APPENDIX 9A

FIRE PROTECTION ANALYSIS

9A.1 Introduction

The AP600 fire protection analysis evaluates the potential for occurrence of fires within the plant and documents the capabilities of the fire protection system and the capability to safely shut down the plant. The fire protection analysis is an integral part of the process of selecting fire prevention, detection, and suppression methods, and provides a design basis for the fire protection system. The design of the fire protection system is described in subsection 9.5.1.

The purpose of the fire protection analysis is as follows:

- Identify the potential for fires based on the type, quantity, and location of combustible materials
- Determine the consequences of postulated fires
- Provide a basis for decisions on how to prevent, detect, contain, and suppress fires
- Assess fire protection system adequacy
- Confirm the capability to safely shut down the plant following a fire

The fire protection analysis is performed for each fire area using the methodology described in Section 9A.2. This methodology follows the guidance of Branch Technical Position (BTP) CMEB 9.5-1 (Reference 1). The results of the analysis are provided in Section 9A.3.

The fire protection analysis is performed for areas of the plant containing safety-related components and for areas containing systems important to the generation of electricity. It is performed on an area by area basis outside containment and a zone by zone basis inside containment. This approach provides confidence that plant safety is preserved.

9A.2 Fire Protection Analysis Methodology

9A.2.1 Fire Area Description

The plant is divided into fire areas and fire zones as described in subsection 9.5.1.2.1.1. These fire areas/zones and their boundaries are illustrated on Figures 9A-1 through 9A-5.

The analysis for each fire area briefly describes the fire area and associated fire zones, and identifies the principal systems and safety-related components in the fire area. Fire detection and suppression features are listed and the means of smoke control is discussed. The term "smoke" is used throughout this document to imply "smoke and products of combustion".

This document also uses terminology defined in NFPA 13, such as "light hazard", "ordinary hazard", and "extra hazard". Normally, these terms apply to sprinkler installations and their water supplies only. However, as used herein, the terms apply to the quantity and combustibility of the contents of a given fire area or fire zone irrespective of whether or not sprinklers are present.

9A.2.2 Combustible Material Survey

Each fire area and fire zone is surveyed to determine the type, quantity and distribution of in-situ combustible materials. Where the presence of transient combustibles is anticipated (for example, materials required to support refueling activities or scheduled maintenance) these materials are also identified.

When estimating quantities of electrical cable insulation, cable trays are assumed to have a cable fill of 30 percent of the usable tray depth. Cable enclosed in conduit or in closed metal cabinets is not included in the combustible material survey.

9A.2.3 Fire Severity Categorization

For purposes of evaluating fire barrier adequacy, the expected fire severity for each area/zone is categorized from A (slight) to E (severe) in accordance with Table 7-9E of the NFPA Fire Protection Handbook (Reference 2) based on the type of materials present.

Fire severity category A is used for battery cases, category C is used for electrical cable insulation, and category E is used for combustible liquids. For fire areas containing mixed combustibles, an average category is used. If there are significant concentrations of combustible materials in the area/zone, the category assigned is generally more severe than that used for a uniform distribution.

9A.2.4 Combustible Loading and Equivalent Fire Duration Calculations

Combustible loading and equivalent fire duration calculations are performed for each fire area and each fire zone. The preliminary calculations provide information used in the selection of fire detection and suppression methods.

Combustible Loading Calculations

The calculation of combustible loading provides an indication of the maximum heat that is released if all the combustibles in a given fire area/zone are consumed.

The potential heat release (expressed in British thermal units, or Btus) for each type of combustible material in the fire area/zone is the product of the quantity of each combustible multiplied by its heat of combustion. The heat of combustion values used for these calculations is listed in Table 9A-1. The maximum heat release for all combustibles in the fire area/zone is found by adding the potential heat release of each combustible material.

The combustible loading for the fire area/zone is the maximum heat release per square foot (Btus per square foot). It is determined by dividing the maximum heat release for all combustibles in the fire area/zone by the floor area of the fire area or zone.

Fire barriers, detection and suppression methods are based on several factors, including the type of combustibles present, regulatory guidance, and investment protection considerations. Generally, for fire areas that are not protected based on regulatory guidance and that do not have concentrations of volatile or radioactive combustibles, fire detection and suppression needs are established based on combustible loading, using the following guidelines:

Combustible Loading (Btu/ft^2)	Detection Capability	Suppression Capability
0 to 8,000	None	Manual
8000 to 80,000	Yes	Manual
Above 80,000	Yes	Automatic and Manual

In addition, concentrations of combustibles were evaluated, including their proximity to fire barriers.

Equivalent Fire Duration

The duration of a fire in a given fire area or zone is influenced by many factors, including:

- The properties of the material (ease of ignition and rate of heat release)
- The surface area of the combustible material
- The presence of fire retardant coatings
- Ventilation parameters and availability of oxygen
- The degree of separation or the presence of barriers between groups of combustible materials

Fire duration is estimated based on the fire severity category and the equivalent combustible loading. Equivalent combustible loading is defined as the weight per square foot of ordinary combustibles (wood or paper) having a heat of combustion of 8,000 Btu/lb, that releases the same total heat as the combustibles in the fire area/zone. The equivalent combustible loading is calculated by dividing the maximum heat release per square foot by 8,000 Btu/lb. The fire endurance lines of Figure 7-9B of the NFPA Fire Protection Handbook are used to estimate the fire duration in minutes.

Fire barriers are tested by exposure to a fire whose severity follows a time varying temperature curve known as the standard time-temperature curve (NFPA Fire Protection Handbook, Figure 7-9A.) The estimated fire duration for each fire area is normalized based

on the standard time-temperature curve to obtain an equivalent fire duration. This value is compared with the fire resistance of the fire area boundaries. This comparison is used in conjunction with other factors, including those listed above, in making a determination of the adequacy of the fire area boundaries.

9A.2.5 Fire Protection Adequacy

The adequacy of the fire protection features for a postulated fire in each fire area or fire zone is evaluated. This evaluation includes the following points:

- A review of how the fire is detected and suppressed
- Verification of the adequacy of the fire resistance of the fire area boundaries
- Verification that the ventilation system for the fire area does not contribute to the spread of fire or smoke
- Verification that a fire in a nonsafety-related area does not threaten safety-related areas of the plant
- Verification that, for a fire in an area containing radioactive materials, the capability to minimize and control a potential release of radioactivity is not adversely affected
- A determination of the need for structural steel fireproofing
- A determination of the capability of the drainage systems to handle fire protection water flow.

9A.2.6 Fire Protection System Integrity

For fire areas containing safety-related components, the potential for a credible inadvertent actuation of automatic suppression systems is determined and the consequences are evaluated.

The design of automatic and manual suppression systems is reviewed to verify that there is no potential single impairment which incapacitates both the automatic suppression system and the manual suppression system.

9A.2.7 Safe Shutdown Evaluation

This subsection describes the methodology for 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. The criteria and assumptions upon which the evaluation is based are described in subsection 9A.2.7.1. The safety-related features of the plant designed to provide the safe shutdown capability are described in subsection 9A.2.7.2.

