICATING SWITCH | SDG | C | 312C | 080 | |
| TISH-20-121D | TEMPERATURE INDICATING SWITCH | SDG | D | 312D | 082 | |
| TISH-20-221A | TEMPERATURE INDICATING SWITCH | SDG | A | 316A | 083 | |
| TISH-20-221B | TEMPERATURE INDICATING SWITCH | SDG | B | 316B | 085 | |
| TISH-20-221C | TEMPERATURE INDICATING SWITCH | SDG | C | 316C | 084 | |
| TISH-20-221D | TEMPERATURE INDICATING SWITCH | SDG | D | 316D | 086 | |
| TISL-81-040A | TEMPERATURE INDICATING SWITCH | SPPV | A | 1000 | 122 | |
| TISL-81-040B | TEMPERATURE INDICATING SWITCH | SPPV | B | 1005 | 123 | |
| TISL-81-040C | TEMPERATURE INDICATING SWITCH | SPPV | C | 1000 | 122 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TISL-81-040D | TEMPERATURE INDICATING SWITCH | SPPV | D | 1005 | 123 | |
| TIT-76-121A | RCIC COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 200 | 042 | |
| TIT-76-121B | RCIC COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 200 | 042 | |
| TIT-76-122A | HPCI COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 207 | 041 | |
| TIT-76-122B | HPCI COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 207 | 041 | |
| TIT-76-123A | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 200 | 042 | |
| TIT-76-123B | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 207 | 041 | |
| TIT-76-123C | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | C | 200 | 042 | |
| TIT-76-123D | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | D | 207 | 041 | |
| TIT-76-123E | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 200 | 042 | |
| TIT-76-123F | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 207 | 041 | |
| TIT-76-123G | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | C | 200 | 042 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TIT-76-123H | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | D | 207 | 041 | |
| TIT-76-221A | RCIC COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 284 | 064 | |
| TIT-76-221B | RCIC COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 284 | 064 | |
| TIT-76-222A | HPCI COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 279 | 065 | |
| TIT-76-222B | HPCI COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 279 | 065 | |
| TIT-76-223A | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 284 | 064 | |
| TIT-76-223B | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 279 | 065 | |
| TIT-76-223C | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | C | 284 | 064 | |
| TIT-76-223D | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | D | 279 | 065 | |
| TIT-76-223E | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | A | 284 | 064 | |
| TIT-76-223F | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | B | 279 | 065 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TIT-76-223G | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | C | 284 | 064 | |
| TIT-76-223H | RHR COMPARTMENT TEMPERATURE INDICATING TRANSMITTER | REV | D | 279 | 065 | |
| TRS-41-101 | DIV. I SUPPRESSION POOL TEMPERATURE MONITORING SYSTEM | SPI | A | 533 | 024 | |
| TRS-41-103 | DIV. II SUPPRESSION POOL TEMPERATURE MONITORING SYSTEM | SPI | B | 533 | 024 | |
| TRS-41-201 | DIV. I SUPPRESSION POOL TEMPERATURE MONITORING SYSTEM | SPI | A | 533 | 024 | |
| TRS-41-203 | DIV. II SUPPRESSION POOL TEMPERATURE MONITORING SYSTEM | SPI | B | 533 | 024 | |
| TSH-HH76-121A | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSH-HH76-121B | TEMPERATURE SWITCH | REV | B | 200 | 042 | |
| TSH-HH76-122A | TEMPERATURE SWITCH | REV | A | 207 | 041 | |
| TSH-HH76-122B | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSH-HH76-123A | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSH-HH76-123B | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSH-HH76-123C | TEMPERATURE SWITCH | REV | C | 200 | 042 | |
| TSH-HH76-123D | TEMPERATURE SWITCH | REV | D | 207 | 041 | |
| TSH-HH76-123E | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSH-HH76-123F | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSH-HH76-123G | TEMPERATURE SWITCH | REV | C | 200 | 042 | |
| TSH-HH76-123H | TEMPERATURE SWITCH | REV | D | 207 | 041 | |
| TSH-HH76-221A | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSH-HH76-221B | TEMPERATURE SWITCH | REV | B | 284 | 064 | |
| TSH-HH76-222A | TEMPERATURE SWITCH | REV | A | 279 | 065 | |
| TSH-HH76-222B | TEMPERATURE SWITCH | REV | B | 279 | 065 | |
| TSH-HH76-223A | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSH-HH76-223B | TEMPERATURE SWITCH | REV | B | 279 | 065 | |
| TSH-HH76-223C | TEMPERATURE SWITCH | REV | C | 284 | 064 | |
| TSH-HH76-223D | TEMPERATURE SWITCH | REV | D | 279 | 065 | |
| TSH-HH76-223E | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSH-HH76-223F | TEMPERATURE SWITCH | REV | B | 279 | 065 | |
| TSH-HH76-223G | TEMPERATURE SWITCH | REV | C | 284 | 064 | |
| TSH-HH76-223H | TEMPERATURE SWITCH | REV | D | 279 | 065 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TSH-HH81-101A | TEMPERATURE SWITCH | DGEV | A | 311A | 079 | |
| TSH-HH81-101B | TEMPERATURE SWITCH | DGEV | B | 311B | 081 | |
| TSH-HH81-101C | TEMPERATURE SWITCH | DGEV | C | 311C | 080 | |
| TSH-HH81-101D | TEMPERATURE SWITCH | DGEV | D | 311D | 082 | |
| TSH-HH81-101E | TEMPERATURE SWITCH | DGEV | A | 311A | 079 | |
| TSH-HH81-101F | TEMPERATURE SWITCH | DGEV | B | 311B | 081 | |