As indicated in subsection 9.5.1, this evaluation is based upon satisfying the requirements of BTP CMEB 9.5-1. This basis includes using safe shutdown as defined in section 16.1 in lieu of cold shutdown wherever stated in BTP CMEB 9.5-1. The automatic depressurization system is not used as the method for achieving safe shutdown after a fire and spurious actuation of the automatic depressurization system is avoided The passive residual heat removal heat exchanger is used to remove decay heat for safe shutdown as described in subsection 7.4.1.3.

In addition, the plant has enhanced capability to achieve cold shutdown following a fire as discussed in subsection 9.5.1. This capability is not relied upon in the fire evaluation contained in Appendix 9A.

9A.2.7.1 Criteria and Assumptions

The criteria and assumptions described below are used in performing the safe shutdown evaluation.

Postulated Fire

Only one fire is assumed to occur within the plant at any given time. A postulated fire is assumed to occur in any area (or zone in containment) , whether or not the area contains in-situ combustible materials.

Any damage which would prevent proper operation of equipment and which the fire is capable of causing is assumed to occur immediately. No credit is taken for proper operation of equipment or moving of valves to proper position when not protected from the effects of a postulated fire.

Fire Barriers

As described in subsection 9.5.1.2.1.1, non-combustible fire barriers are provided in accordance with BTP CMEB 9.5-1. The equivalent fire barrier ratings are shown in Figures 9A-1 through 9A-5.

Fire Areas

Fire areas are three dimensional spaces designed to contain a fire that may exist within them. They are separated by fire barriers, fire barrier penetration protection, and other devices, such as those within the heating and air conditioning ducts, that isolate a fire to within the fire area.

A postulated fire does not exceed the boundary of the fire area. For fire areas outside the main control room, remote shutdown workstation, and containment fire areas, the zone of influence is defined as the entire fire area and all equipment in any one fire area is assumed to be rendered inoperable by the fire and re-entry into the fire area for repairs and operator actions is assumed to be impossible. However, no credit is taken for complete fire damage in cases in which complete damage is beneficial and partial damage is not. Chases for

electrical cables, piping or ducts that pass through the fire area but are separated from it by 3-hour fire barriers are outside that fire area.

Zone of Influence

Outside containment, zone of influence is not defined. A fire outside containment is assumed to affect its entire fire area. Inside the containment fire area, the zone of influence is defined as the entire fire zone containing the fire. All equipment in any one fire zone is assumed to be rendered inoperable by the fire unless the fire protection analysis demonstrates otherwise. Class 1E electrical cables that are located in or pass through the fire zone but are separated from it by a 3-hour fire barrier are outside that fire zone.

Fire Zones

Fire zones are three dimensional spaces within fire areas. Fire zones are identified uniquely to indicate that they have fire protection features or attributes different than other fire zones in a given area. In containment, fire zones are identified to establish "zones of influence."

Independence of Affected Fire Areas

Only systems, components, and circuits free of fire damage are credited for achieving safe shutdown for a given fire. Systems, components, and circuits outside the zone of influence are considered free of fire damage if the effects of the fire do not prevent them from performing their required safe shutdown functions.

Event Assumptions

Plant accidents and severe natural phenomena are not assumed to occur concurrently with a postulated fire. Furthermore, a concurrent single active component failure (independent of the fire) is not assumed.

Offsite Power

A loss of offsite power is assumed concurrent with the postulated fire only when the safe shutdown evaluation indicates the fire could initiate the loss of offsite power.

Availability of Nonsafety-Related Systems

Only safety-related components and systems are assumed to be available to perform safe shutdown functions. (This is more stringent than required by BTP CMEB 9.5-1.) For each fire area or zone, the safe shutdown evaluation is valid for the worst case fire in the area or zone and initial use of nonsafety-related equipment. Fire protection and smoke control systems are assumed to function as designed to detect and mitigate the effects of the fire.

If offsite power is available, nonsafety-related systems are assumed to continue to operate if a more conservative evaluation would result. Each safe shutdown evaluation is also valid

considering the possibility that the operator may initiate safe shutdown using available nonsafety-related systems and that, should the fire later cause those systems to fail, safety-related systems may be automatically or manually actuated to continue the safe shutdown process.

Automatic Suppression Features Assessment

An assessment is performed to demonstrate the ability of the AP600 to withstand a fire in fire areas outside containment, and achieve safe shutdown without the need for actuating the passive safety-related decay heat removal system. This evaluates the capability of the AP600 nonsafety-related systems to achieve safe shutdown.

Fire suppression is provided outside containment in locations that would degrade the normal nonsafety-related systems used to achieve safe shutdown following a fire, such that the operation of the passive residual heat removal heat exchanger would be required to provide shutdown decay heat removal. Fire suppression minimizes the challenges to the safety-related decay heat removal systems by enhancing the survivability of nonsafety-related systems used for shutdown decay heat removal.

The safe shutdown process, using nonsafety-related systems, is described in subsection 7.4.1.2. This assessment credits the use of selected safety-related systems other than the passive residual heat removal system to facilitate the transition to cold shutdown conditions. The following safety-related features may be used:

- Insertion of the control rods to provide reactor shutdown,
- Operation of the core makeup tanks to provide boration and reactor coolant system makeup,
- Manual throttling and closing of a first stage automatic depressurization valve to reduce the reactor coolant system pressure to the operating pressure of the normal residual heat removal system,
- Instrumentation used to monitor reactor coolant system conditions.

The use of these safety-related systems do not result in significant plant transients. The reactor coolant system pressure boundary is maintained, and containment pressure and temperature conditions are not affected by use of these safety-related systems.

Process Monitoring

Direct process signals are provided to monitor the shutdown process and to assist in determining proper actions for operation of the shutdown methods.

Manual Operation

One of the required manual actions to achieve plant shutdown for a postulated fire event in a fire area is to scram the reactor.

Manual actions by operations personnel include manipulation of equipment located anywhere outside the affected fire area, if accessibility and staffing levels permit such actions. Entry into the fire area for repairs or operator actions is assumed to be impossible.

Although the typical shutdown sequence does not require manual actions by the operator, fire damage may not be sufficient in many cases to trip the plant. The operator may take appropriate actions to expedite an orderly shutdown. These actions are performed in the main control room. If the fire occurs in the main control room, these actions are performed at the remote shutdown workstation

High-Low Pressure Interfaces

NRC Generic Letter 81-12 (Reference 3) requests the identification and evaluation of the interfaces between the high pressure reactor coolant system and low pressure systems such as the normal residual heat removal system. Typically, these high-low pressure interfaces contain two redundant and independent remotely-operated valves in series. These two valves and their control and power cables may be subject to a single fire. This fire may potentially cause the two valves to open, resulting in a fire-initiated loss-of-coolant accident (LOCA) through the high-low pressure system interface. Electrically controlled valves which provide such an interface are identified. These interface valves are considered to be required for safe shutdown.

Associated Circuits

The AP600 was designed with separation of safety-related circuits and equipment as a primary objective. As a result of the concern for separation from the beginning of the design, the use of associated circuits has been minimized.

The safe shutdown equipment and systems for each fire area are isolated from associated circuits in the fire area so that hot shorts, open circuits, or shorts to ground in the associated circuits will not prevent operation of the safe shutdown equipment. No postulated fire involving associated circuits will prevent safe shutdown.

Associated circuits comply with Regulatory Guide 1.75 position 4 related to associated circuits and IEEE 384-1981 (Section 5.5.2).

Spurious Actuation of Equipment

Fire-caused damage is assumed to be capable of resulting in the following types of circuit faults: hot shorts, open circuits, and shorts to ground. Spurious actuation of components caused by these circuit faults are evaluated. Components are assumed to be energized or de-

energized by one or more of the above circuit faults. For example, air operated and solenoid operated valves are assumed to fail open or closed; pumps are assumed to fail running or not running; electrical distribution breakers could fail open or closed. For three-phase ac circuits, the probability of getting a hot short on all three phases in the proper sequence to cause spurious operation of a motor is considered sufficiently low as to not require evaluation, except for cases involving high-low pressure interfaces. For ungrounded dc circuits, if spurious operation could only occur as a result of two ungrounded hot shorts of the proper polarity, then no further evaluation is necessary, except for any cases involving a high-low pressure interface. Therefore, spurious operation of ac or dc motor operated valves as a result of power cable hot shorts is not assumed, except for cases involving a high-low pressure interface.

It is assumed that a fire results in the loss of all automatic function (signals and logic) from the circuits located in the fire area, in conjunction with one worst case spurious actuation or signal resulting from the fire.

Spurious actuation of the redundant valves in any one high-low pressure interface line are postulated if the circuits for those valves are located in the fire area.

Most control room controls use soft-controls which communicate over multiplexed data channels. Fire-induced spurious actuation from these multiplexed soft controls is not assumed.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation. In the event of a fire in the main control room, control may be transferred to the remote shutdown workstation, depending on the extent of the fire. For a small fire which can be quickly extinguished, control is maintained in the main control room, and the potential for damage or spurious signals is limited. For larger postulated fires, the main control room is evacuated and control is transferred to the remote shutdown workstation. Once control is transferred, the dedicated switches in the main control room are disabled by a transfer switch.

Spurious actuation of squib valves is prevented by the use of a squib valve controller circuit which requires multiple hot shorts for actuation, physical separation of potential hot short locations, and provisions for operator action to remove power from the fire zone. No postulated fire can spread to the hot short locations before the operator can remove power from the fire zone.

Automatic depressurization system stages 1, 2, and 3 consist of parallel paths, each path having two motor-operated valves in series. Spurious stage 1, 2, or 3 actuation is prevented by the use of physical separation of control circuits for the two series valves and provisions for operator action to remove power from the fire zone. No postulated fire can spread to the hot short locations before the operator can remove power from the fire zone.

Multiple High-Impedance Faults

It is postulated that fire-induced circuit faults may occur with high enough impedance to prevent tripping of the affected circuit breaker. If multiple high-impedance faults occur simultaneously, affecting branch circuits fed from a common power source, there is a potential for the sum of the currents from these multiple high-impedance faults to be high enough to trip the main circuit breaker feeding the bus. Once the main breaker trips, components powered from the bus lose their power source. Multiple high-impedance faults are considered in the evaluation of safe shutdown capability.

Plant Personnel

The plant operating staff available for manual actions to achieve safe shutdown, during and after the fire, is limited to the minimum number of posted operator positions minus those assigned to the fire brigade.

Equipment Environment

The environment of the equipment required to function for shutdown should not become so severe as to prevent the equipment from functioning. If the environment does exceed the conditions for which the equipment is capable of functioning, it is assumed that the equipment no longer is capable of performing its intended function.

Emergency Lighting

In situations where the safe shutdown evaluation identifies the need for manual operator action in response to a fire, the estimate of the time required for this action considers the availability of emergency lighting in locations where these actions are performed and along the access and egress routes thereto.

Emergency Communications

The safe shutdown evaluations consider the need for and availability of emergency communications within the plant following a fire.

9A.2.7.2 Safe Shutdown Methodology

The safe shutdown process, the systems used, and the functional requirements for safe shutdown are described in Section 7.4. As noted above, only safety-related equipment is utilized for safe shutdown. A description of this equipment is provided in the applicable sections.

Table 9A-2 lists the safety-related components used for safe shutdown and their associated electrical divisions. Each fire area is reviewed to identify the potential scope of fire damage and to verify that the capability to achieve and maintain safe shutdown is preserved.

The shutdown process uses controls located in the main control room. In the event of a fire in the main control room, controls located at the remote shutdown workstation are used.

9A.3 Fire Protection Analysis Results

The fire protection analysis is conducted for the following primary plant structures, which are shown on the site plot plan, Figure 1.2-2:

- Nuclear island
- Turbine building
- Annex building
- Radwaste building
- Diesel generator building

Table 9A-3 identifies the type and quantity of combustible materials in each fire area of the primary plant structures and indicates the equivalent fire duration. Fire detection and suppression features are also summarized in Table 9A-3.

Openings through fire barriers for pipe, conduit, and cable trays are sealed or closed to provide a fire resistance rating at least equal to that of the fire barrier itself. Penetration designs conform to the guidelines of BTP CMEB 9.5-1. Fire barrier penetration openings for ventilation are protected by fire dampers having a rating equivalent to that of the fire barrier. For 1-hour rated fire barriers, fire dampers are not required since the duct itself is an adequate barrier. The protection of door openings conforms to the guidelines of BTP CMEB 9.5-1.

Structural steel fireproofing is provided as described in subsection 9.5.1.2.1.1.

The fire detection and suppression capabilities for each fire area are selected based on the criteria described in subsection 9A.2.1 and are consistent with the importance of the equipment in the fire area to plant availability. Portable fire extinguishers are accessible throughout the plant.

The presence of radioactive systems is noted in the description of each fire area. Potential releases of radioactivity as a consequence of a fire in these areas is mitigated by measures such as:

- Control and confinement of sources of radioactivity per ALARA principles
- Use of fire dampers to isolate ventilation ducts serving the fire area
- Use of fire suppression systems to quickly suppress the fire
- Provision of curbed floor areas and sizing of sumps to collect and retain fire protection water within the affected fire area or building

The safe shutdown evaluation of spurious equipment actuation as a result of a fire is addressed in subsection 9A.3.7. The protection of accident mitigation equipment (as opposed to safe shutdown equipment) is also addressed in subsection 9A.3.7.

9A.3.1 Nuclear Island

Figure 9A-1 identifies fire areas and fire zones within the nuclear island and illustrates the fire resistance of the fire area boundaries. The nuclear island is comprised of the following primary areas:

- Containment/shield building
- Auxiliary building - nonradiologically controlled areas (non-RCA)
- Auxiliary building - radiologically controlled areas (RCA)

The containment/shield building comprises a single fire area for the purposes of this analysis.