| TSH-HH81-101G | TEMPERATURE SWITCH | DGEV | C | 311C | 080 | |
| TSH-HH81-101H | TEMPERATURE SWITCH | DGEV | D | 311D | 082 | |
| TSH-HH81-201A | TEMPERATURE SWITCH | DGEV | A | 315A | 083 | |
| TSH-HH81-201B | TEMPERATURE SWITCH | DGEV | B | 315B | 085 | |
| TSH-HH81-201C | TEMPERATURE SWITCH | DGEV | C | 315C | 084 | |
| TSH-HH81-201D | TEMPERATURE SWITCH | DGEV | D | 315D | 086 | |
| TSH-HH81-201E | TEMPERATURE SWITCH | DGEV | A | 315A | 083 | |
| TSH-HH81-201F | TEMPERATURE SWITCH | DGEV | B | 315B | 085 | |
| TSH-HH81-201G | TEMPERATURE SWITCH | DGEV | C | 315C | 084 | |
| TSH-HH81-201H | TEMPERATURE SWITCH | DGEV | D | 315D | 086 | |
| TSHL-76-121A | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSHL-76-121B | TEMPERATURE SWITCH | REV | B | 200 | 042 | |
| TSHL-76-122A | TEMPERATURE SWITCH | REV | A | 207 | 041 | |
| TSHL-76-122B | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSHL-76-123A | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSHL-76-123B | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSHL-76-123C | TEMPERATURE SWITCH | REV | C | 200 | 042 | |
| TSHL-76-123D | TEMPERATURE SWITCH | REV | D | 207 | 041 | |
| TSHL-76-123E | TEMPERATURE SWITCH | REV | A | 200 | 042 | |
| TSHL-76-123F | TEMPERATURE SWITCH | REV | B | 207 | 041 | |
| TSHL-76-123G | TEMPERATURE SWITCH | REV | C | 200 | 042 | |
| TSHL-76-123H | TEMPERATURE SWITCH | REV | D | 207 | 041 | |
| TSHL-76-221A | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSHL-76-221B | TEMPERATURE SWITCH | REV | B | 284 | 064 | |
| TSHL-76-222A | TEMPERATURE SWITCH | REV | A | 279 | 065 | |
| TSHL-76-222B | TEMPERATURE SWITCH | REV | B | 279 | 065 | |
| TSHL-76-223A | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSHL-76-223B | TEMPERATURE SWITCH | REV | B | 279 | 065 | |
| TSHL-76-223C | TEMPERATURE SWITCH | REV | C | 284 | 064 | |
| TSHL-76-223D | TEMPERATURE SWITCH | REV | D | 279 | 065 | |
| TSHL-76-223E | TEMPERATURE SWITCH | REV | A | 284 | 064 | |
| TSHL-76-223F | TEMPERATURE SWITCH | REV | B | 279 | 065 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TSHL-76-223G | TEMPERATURE SWITCH | REV | C | 284 | 064 | |
| TSHL-76-223H | TEMPERATURE SWITCH | REV | D | 279 | 065 | |
| TSHL-81-341A | TEMPERATURE SWITCH | SPPV | A | 1000 | 122 | |
| TSHL-81-341B | TEMPERATURE SWITCH | SPPV | B | 1005 | 123 | |
| TSHL-81-341C | TEMPERATURE SWITCH | SPPV | C | 1000 | 122 | |
| TSHL-81-341D | TEMPERATURE SWITCH | SPPV | D | 1005 | 123 | |
| TTICSL-81-041A | SYSTEM "A" FAN CABINET TEMPERATURE INDICATING CONTROLLER | SPPV | A | 1000 | 122 | |
| TTICSL-81-041B | SYSTEM "B" FAN CABINET TEMPERATURE INDICATING CONTROLLER | SPPV | B | 1005 | 123 | |
| TTICSL-81-041C | SYSTEM "C" FAN CABINET TEMPERATURE INDICATING CONTROLLER | SPPV | C | 1000 | 122 | |
| TTICSL-81-041D | SYSTEM "D" FAN CABINET TEMPERATURE INDICATING CONTROLLER | SPPV | D | 1005 | 123 | |
| TTICSHL-81-101A | CELL "A" EXHAUST FAN CONTROLLER | DGEV | A | 311A | 079 | |
| TTICSHL-81-101B | CELL "B" EXHAUST FAN CONTROLLER | DGEV | B | 311B | 081 | |
| TTICSHL-81-101C | CELL "C" EXHAUST FAN CONTROLLER | DGEV | C | 311C | 080 | |
| TTICSHL-81-101D | CELL "D" EXHAUST FAN CONTROLLER | DGEV | D | 311D | 082 | |
| TTICSHL-81-101E | CELL "A" EXHAUST FAN CONTROLLER | DGEV | A | 311A | 079 | |
| TTICSHL-81-101F | CELL "B" EXHAUST FAN CONTROLLER | DGEV | B | 311B | 081 | |
| TTICSHL-81-101G | CELL "C" EXHAUST FAN CONTROLLER | DGEV | C | 311C | 080 | |
| TTICSHL-81-101H | CELL "D" EXHAUST FAN CONTROLLER | DGEV | D | 311D | 082 | |
| TTICSHL-81-201A | CELL "A" EXHAUST FAN CONTROLLER | DGEV | A | 315A | 083 | |
| TTICSHL-81-201B | CELL "B" EXHAUST FAN CONTROLLER | DGEV | B | 315B | 085 | |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| TTICSHL-81-201C | CELL "C" EXHAUST FAN CONTROLLER | DGEV | C | 315C | 084 | |
| TTICSHL-81-201D | CELL "D" EXHAUST FAN CONTROLLER | DGEV | D | 315D | 086 | |
| TTICSHL-81-201E | CELL "A" EXHAUST FAN CONTROLLER | DGEV | A | 315A | 083 | |
| TTICSHL-81-201F | CELL "B" EXHAUST FAN CONTROLLER | DGEV | B | 315B | 085 | |
| TTICSHL-81-201G | CELL "C" EXHAUST FAN CONTROLLER | DGEV | C | 315C | 084 | |
| TTICSHL-81-201H | CELL "D" EXHAUST FAN CONTROLLER | DGEV | D | 315D | 086 | |
| TY-41-102 | TEMPERATURE CONVERTER | SPI | A | 540 | 026 | |
| TY-41-202 | TEMPERATURE CONVERTER | SPI | A | 540 | 026 | |
| TY-81-101A | TEMPERATURE SIGNAL SELECTOR | DGEV | A | 311A | 079 | |
| TY-81-101B | TEMPERATURE SIGNAL SELECTOR | DGEV | B | 311B | 081 | |
| TY-81-101C | TEMPERATURE SIGNAL SELECTOR | DGEV | C | 311C | 080 | |
| TY-81-101D | TEMPERATURE SIGNAL SELECTOR | DGEV | D | 311D | 082 | |
| TY-81-201A | TEMPERATURE SIGNAL SELECTOR | DGEV | A | 315A | 083 | |
| TY-81-201B | TEMPERATURE SIGNAL SELECTOR | DGEV | B | 315B | 085 | |
| TY-81-201C | TEMPERATURE SIGNAL SELECTOR | DGEV | C | 315C | 084 | |
| TY-81-201D | TEMPERATURE SIGNAL SELECTOR | DGEV | D | 315D | 086 | |
| XR-42-1R623A | REACTOR VESSEL PRESSURE AND WATER LEVEL RECORDER | RVI | A | 533 | 024 | 1-RVI |
| XR-42-1R623B | REACTOR VESSEL PRESSURE AND WATER LEVEL RECORDER | RVI | B | 533 | 024 | 1-RVI |
| XR-42-2R623A | REACTOR VESSEL PRESSURE AND WATER LEVEL RECORDER | RVI | A | 533 | 024 | 2-RVI |
| XR-42-2R623B | REACTOR VESSEL PRESSURE AND WATER LEVEL RECORDER | RVI | B | 533 | 024 | 2-RVI |

Table 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| Component | Description | Plant Sys. | Sfgd. Chan. | Room | Fire Area | FSSD Sys. Design. |
|---|---|---|---|---|---|---|
| ZC-81-102A | POSITION CONTROLLER | DGEV | A | 311A | 079 | |
| ZC-81-102B | POSITION CONTROLLER | DGEV | B | 311B | 081 | |
| ZC-81-102C | POSITION CONTROLLER | DGEV | C | 311C | 080 | |
| ZC-81-102D | POSITION CONTROLLER | DGEV | D | 311D | 082 | |
| ZC-81-102E | POSITION CONTROLLER | DGEV | A | 311A | 079 | |
| ZC-81-102F | POSITION CONTROLLER | DGEV | B | 311B | 081 | |
| ZC-81-102G | POSITION CONTROLLER | DGEV | C | 311C | 080 | |
| ZC-81-102H | POSITION CONTROLLER | DGEV | D | 311D | 082 | |
| ZC-81-202A | POSITION CONTROLLER | DGEV | A | 315A | 083 | |
| ZC-81-202B | POSITION CONTROLLER | DGEV | B | 315B | 085 | |
| ZC-81-202C | POSITION CONTROLLER | DGEV | C | 315C | 084 | |
| ZC-81-202D | POSITION CONTROLLER | DGEV | D | 315D | 086 | |
| ZC-81-202E | POSITION CONTROLLER | DGEV | A | 315A | 083 | |
| ZC-81-202F | POSITION CONTROLLER | DGEV | B | 315B | 085 | |
| ZC-81-202G | POSITION CONTROLLER | DGEV | C | 315C | 084 | |
| ZC-81-202H | POSITION CONTROLLER | DGEV | D | 315D | 086 | |