The auxiliary building is divided into the radiologically controlled areas and nonradiologically controlled areas which are physically separated by structural walls and floor slabs. These structural barriers are designed to prevent fire propagation across the boundary between these areas.

The auxiliary building is further subdivided into fire areas separated by fire-rated structural barriers. These barriers provide physical separation between the four Class 1E electrical divisions and between these divisions and nonsafety-related areas.

Floor drains accommodate water flow from fire protection systems without a significant accumulation of water in a fire area. Flooding of components required for safe shutdown is also precluded by the fact that only a limited volume of fire water can be discharged from the fire protection system in fire areas containing those components. This subject is further discussed in Section 3.4.

Drain systems in the radiological controlled area of the nuclear island Annex Building and Radwaste Building drain to fire zones in the nuclear island where there are no safe shutdown components. Fires in these zones due to potential combustible liquid transport by the drains do not affect safe shutdown.

There is no drain path which could drain combustible liquids to the fire areas in the electrical portion of the nuclear island.

For mechanical equipment fire areas in the nonradioactive auxiliary building, fires caused by potential transport of combustible liquid through the drain system are included in the fire hazards analysis.

9A.3.1.1 Containment/Shield Building

This building comprises one fire area - 1000 AF 01. This fire area is separated into fire zones and includes the spaces inside containment as well as the valve room for the passive containment cooling system (PCS), the middle annulus, the upper annulus, and the operating deck staging area outside containment.

The fire protection and the safe shutdown analysis for the containment identifies the location and the separation of the safe shutdown components located inside the containment. The safe shutdown components located inside the containment are primarily components of the passive core cooling system (PXS), the reactor coolant system (RCS), the steam generator system (SGS), and containment isolation.

For this evaluation, the containment shield building is divided into the following fire zones. These zones are based on the establishment of boundaries (structures or distance) that inhibit fire propagation from zone to zone. Complete fire barrier separation cannot be provided inside containment because of the need to maintain the free exchange of gases for purposes such as passive containment cooling. The location of safety-related equipment and the routing of Class 1E electrical cable in each fire zone enhances the separation of redundant safe shutdown components.

Fire Zone

- 1100 AF 11105 Reactor cavity
- 1100 AF 11204 Vertical access and reactor coolant drain tank room
- 1100 AF 11206 Accumulator room A
- 1100 AF 11207 Accumulator room B
- 1100 AF 11208 Normal residual heat removal valve room
- 1100 AF 11209 Chemical and volume control system room
- 1100 AF 11300A Maintenance floor (southeast quadrant access)
- 1100 AF 11300B Maintenance floor (north half)
- 1100 AF 11301 Steam generator compartment 1
- 1100 AF 11302 Steam generator compartment 2
- 1100 AF 11303 Pressurizer compartment
- 1100 AF 11303A Automatic depressurization system lower valve area

- 1100 AF 11303B Automatic depressurization system upper valve area
- 1100 AF 11500 Operating deck
- 1200 AF 12341 Middle annulus
- 1200 AF 12541 Upper annulus
- 1250 AF 12555 Main control room emergency habitability system air storage/operating deck staging area
- 1270 AF 12701 Passive containment cooling system valve room

The equipment and components in this fire area contain radioactive material with the exception of passive containment cooling system and main control room emergency habitability system components.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers (during reactor shutdown for maintenance)
- Water spray systems in specific locations

Smoke Control Features

Containment air filtration system (VFS) containment isolation valves, if open to the containment atmosphere, are closed by operator action to control the spread of fire and smoke. After the fire, smoke is removed from the fire area by portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by operation of a fire detector, which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of electrical cable insulation. Concentrations of combustibles are described in the evaluation of each fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

Inadvertent operation of an automatic suppression system is prevented by the normally closed containment isolation valve in the water supply line Operator action is required to open this valve and admit water to the system.

The consequences of a break in a fire protection line during normal plant operation are limited because the containment isolation valve for the fire water supply line to the containment hose stations is normally closed and are bounded by other flooding events inside containment. See Section 3.4 for further discussion of flooding events inside containment.

9A.3.1.1.1 Fire Zone 1100 AF 11105

This fire zone is comprised of the following room(s):

Room No.	
11105	Reactor vessel cavity
11205	Reactor vessel nozzle area

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation associated with the instrumentation in this zone. These cables and instruments are located in the lower part of the fire zone. This fire zone is separated from adjacent fire zones by the thick concrete walls and floor of the reactor vessel cavity, except at the top of the fire zone, where there are penetrations associated with reactor coolant system piping and where the annular space around the reactor vessel flange is closed by the cavity seal ring. There is a doorway to the reactor coolant drain tank room (fire zone 1100 AF 11204) that is closed and a ventilation duct that provides cool air from the containment recirculation cooling system.

Smoke and hot gases from a fire accumulate within this fire zone and gradually migrate via reactor coolant system piping penetrations to adjacent fire zones 1100 AF 11204, 1100 AF 11206, 1100 AF 11301, and 1100 AF 11302. The smoke and hot gases are expected to rise due to their buoyancy and be replaced by air coming from the containment recirculation cooling system. They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 identifies the safe shutdown components located in this fire zone. They are the four excore flux instrumentation channels, one for each division. Although it is unlikely that all of the components would be damaged, a fire in this fire zone is conservatively assumed to disable all of the above instrumentation. The source, intermediate and power range excore detectors are not required for automatic safe shutdown initiation or maintenance during or following a fire in this fire zone. These detectors are used to monitor and verify that the reactor is shut down. The redundant instrumentation used for monitoring core reactivity indirectly are the core exit thermocouples located in fire zone 1100 AF 11500. These thermocouples are mounted within the reactor and integrated head package and have exposed cable high in the integrated head package in fire zone 1100 AF 11500. The thermocouple cables will be unaffected by smoke from a fire in the reactor cavity. In addition, reactor subcriticality after shutdown is maintained by an adequate boron concentration in the reactor coolant. This concentration is establish by the automatic actions taken upon reactor trip such as, isolation of non-borated makeup sources and opening of the flow paths to sources of borated water. Boron concentrations can be checked periodically to determine if adequate levels exist.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.2 Fire Zone 1100 AF 11204

This fire zone is comprised of the following room(s):

Room No.	
11104	Reactor coolant drain tank room
11204	Vertical access area

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation associated with the instrumentation in this zone. The cable raceways are located against one structural concrete wall of the fire zone and in the reactor coolant drain tank room at the bottom of the fire zone. The floor of this fire zone is solid concrete at the bottom of containment. Thick concrete walls separate this fire zone from adjacent fire zones, except for access passageways to and from the steam generator compartments (fire zones 1100 AF 11301/11302). Steel grating and the vertical access stairway form the boundary between this fire zone and the maintenance floor above (fire zone 1100 AF 11300B). There is a doorway between the reactor coolant drain tank room and the bottom of the reactor cavity (fire zone 1100 AF 11105) that is closed.