LEGEND FOR TABLE 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

The information presented in each column of Table 9A-4 is explained as follows.

Component — Major Safe Shutdown Components
NOTE: Components identified with an asterix (*) designate associations of equipment and cables that perform common functions. These designations are used for analysis purposes only, and do not represent plant identification.

Description — Brief description of the component

Plant Sys. — General FSSD system designation for the component, based on the function the component provides

KEY:

| | |
|---|---|
| ADS | Automatic Depressurization System |
| APS | 13kV Power Supply to the 4kV Safeguard Busses |
| CS | Core Spray |
| DGEV | Diesel Generator Enclosure Ventilation |
| EPS | Class 1E Power Distribution System |
| ESW | Emergency Service Water System |
| HI/LOW | Selected Reactor Coolant Pressure Boundaries and High Low Pressure Interfaces |
| HPCI | High Pressure Coolant Injection System |
| MSRV | Main Steam Relief Valves |
| PCIG | Primary Containment Instrument Gas System |
| RCIC | Reactor Core Isolation Cooling System |
| REV | Reactor Enclosure Ventilation |
| RHR | Residual Heat Removal System |
| RHRSW | Residual Heat Removal Service Water System |
| RVI | Reactor Vessel Instrumentation |
| SDG | Standby Diesel Generators and Auxiliaries |
| SPI | Suppression Pool Instrumentation |
| SPPV | Spray Pond Pump Structure Ventilation |

LEGEND FOR TABLE 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

| | |
|---|---|
| Sfgd. Chan. | Safeguard Channel designation for electrical components |
| | NOTE: Components identified with a letter in parenthesis are not designated as safeguard, but are energized from the Safeguard Channel indicated. |
| Room | Room location for the component |
| | Components located in rooms which are subdivided by Combustible Free Zones have an East or West suffix provided to more precisely identify their location. |
| Fire Area | Fire Area location for the component |
| | Components located in Fire Areas which are subdivided by Combustible Free Zones have an East or West suffix provided to more precisely identify their location. |
| FSSD Sys. | Fire Safe Shutdown System/Train Designation |
| Desig. | Populated for components which directly support a Safe Shutdown Function. |
| | KEY: |
| | A-BBBBB-C |
| | A — Unit (0, 1, 2) |
| | BBBBB — System Function Designation (see table below) |
| | C — Loop/Train (provided for multi-train systems) |

LEGEND FOR TABLE 9A-4 (Cont'd)

MAJOR COMPONENTS ANALYZED FOR FIRE SAFE SHUTDOWN

System Function Designations:

| | |
|---|---|
| ESW | Emergency Service Water |
| ADS | Automatic Depressurization System |
| HI/LOW | Selected Reactor Coolant Pressure Boundaries and High Low Pressure Interfaces |
| HPCI | High Pressure Coolant Injection System |
| HPCITRIP | HPCI shutdown capability |
| MSRV | Main Steam Relief Valves |
| RCIC | Reactor Core Isolation Cooling System |
| RCICTRIP | RCIC shutdown capability |
| RHRASC | RHR Alternate Shutdown Cooling Mode |
| RHRLPCI | RHR Low Pressure Coolant Injection Mode |
| RHRSC | RHR Shutdown Cooling Mode |
| RHRSPC | RHR Suppression Pool Cooling Mode |
| RHRSW | RHR Service Water |
| RVI | Reactor Vessel Instrumentation - Direct-reading indication of Reactor parameters |
| SPI | Suppression Pool Instrumentation - Direct-reading indication of Suppression Pool parameters |

Tables 9A-5 through 9A-11

Tables 9A-5 through 9A-11

(Deleted)

Table 9A-12

RCPB VALVES SUSCEPTIBLE TO
FIRE INDUCED SPURIOUS OPERATION

| P&ID NUMBER | INTERFACE VALVES[1,2] | REMARKS |
|---|---|---|
| M-41 | (U) HV-41-1F001<br>(D) HV-41-1F002<br><br>(U) HV-41-2F001<br>(D) HV-41-2F002 | Located in piping from the RPV head vent line to the drywell equipment drain tank. If both valves open due to fire damage, the steam released into the drain tank would be vented into the drywell via the 4 inch vent line. No equipment needed for safe shutdown would be damaged. |
| M-41 | (S) PSV-41-1F013A<br><br>(S) PSV-41-2F013A | Located in a branch line connected to the main steam piping inside primary containment. Typical for suffix "B", "C", "D", "E", "F", "G", "H", "J", "K", "L", "M", "N", and "S" valves. If this valve opens, steam will be discharged from the reactor vessel to the suppression pool. Released reactor coolant will be retained inside the primary containment, and no equipment needed for safe shutdown will be damaged. |
| M-41 | (U) HV-41-1F016<br>(D) HV-41-1F019<br><br>(U) HV-41-2F016<br>(D) HV-41-2F019 | Located in the main steam drain line. If both of these valves open due to fire damage, various leakage paths downstream of the valves could allow reactor coolant to be discharged to the main condenser or the main steam tunnel. For all of the potential flow paths, this condition is acceptable because (a) the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods, (b) the mass inventory expected to be released is less than that expected for a main steam line break outside primary containment, and (c) the release of reactor coolant will not cause damage to any equipment needed for safe shutdown |
| M-41 | (U) HV-41-1F022A<br>(D) HV-41-1F028A<br><br>(U) HV-41-2F022A<br>(D) HV-41-2F028A | Located in the main steam lines between the reactor vessel and the turbine-generator. Typical for suffix "B", "C", and "D" valves. If both of these valves open simultaneously due to fire damage, the main steam piping outside primary containment would be pressurized. Although the main steam piping leading to the main turbine is designed as high pressure piping, there are a number of potential leakage paths associated with branch lines from the main steam lines. Because of the high reliability of the MSIVs and because of the fail-safe features of their design, these valves are assumed to retain their capability to close and remain closed during a postulated fire. |

Table 9A-12 (Cont'd)

| P&ID NUMBER | INTERFACE VALVES(1,2) | REMARKS |
|---|---|---|
| M-41 | (U) HV-41-1F084<br>(D) HV-41-1F085 | Located in the sample line from main steam line C to sample station 10S292 (20S292). If both valves open due to fire damage, a closed manual valve at the sample station would prevent steam blowdown. |
| M-41 | (U) HV-41-109A<br>(U) HV-41-109B<br>(D) HV-41-110<br><br>(U) HV-41-209A<br>(U) HV-41-209B<br>(D) HV-41-210 | Located in the feedwater recirculation line between the main feedwater headers and the main condenser. Spurious opening of either of the upstream valves together with the downstream valve as a result of fire-caused damage would allow water from the RWCU return line to be discharged to the main condenser via the feedwater headers. Plant procedures require that the circuit breakers for the upstream valves be locked open at motor control centers 10B213 (20B213) and 10B214 (20B214), with the valves in the fully closed position, after warmup of the feedwater lines has been completed. By de-energizing the breakers, fires which effect the control circuits to the valves are prevented from causing the valves to spuriously open. This action prevents the interface from opening in fire areas where RCIC is relied upon for safe shutdown. For other postulated fires, this condition is acceptable because (a) the reactor vessel inventory can be maintained by the available coolant makeup pumps, (b) the mass inventory expected to be released is less than expected for a main steam line break outside containment, and (c) the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |
| M-43 | (U) HV-43-1F019<br>(D) HV-43-1F020<br><br>(U) HV-43-2F019<br>(D) HV-43-2F020 | Located in the sample line from recirculation loop B to sample station 10S292 (20S292). This spurious operation or loss of capability to close these valves due to fire damage, will allow the sample line to blowdown to clean radwaste system (CRWS). The leakage is acceptable because the inventory loss is within the RCIC pump make-up capability, the blowdown is limited by the 1/4 inch sample line and the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |

Table 9A-12 (Cont'd)

| P&ID NUMBER | INTERFACE VALVES(1,2) | REMARKS |
|---|---|---|
| M-44 | (U) HV-44-1F031<br>(U) HV-C44-1F033<br>(D) HV-44-1F034<br>(D) HV-44-1F035<br><br>(U) HV-44-2F031<br>(U) HV-C44-2F033<br>(D) HV-44-2F034<br>(D) HV-44-2F035 | Located in the blowdown line from the RWCU system. If only valve HV-C44-1(2)F033 opens spuriously together with either HV-44-1(2)F034 or HV-44-1(2)F035 valve water from the RWCU system would be discharged to either the main condenser or the equipment drain collection tank. No equipment needed for safe shutdown would be damaged by the discharge of reactor coolant and the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods. To ensure that HV-44-1(2)F031 does not open and the blowdown flow rate is limited to an acceptable value, the power circuit for valve HV- 44-1F031 (2F031) will be isolated (with the valve in the fully closed position) when reactor pressure exceeds 75 psig. |
| M-44 | (S) SV-45-101A<br><br>(S) SV-45-201A | Located in the RWCU filter/demineralizer sample line. Typical for the suffix "B" valve. The loss of capability to close these valves due to fire damage, will allow the sample line to blowdown to clean radwaste system (CRWS). The leakage is acceptable because the inventory loss is within the RICI pump make-up capability, the blowdaown is limited by the 1/4 inch sample line and the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |
| M-47 | (U) XV-47-1F010<br>(D) XV-47-1F180<br><br>(U) XV-47-2F010<br>(D) XV-47-2F180 | Located in the vent line from the scram discharge volume to an open floor drain. The SDV would be at high pressure only during the period following a scram and prior to reset of the scram signal. The discharge of water from the SDV into a floor drain during this period would not cause damage to any equipment needed for safe shutdown, and the flow rate would be low enough so that reactor vessel inventory could be maintained by the coolant makeup pumps that are available for each shutdown method. |
| M-47 | (U) XV-47-1F011<br>(D) XV-47-1F181<br><br>(U) XV-47-2F011<br>(D) XV-47-2F181 | Located in the drain line from the scram discharge volume to the equipment drain collection tank (via 8" HBC-133/233). The SDV would be at high pressure only during the period following a scram and prior to reset of the scram signal. The discharge of water from the SDV to the equipment drain collection tank during this period would not cause damage to any equipment needed for safe shutdown, and the flow rate would be low enough so that reactor vessel inventory could be maintained by the coolant makeup pumps that are available for each shutdown method. |

Table 9A-12 (Cont'd)

| P&ID NUMBER | INTERFACE VALVES[1,2] | REMARKS |
|---|---|---|
| M-49 | (S) LV-49-1F054<br>(S) LV-49-2F054 | Located in the drain line from the drain pot in the RCIC steam supply line. If this valve opens due to fire damage, main steam would be discharged to the main condenser. This condition is acceptable because (a) the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods, (b) the mass inventory expected to be released is less than that expected for a main steam line break outside primary containment, and (c) the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |
| M-50 | (S) LV-50-110<br>(S) LV-50-210 | Located in the drain line from the drain pot in the RCIC turbine exhaust line. If this valve opens due to fire damage, at a time when RCIC steam supply line shutoff valve HV-50-1F045 (2F045) is open, main steam could bleed into the RCIC barometric condenser. This condition is acceptable because (a) the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods, (b) the mass inventory expected to be released is less than that expected for a main steam line break outside primary containment, and (c) the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |
| M-51 | (U) HV-51-1F009<br>(D) HV-51-1F008<br>(U) HV-51-2F009<br>(D) HV-51-2F008 | Located in the RHR shutdown cooling suction line. If both valves open due to fire damage, the RHR pump suction lines could be damaged. In order to prevent both the upstream and downstream valves from opening simultaneously, an additional interlock by means of a pressure switch, is added to monitor the reactor vessel pressure for the downstream valve. Whenever the reactor vessel pressure exceeds the design capabilities of the RHR low pressure piping the contacts of the pressure switch will open, thereby isolating the opening relay of the downstream valves and preventing the valve to open. |