Smoke and hot gases from a fire in this fire zone rise through the grating at the top of the vertical access area and spread through the large maintenance floor air space (fire zones 1100 AF 11300A and B). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components contained in this fire zone. Although it is unlikely that all of the components would be damaged, a fire in this fire zone is conservatively assumed to disable the passive core cooling system containment floodup level and reactor coolant system hot leg instrumentation. The redundant reactor coolant system hot leg instrumentation located in 1100 AF 11206 and passive core cooling system floodup level instrumentation located in 1100 AF 11105 are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.3 Fire Zone 1100 AF 11206

This fire zone is comprised of the following room(s):

Room No.	
11206	Passive core cooling system valve/accumulator room A

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation related to the valves located in this fire zone. There are no significant concentrations of combustible materials. This fire zone is physically separated from other fire zones by walls, floor and ceiling with minimum concrete thicknesses of more than one foot, except for an access hatch and a small blockout in ceiling. The blockout is beneath core makeup tank A, located on the maintenance floor (fire zone 1100 AF 11300A). The physical arrangement of the small blockout and the large tank and its support results in a tortuous path for fire propagation between these two fire zones.

Smoke and hot gases from a fire in this fire zone rise through the blockout and access hatch and spread through the large maintenance floor air space (fire zones 1100 AF 11300A and B). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in

Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components contained in this fire zone. A fire in this fire zone is conservatively assumed to disable control of all of the valves and instrumentation in this fire zone. The passive core cooling system safe shutdown components located in fire zones 1100 AF 11207 and 1100 AF 11300B are redundant to those in this fire zone, and are sufficient to perform applicable functions to achieve and maintain safe shutdown. The spent fuel pool cooling system containment isolation valve located outside the containment fire area is redundant to the containment isolation valve inside containment in this fire zone and is sufficient to maintain containment integrity.

Redundant reactor coolant hot leg instruments in fire zone 1100 AF 11204 provide the operator with information required to take corrective action during reduced inventory operation.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.4 Fire Zone 1100 AF 11207

This fire zone is comprised of the following room(s):

Room No.	
11207	Passive core cooling system valve/accumulator room B

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation related to the valves located in this fire zone. There are no significant concentrations of combustible materials. This fire zone is physically separated from other fire zones by walls, floor and ceiling with concrete thicknesses of more than one foot, except for a closed access hatch and a small blockout in the ceiling, and a passageway to the adjacent RNS valve room (fire zone 1100 AF 11208). The large accumulator vessel stands in front of this passageway and provides a barrier to fire propagation between the two fire zones. The ceiling blockout is beneath core makeup tank B, located on the maintenance floor (fire zone 1100 AF 11300B). The physical arrangement of the small blockout and the large tank and its support results in a tortuous path for fire propagation between these two fire zones. A fire is not expected to propagate to fire zone 1100 AF 11208. If it did, however, fire zone 1100 AF 11206 provides redundant safe shutdown equipment.

Smoke and hot gases from a fire in this fire zone rise through the ceiling blockout and spread through the large maintenance floor air space (fire zones 1100 AF 11300A and B). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components contained in this fire zone. Although it is unlikely that more than one valve would be damaged, a fire in this fire zone is conservatively assumed to disable control of all of the valves in this fire zone. The passive core cooling system safe shutdown components located in fire zone 1100 AF 11206 and 1100 AF 11300A are redundant to those in this fire zone, and are sufficient to perform applicable functions to achieve and maintain safe shutdown.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.5 Fire Zone 1100 AF 11208

This fire zone is comprised of the following room(s):

Room No.	
11208	Normal residual heat removal valve room

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation associated with the valves in this zone. There are no significant concentrations of combustible materials. This small fire zone is physically separated from other fire zones by walls, floor and ceiling with concrete thicknesses of more than one foot, except for a passageway to the adjacent PXS valve/accumulator room (fire zone 1100 AF 11207). The large accumulator vessel stands in front of this passageway and provides a barrier to fire propagation between the two fire zones. If fire were to propagate to fire zone 1100 AF 11207, however, fire zone 1100 AF 11206 provides redundant safe shutdown equipment.

Smoke and hot gases from a fire in this fire zone migrate into the adjacent PXS valve/accumulator room (fire zone 1100 AF 11207). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond

this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this zone. Although it is unlikely that more than one valve would be damaged, a fire in this fire zone is conservatively assumed to disable control of all of the valves in this fire zone. During normal power operation, power to the hot leg suction isolation valves is locked out to protect the high-low pressure interface between the reactor coolant system and the normal residual heat removal such that they will be unaffected by the fire in maintaining the reactor coolant pressure boundary. The normal residual heat removal containment isolation valve, located outside the containment fire area, is redundant to the four containment isolation valves in this zone and is sufficient to maintain containment and reactor coolant pressure boundary integrity.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.6 Fire Zone 1100 AF 11209

This fire zone is comprised of the following room(s):

Room No.	
11209	Chemical and volume control system room

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire in this fire zone does not propagate to the extent that it damages safe shutdown components outside this fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation associated with the valves and instrumentation in this zone. There are no significant concentrations of combustible materials. This fire zone is physically separated from other fire zones by walls, floor and ceiling with concrete thicknesses of more than one foot, except for an access stairway and a small hatch from the maintenance floor above (fire zone 1100 AF 11300B).

Smoke and hot gases from a fire in this fire zone rise through the access hatch and spread through the large maintenance floor air space (fire zones 1100 AF 11300A and B). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

There are no safe shutdown components in this fire zone. No further evaluation is required.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.7 Fire Zone 1100 AF 11300A

This fire zone is comprised of the following room(s):

Room No.	
11300	Maintenance floor (southern part)
11400	Maintenance floor mezzanine (southern part)

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation. There are small concentrations of cables at the top of the zone and at several separate locations along the walls. This fire zone is physically separated from fire zones below by the maintenance floor, with a concrete thickness of more than one foot, except for openings described in the evaluation of fire zone 1100 AF 11206. This fire zone is separated from the operating deck above (fire zone 1100 AF 11500) by a ceiling with a concrete thickness of more than one foot, except for the hatches near the containment maintenance hatch, which are covered with steel grating. The walls of this fire zone are the steel containment vessel, the steel wall of the in-containment refueling water storage tank, or walls with a concrete thickness of more than one foot, except for two designated boundaries with the adjacent portion of the maintenance floor (fire zone 1100 AF 11300B). These boundaries are approximately at the centerline of containment, one located in the narrow annular space behind the in-containment refueling water storage tank and the other near the personnel hatch. The steam generator compartments, the refueling cavity, and the in-containment refueling water storage tank provide barriers between the two large maintenance floor fire zones. Safe shutdown components fire zone 1100 AF 11300A are separated from redundant safe shutdown components in fire zone 1100 AF 11300B by these barriers or by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, safety-related cables in both of these fire zones are routed in closed cable trays or conduit, minimizing the likelihood that a fire originating in a raceway of one division can propagate to a raceway of another division. Furthermore, open-nozzle water spray suppression systems are provided for nonsafety-related electrical cables routed in open cable trays in fire zone 1100 AF 11300B (there are no such cable trays in fire zone 1100 AF 11300A), providing additional assurance that a fire will not propagate between these fire zones.