Table 9A-12 (Cont'd)

| P&ID NUMBER | INTERFACE VALVES(1,2) | REMARKS |
|---|---|---|
| M-51 | (U) HV-51-151A<br>(U) HV-51-1F050A<br>(D) HV-51-1F015A<br>(U) 51-1200A<br>(U) HV-51-251A<br>(U) HV-51-2F050A<br>(D) HV-51-2F015A<br>(U) 51-2200A | Located in the RHR loop A shutdown cooling return line. HV-51-1F050A (2F050A) is a check valve that will close to prevent reverse flow if HV-51-1F015A (2F015A) fails in the open position. The pneumatic operator on HV-51-1F050A (2F050A) is for testing purposes only and cannot unseat the valve disk or hold it open when a differential pressure exists across the valve. However, if bypass valve HV-51-151A (251A) and the outboard containment isolation valve both open due to fire damage, the flow through the bypass line will pressurize the shutdown cooling return piping outside the drywell. The flow through the bypass line will be limited by ¼" flow restricting orifice F0-51-151A (251A) to a value that is less than the capacity of downstream relief valve PSV-51-1F025A (2F025A). The discharged reactor coolant will not overpressurize or overheat the low pressure piping and will not cause damage to any equipment required for safe shutdown. In addition, the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods. (Typical for the loop B shutdown cooling return line.)<br><br>Outboard isolation valve HV-051-1F015A (2F015A) has an additional piping path from the reactor coolant pressure boundary to penetration X-13A. This small-bore piping path connects the equalizing line of valve HV-51-1F050A (2F050A) to the bonnet vent line of the recirculation pump suction block valve HV-043-1F023A (2F023A). Spring-assisted, check valve 51-1200A (2200A) in this flow path will acts as an inboard isolation valve to penetration X-13A from the recirculation system. Check valve 51-1200A (2200A) performs the same PCIV's/PIV's functions in penetration X-13A as valves HV-051-1F050A (2F050A) and HV-051-151A (251A). (Typical for the loop B shutdown cooling return line.) |
| M-51 | (U) HV-51-142A<br>(U) HV-51-1F041A<br>(D) HV-51-1F017A<br><br>(U) HV-51-242A<br>(U) HV-51-2F041A<br>(D) HV-51-2F017A | Located in the loop A LPCI injection line. HV-51-1F041A (2F041A) is a check valve that will close to prevent reverse flow if HV-51-1F017A (2F017A) fails in the open position. The pneumatic operator on HV-51-1F041A (2F041A) is for testing purposes only and cannot unseat the valve disk or hold it open when a differential pressure exists across the valve. However, if bypass valve HV-51-142A (242A) and the outboard containment isolation valve both open due to fire damage, the flow through the bypass line will pressurize the LPCI injection piping outside the drywell. The flow through the bypass line will be limited by ¼" flow restricting orifice F0-51- 142A(242A) to a value that is less than the capacity of downstream relief valve PSV-51-1F025A (2F025A). The discharged reactor coolant will not overpressurize or overheat the low pressure piping and will not cause damage to any equipment required for safe shutdown. In addition, the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods. (Typical for LPCI injection lines B, C, and D.) |

Table 9A-12 (Cont'd)

| P&ID NUMBER | INTERFACE VALVES(1,2) | REMARKS |
|---|---|---|
| M-52 | (U) HV-52-1F039A<br>(U) HV-52-1F006A<br>(D) HV-52-1F005<br><br>(U) HV-52-2F039A<br>(U) HV-52-2F006A<br>(D) HV-52-2F005 | Located in the loop A core spray injection line. HV-52-1F006A (2F006A) is a check valve that will close to prevent reverse flow if HV-52-1F005 (2F005) fails in the open position. The pneumatic operator on HV-52-1F006A (2F006A) is for testing purposes only and cannot unseat the valve disk or hold it open when a differential pressure exists across the valve. However, if bypass valve HV-52-1F039A (2F039A) and the outboard containment isolation valve both open due to fire damage, the flow through the bypass line will pressurize the core spray injection piping outside the drywell. The flow through the bypass line will be limited by ¼" flow restricting orifice F0-52-106A (206A) to a value that is less than the capacity of downstream relief valve PSV-52-1F012A (2F012A). The discharged reactor coolant will not overpressurize or overheat the low pressure piping and will not cause damage to any equipment required for safe shutdown. In addition, the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods. |
| M-52 | (U) HV-52-1F039B<br>(U) HV-52-1F006B<br>(D) HV-52-108<br><br>(U) HV-52-2F039B<br>(U) HV-52-2F006B<br>(D) HV-52-208 | Located in the loop B core spray injection line. The pneumatic operator on check valve HV-52-1F006B (2F006B) is for testing purposes only and cannot unseat the valve disk or hold it open when a differential pressure exists across the valve. If bypass valve HV-52-1F039B (2F039B) opens due to fire damage, reverse flow cannot occur because outboard containment isolation valve HV-52-108 (208) is a check valve. |
| M-55 | (S) HV-55-1F054<br>(S) HV-55-1F054 | Located in the drain line of the HPCI steam supply line drain pot. If this valve opens due to fire damage, main steam could be discharged to the main condenser. This condition is acceptable because (a) the reactor vessel inventory can be maintained by the coolant makeup pumps that are available for each of the shutdown methods, (b) the mass inventory expected to be released is less than expected for a main steam line break outside primary containment, and (c) the release of reactor coolant will not cause damage to any equipment needed for safe shutdown. |

(1) Upstream valves are identified by the (U) designation. Downstream valves are identified by the (D) designation. Single valves are identified by the (S) designation. For the purposes of this study, upstream valves are defined as those valves that are closest to the RCPB.