Most of the smoke and hot gases from a fire in this fire zone rises through the large steel grating covered hatches between the containment maintenance hatch and the steam generator 2

compartment into the large air space in the upper portion of containment(fire zone 1100 AF 11500). Small quantities of smoke, especially that which has already cooled, may migrate horizontally into the adjacent portion of the maintenance floor (fire zone 1100 AF 11300B). The smoke and gases are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Temperature effects on the electrical cables routed high above the operating deck and passing over the large steel-grating covered hatches are not expected to be significant, but are not a concern as these are the same cables that continue into this fire zone and are assumed to be lost. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this fire zone. The passive core cooling system has two IRWST gutter isolation valves located in this zone. These valves close to divert condensate from the passive containment cooling system (on the inside of the containment shell) into the IRWST. This condensate maintains the passive residual heat removal heat exchanger heat sink for the long term. These valves are fail closed air operated valves. They are located at least 20 feet apart horizontally and a fire detector is located close to each valve. Given the low combustible materials in this fire zone, a fire will only affect one of the valves initially. The fire detector located near the valve that is initially affected will alert the operators so that they can actuate the unaffected valve before the fire can prevent operation of the second valve. These valves are qualified to operate with elevated temperatures of 340°F.

Although the consequences of a fire are expected to be very limited, a fire in this fire zone is conservatively assumed to eventually disable all of the safe shutdown components in this fire zone.

The redundant passive core cooling system, passive containment cooling system and steam generator system safe shutdown components (listed in Table 9A-2), located in fire zones 1100 AF 11207 and 1100 AF 11300B, are sufficient to perform applicable functions to achieve and maintain safe shutdown.

The primary sampling system and containment air filtration system containment isolation valves, located outside the containment fire area, are redundant to the containment isolation valves in this fire zone and are sufficient to maintain containment integrity.

The redundant reactor coolant system cold leg flow instrumentation located in fire zones 1100 AF 11300B and 1100 AF 11301 is sufficient to perform applicable functions to achieve and maintain safe shutdown.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.8 Fire Zone 1100 AF 11300B

This fire zone is comprised of the following room(s):

Room No.	
11300	Maintenance floor (northern part)
11400	Maintenance floor mezzanine (northern part)

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation in the termination boxes and cable trays. There is a concentration of cables on the south side of the zone near the refueling cavity and small concentrations of cables at the top of the zone and at several locations along the walls. This fire zone is physically separated from fire zones below by the maintenance floor, which has a concrete thickness of more than one foot, except for access stairways and hatches. This fire zone is separated from the operating deck above (fire zone 1100 AF 11500) by a ceiling that has a concrete thickness of more than one foot, except for several openings for an access stairway, elevator, hatches and blockouts. The walls of this fire zone are the steel containment vessel, the steel wall of the in-containment refueling water storage tank, the noncombustible enclosure for the division B and D penetrations and raceways (fire zone 1100 AF 11500), or walls with a concrete thickness of more than one foot, except for the designated boundaries with the adjacent portion of the maintenance floor, described in the evaluation of fire zone 1100 AF 11300A. There is a doorway to lower pressurizer compartment (fire zone 1100 AF 11303) that is closed.

Safety-related cables are routed in closed cable trays or conduit. For open cable trays, which represent the only significant in-situ combustibles in this fire zone, open-nozzle water spray suppression systems are provided. These systems are automatic except that, to preclude inadvertent actuation, operator action is required to open the outboard containment isolation valve. These suppression systems rapidly extinguish a fire in these cable trays and prevent fire propagation to adjacent fire zones.

The use of water spray systems for the open cable trays in this fire zone limits smoke and heat generation. Small quantities of smoke and hot gases from a fire in this fire zone rise through openings in the ceiling, or migrate via the large steel grating covered hatches between the containment maintenance hatch and the steam generator 2 compartment in the adjacent portions of the maintenance floor (fire zone 1100 AF 11300A), into the large air space in the upper portion of containment. They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this fire zone. The division A and C electrical penetrations listed in Table 9A-2 are conservatively assumed to be disabled as a

result of a fire in this fire zone. The B and D electrical penetrations and their cable trays routed from the electrical penetrations up to the operating deck are functionally part of fire zone 1100 AF 11500. These two divisions are sufficient to perform applicable functions to achieve and maintain safe shutdown.

These division B and D electrical penetrations and their associated raceways are protected from a fire in this fire zone by a combination of barriers, distance and fire suppression systems. Noncombustible barriers of steel or steel-composite construction form vertical shaft(s) from the floor up to the operating deck, surrounding the division B and D penetrations and the associated cable trays. The significant combustible materials in this fire zone are the nonsafety-related cables routed in open cable trays. These cable trays are located at least 20 feet from the division B and D penetrations and their associated raceways, and they are protected by water spray suppression systems.

The passive core cooling system has two passive residual heat removal heat exchanger control valves which are located in this fire area. These valves are fail-open air-operated valves. They are located within several feet of each other. The valves are separated from each other by a noncombustible barrier of steel or steel composite materials. One of the valves is located close to the IRWST wall. This valve is assigned to division B. The cables for this valve are enclosed in conduit or enclosed raceways and routed up through the operating deck. Separate fire detectors are provided near each valve. The only combustibles in the area are the valves themselves and their cables. A fire that would affect these valves would be expected to start at one of the valves. The barrier protects the other valve from the initial effects of the fire. The fire detectors would alert the operators and allow them to actuate the other valve before the fire could spread and damage it. These valves are qualified to operate with elevated temperatures of 340°F.

Reactor coolant system, and steam generator system instrumentation located in this fire zone are conservatively assumed to be disabled as a result of a fire in this fire zone. The redundant passive core cooling system instrumentation, and the passive containment cooling system, reactor coolant system pressurizer and steam generator system instrumentation located in fire zones 1100 AF 11206, 1100 AF 11300A, 1100 AF 11301 and 1100 AF 11500 are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Reactor coolant system temperature instrumentation located in fire zones 1000 AF 11301 and 1000 AF 11302 are sufficient to provide the monitoring function accomplished by the passive residual heat removal heat exchanger flow instrumentation located in this fire zone.

The reactor coolant system to chemical and volume control system stop valves located in this fire zone are conservatively assumed to be disabled as a result of a fire in this fire zone. The chemical and volume control system containment isolation valves located outside of this fire zone provide backup isolation capability to maintain the reactor coolant pressure boundary.

The redundant reactor coolant system cold leg flow instrumentation located in fire zones 1100 AF 11300A and 1100 AF 11301 is sufficient to perform applicable functions to achieve and maintain safe shutdown.

The chemical and volume control system and the liquid radwaste system containment isolation valves located outside the containment fire area are redundant to the containment isolation valves inside containment in this fire zone and are sufficient to perform the applicable functions to maintain containment integrity.

The redundant steam line pressure instruments located in fire area 1201 AF 05 for steam generator 1 and in fire area 1201 AF 06 for steam generator 2 are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The redundant core exit thermocouples located in fire zone 1100 AF 11500 are sufficient to provide the applicable safe shutdown monitoring function.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.9 Fire Zone 1100 AF 11301

This fire zone is comprised of the following room(s):

Room No.	
11201	Steam generator compartment 1
11301	Steam generator 1 lower manway area
11401	Steam generator 1 tubesheet area
11501	Steam generator 1 operating deck
11601	Steam generator 1 feedwater nozzle area
11701	Steam generator 1 upper manway area

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation related to the reactor coolant pump motors and other components in this fire zone. These cables are generally located at separate locations near the perimeter of the fire zone and there are no significant cable concentrations. This fire zone is separated from other fire zones (except fire zone 1100 AF 11500) by structural barriers or partial barriers. The bottom of this fire zone is the solid concrete floor of the steam generator compartment. Up to an elevation more than 12 feet above the operating deck the fire zone is enclosed by walls with a concrete thickness of more than one foot, except for access passageways to and from the pressurizer compartment (fire zone 1100 AF 11303) and the adjoining portion of the vertical access area (fire zone 1100 AF 11204), and the floor grating interface between the vertical access area and the steam generator 1 access room (fire zone 1100 AF 11303).

Above the top of these concrete walls, the fire zone is open to the large air space above the operating deck (fire zone 1100 AF 11500). A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Depending on fire location, smoke and hot gases from a fire in this fire zone rise through the annular space surrounding the steam generator or through the pressurizer compartment (fire zone 1100 AF 11303) and into the air space in the upper portion of the containment (fire zone 1100 AF 11500). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this fire zone. Although the consequences of a fire are expected to be very limited, a fire in this fire zone is conservatively assumed to disable all of the safe shutdown components in this fire zone.

The redundant reactor coolant system hot leg/cold leg instrumentation located in fire zone 1100 AF 11302, and redundant reactor coolant system pressurizer and steam generator system steam generator level instrumentation located in 1100 AF 11300B are sufficient to perform applicable functions to achieve and maintain safe shutdown.

The four divisions of reactor coolant system/reactor coolant pump bearing water temperature instrumentation are assumed to be disabled and would not be available to detect and provide a trip signal on a loss of component cooling water to the pump. If the fire in this fire zone does not disable the pump, the component cooling water flow to the pump will be unaffected by the fire and will continue to provide cooling water to the pump bearings until the pump is tripped by other means.

The reactor coolant system reactor coolant pump shaft speed instruments are conservatively assumed to be disabled. The redundant reactor coolant system cold leg flow instrumentation located in fire zones 1100 AF 11300A and 1100 AF 11300B is sufficient to perform applicable functions to achieve and maintain safe shutdown.

The four reactor coolant system reactor head vent valves are assumed to be disabled. If power is lost while in the closed position, the head vent valves will maintain reactor coolant pressure boundary integrity. Refer to subsection 9A.3.7.1.1 for a discussion on spurious actuation of reactor coolant system reactor head vent valves.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.10 Fire Zone 1100 AF 11302

This fire zone is comprised of the following room(s):

Room No.	
11202	Steam generator compartment 2
11302	Steam generator 2 lower manway area
11402	Steam generator 2 tubesheet area
11502	Steam generator 2 operating deck
11602	Steam generator 2 feedwater nozzle area
11702	Steam generator 2 upper manway area

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of cable insulation related to the reactor coolant pump motors and other components in this fire zone. These cables are generally located at separate locations near the perimeter of the fire zone and there are no significant cable concentrations. This fire zone is separated from other fire zones (except fire zone 1100 AF 11500) by structural barriers or partial barriers. The bottom of this fire zone is the solid concrete floor of the steam generator compartment. Up to an elevation of more than 12 feet above the operating deck the fire zone is enclosed by walls with a concrete thickness of more than one foot, except for access passageways from the vertical access area (fire zone 1100 AF 11204) and the maintenance floor (fire zone 1100 AF 11300B). Above the top of these concrete walls, the fire zone is open to the large air space above the operating deck (fire zone 1100 AF 11500). A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Smoke and hot gases from a fire in this fire zone rise through the annular space surrounding the steam generator into the air space in the upper portion of the containment (fire zone 1100 AF 11500). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this fire zone. Although the consequences of a fire are expected to be very limited, a fire in this fire zone is conservatively assumed to disable all of the safe shutdown components in this fire zone.

The redundant reactor coolant system hot leg/cold leg instrumentation located in fire zone 1100 AF 11301 are sufficient to perform applicable functions to achieve and maintain safe shutdown.

The four divisions of reactor coolant system/reactor coolant pump bearing water temperature instrumentation are assumed to be disabled and would not be available to detect and provide

a trip signal on a loss of component cooling water to the pump. If the fire in this fire zone does not disable the pump, the component cooling water flow to the pump will be unaffected by the fire and will continue to provide cooling water to the pump bearings until the pump is tripped by other means.

The reactor coolant system reactor coolant pump shaft speed instruments are conservatively assumed to be disabled. The redundant reactor coolant system flow instrumentation located in fire zones 1100 AF 11300A and 1100 AF 11300B are sufficient to perform applicable functions to achieve and maintain safe shutdown.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.11 Fire Zone 1100 AF 11303

This fire zone is comprised of the following room(s):

Room No.	
11303	Lower pressurizer compartment
11304	Steam generator 1 access room
11503	Upper pressurizer compartment

Safe Shutdown Evaluation

There are no safe shutdown components located in this fire zone.

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of the cable insulation for the pressurizer heaters. There are no significant cable concentrations. This fire zone is separated from other fire zones (except fire zone 1100 AF 11500) by structural barriers or partial barriers. The bottom of this fire zone is solid concrete except for floor grating in the steam generator 1 access room (above fire zone 1100 AF 11301). Up to an elevation more than 22 feet above the operating deck this fire zone is enclosed by walls with a minimum concrete thickness of more than one foot, except for access passageways to and from the steam generator 1 compartment (fire zone 1100 AF 11301) and a closed doorway from the maintenance floor (fire zone 1100 AF 11300B). Several feet above the top of these walls, a steel platform separates the top this fire zone from fire zone 1100 AF 11303A directly above. Between the top of the walls and this platform the sides of this fire zone are open to the large air space above the operating deck (fire zone 1100 AF 11500). A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Smoke and hot gases from a fire in this fire zone rise through the annular space surrounding the pressurizer into the air space in the upper portion of the containment (fire zone 1100 AF 11500). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.12 Fire Zone 1100 AF 11303A

This fire zone is comprised of the following room(s):

Room No.	
11603	Lower automatic depressurization system valve area

Safe Shutdown Evaluation

There are no safe shutdown components located in this fire zone that are required to operate as a result of a fire.