(2) For each entry in this table, two groups of interface valves are listed. The first group consists of valves in Unit 1 and the second group consists of the corresponding valves in Unit 2.

Table 9A-13
has been DELETED.

Table 9A-14

Operations That May Be Required To Be Performed Outside The Control Room

| Equipment ID | Action Description |
|---|---|
| 10-A116 | Operate Local Control Switches |
| 10-A118 | Trip B Control Room Chiller For MHIF |
| 10-C601-X1 | Position Valves Using Emergency Control Switches - HV-51-125B, 1F004B, 1F015B, 1F027B, HV-C-51-1F048B |
| 10-C601-X2 | Position Valve Using Emergency Control Switch - HV-51-1F017B |
| 10TB-49-1F007 | Operate Power Transfer Switch - HV-49-1F007 |
| 1A-C514 | Start Diesel 1AG501 Generator Using Local Controls |
| 1B-C514 | Start Diesel 1BG501 Generator Using Local Controls |
| 20-A116 | Operate Local Control Switches |
| 20-C601-X1 | Position Valves Using Emergency Control Switches - HV-51-2F015B, 2F027B, HV-C-51-2F048B |
| 20-C601-X2 | Position Valve Using Emergency Control Switch - HV-51-2F017B |
| 20TB-49-2F007 | Operate Power Transfer Switch - HV-49-2F007 |
| 2A-C514 | Start Diesel 2AG501 Generator Using Local Controls |
| 2B-C514 | Start Diesel 2BG501 Generator Using Local Controls |

Table 9A-14 (Cont'd)

Operations That May Be Required To Be Performed Outside The Control Room

| Equipment ID | Action Description |
|---|---|
| ADS Control at 289' | Operate ADS Valves At The PGCC |
| HS-51-282B | Open Valve Using Local Controls - HV-51-282B |
| HS-56-162 | Operate Switch At 10C201 To Runback HPCI Turbine |
| HS-56-262 | Operate Switch At 20C201 To Runback HPCI Turbine |
| HV-11-011B | Close Manually To Prevent Long Term ESW Flow Diversion |
| HV-11-015A | Close Manually To Prevent Long Term ESW Flow Diversion |
| HV-11-015B | Open Manually |
| HV-11-132A | Open Manually |
| HV-11-232A | Open Manually |

Table 9A-14 (Cont'd)

Operations That May Be Required To Be Performed Outside The Control Room

| Equipment ID | Action Description |
|---|---|
| HV-12-031B | Close Manually |
| HV-12-031C | Open Manually |
| HV-12-032B | Open Manually |
| HV-12-032C | Open Manually |
| HV-12-032D | Open / Close Manually |
| HV-49-1F084 | Open Manually |
| HV-49-2F084 | Open Manually |
| HV-51-1F003B | Open Manually |
| HV-51-1F006B | Close Manually |
| HV-51-1F008 | Open Manually |
| HV-51-1F010A | Close Manually |
| HV-51-1F014B | Open Manually |
| HV-51-1F015A | Close Manually |
| HV-51-1F017B | Close Manually |
| HV-51-1F024B | Open Manually |
| HV-51-1F047B | Open Manually |
| HV-51-1F049 | Close Manually |

Table 9A-14 (Cont'd)

Operations That May Be Required To Be Performed Outside The Control Room

| Equipment ID | Action Description |
|---|---|
| HV-51-1F068A | Open Manually |
| HV-51-1F068B | Open Manually |
| HV-51-2F006B | Close Manually |
| HV-51-2F008 | Open Manually |
| HV-51-2F010A | Close Manually |
| HV-51-2F015A | Close Manually |
| HV-51-2F024B | Open Manually |
| HV-51-2F049 | Close Manually |
| HV-51-2F068A | Open Manually |
| HV-51-2F068B | Open Manually |
| HV-51-2F073 | Close Manually |
| HV-55-126 | Open Manually |
| HV-C-51-1F048A | Close Manually |
| HV-C-51-2F048B | Close Manually |
| Remote Shutdown Panel (289) | Operate Equipment, Monitor Instruments |