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of the cable insulation for the automatic depressurization system valves. There are no significant cable concentrations. This fire zone is separated from other fire zones (except fire zone 1100 AF 11500) by structural barriers. The floor is a thick structural steel plate that provides separation from the pressurizer compartment (fire zone 1100 AF 11303). The ceiling is a thick structural steel plate that provides separation from the upper automatic depressurization system valve area (fire zone 1100 AF 11303B). The sides of this fire zone are open to the large containment air space above the operating deck (fire zone 1100 AF 11500). A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Smoke and hot gases from a fire in this fire zone are deflected horizontally by the ceiling into the surrounding air space in the upper portion of the containment (fire zone 1100 AF 11500). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.13 Fire Zone 1100 AF 11303B

This fire zone is comprised of the following room(s):

Room No.	
11703	Upper automatic depressurization system valve area

Safe Shutdown Evaluation

There are no safe shutdown components located in this fire zone that are required to operate as a result of a fire.

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is very low, consisting primarily of the cable insulation for the automatic depressurization system valves. There are no significant cable concentrations. The floor of this fire zone is a thick structural steel plate that provides separation from the lower automatic depressurization system valve area (fire zone 1100 AF 11303A). The top and sides of this fire zone are open to the large containment air space above the operating deck (fire zone 1100 AF 11500), which has no nearby combustibles. A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Smoke and hot gases from a fire in this fire zone rise into the large air space in the upper portion of containment (fire zone 1100 AF 11500). They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.14 Fire Zone 1100 AF 11500

This fire zone is comprised of the following room(s):

Room No.	
11500	Operating deck
11504	Refueling cavity

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separates this zone from other fire zones are such that a fire which damages safe shutdown components in this zone does not propagate to the extent that it damages redundant safe shutdown components in another fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation. There are small concentrations of cables in horizontal raceways around the circumference of this fire zone high above the operating deck, in vertical raceways at separate locations near the boundaries of this fire zone, and at the center of the fire zone in the vicinity of the reactor vessel integrated head package. This fire zone encompasses much of the containment. It is physically separated from fire zones below by the operating deck or the bottom of the refueling cavity, which have a concrete thicknesses of more than one foot, except for penetrations described in the evaluations of fire zones below this fire zone. There also is a few inch clearance annulus around the entire operating deck. The walls of this fire zone are the steel containment vessel or walls with a concrete thickness of more than one foot, with exceptions as described earlier for fire zones 1100 AF 11301, 1100 AF 11302, 1100 AF 11303, and 1100 AF 11303A & B. The boundary of this fire zone also includes the 3-hour fire barriers that protect the division B and D containment penetrations on elevation 107'-2" and the associated raceways from these penetrations up to the operating deck. A fire does not propagate beyond this fire zone to the extent that it damages redundant safe shutdown components in another fire zone.

Smoke and hot gases from a fire in this fire zone rise into the large air space above the operating deck. They are cooled by mixing with the air and by contact with structural surfaces and thus do not cause propagation of the fire beyond this fire zone. Safe shutdown components listed in Table 9A-2 for the adjacent fire zones are not susceptible to damage by the diluted and cooled smoke and gases from this fire zone.

Table 9A-2 lists the safe shutdown components located in this fire zone. Although the consequences of a fire are expected to be very limited, a fire in this fire zone is conservatively assumed to disable all of the safe shutdown components in this fire zone.

Control of all division B and D components in the containment is conservatively assumed to be disabled. The primary division A and C electrical cables that provide power supply to safe shutdown components in containment are located in 1100 AF 11300B and are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The in-core instrumentation system core exit temperature instrument termination cabinets located in this fire zone are conservatively assumed to be disabled as a result of a fire in this fire zone. The reactor coolant system hot leg temperature (wide range) instrumentation located in fire zones 1100 AF 11301 and 1100 AF 11302 provide a diverse means of observing temperature conditions in the reactor vessel to support the safe shutdown process.

The reactor coolant system narrow range level instrumentation is conservatively assumed to be disabled. The redundant reactor coolant system narrow range level instrumentation located in fire zone 1100 AF 11300B is sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The central chilled water system containment isolation valve located outside the containment fire area is redundant to the containment isolation valve inside containment in this fire zone and is sufficient to perform the applicable functions to maintain containment integrity.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.15 Fire Zone 1200 AF 12341

This fire zone is comprised of the following room(s):

Room No.	
12341	Middle annulus

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire does not propagate to or from this fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation in the non-Class 1E electrical penetration assemblies, located in the northeast quadrant of the fire zone. The Class 1E electrical penetration assemblies also pass through this fire zone, but are enclosed by 3-hour fire barriers and are considered extensions of the associated Class 1E divisional fire areas on the other side of the shield building wall. This fire zone is physically separated from other fire zones by the steel wall of containment and by the steel and concrete vessel stiffener and flexible ventilation seal above, and it is separated from adjacent fire areas by the walls and floor of the shield building, which have concrete thicknesses of more than one foot, and the 3-hour fire barriers enclosing the Class 1E electrical penetrations. The access doorway to the middle annulus fire zone is closed by a door.

The radiologically controlled area ventilation system serves this fire area on a once-through basis. Smoke and hot gases are confined in this fire zone following automatic closure of the fire dampers on high temperature, while the balance of the radiologically controlled area ventilation system continues to operate at the discretion of the operator. There is no propagation of the fire beyond this fire zone. Smoke and gases are removed from the fire zone by reopening the fire dampers after a fire. The radiologically controlled area ventilation system exhausts the smoke and gases to the atmosphere.

There are no safe shutdown components in this fire zone. The Class 1E electrical penetrations are separated from this fire zone by 3-hour fire barriers and are part of the associated divisional fire areas outside the shield building.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.16 Fire Zone 1200 AF 12541

This fire zone is comprised of the following room(s):

Room No.	
12541	Upper annulus

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire does not propagate to or from this fire zone.

The quantity of combustible materials in this fire zone is extremely low, consisting primarily of cable insulation. There are no cable concentrations. This fire zone is physically separated from other fire zones by the steel wall of containment and the steel and concrete vessel stiffener and flexible ventilation seal below, and it is separated from adjacent fire areas by the walls of the shield building, which have a concrete thickness of more than one foot. Access doorways are closed by doors. The physical separation between this fire zone and fire zone 1270 AF 12701 are described in the evaluation for that zone. This fire zone communicates with the environment via the passive containment cooling system air inlets at the top perimeter of the shield building and the passive containment cooling system air outlet at the center of the shield building roof. These openings have screens that prevent the entry of external debris.

Smoke and hot gases from a fire in this fire zone rise to the top of the fire zone and into the atmosphere and thus do not cause propagation of a fire beyond this fire zone.

The safe shutdown components in this fire zone are the Division B and C electrical cables that serve the redundant passive containment cooling system valves and instruments located in the passive containment cooling system valve room. Although the consequences of a fire are expected to be very limited, a fire in this fire zone is conservatively assumed to disable these safe shutdown valves and instruments.

The valves for each passive containment cooling system water delivery path are arranged with a normally open motor-operated valve and normally closed/fail open air-operated valve in series. If the fire causes a loss of power to the valves, the air-operated valves will open and passive containment cooling system flow, which has no adverse impact on achieving and

maintaining safe shutdown, will be initiated. Refer to subsection 9A.3.7.1.2 for a discussion of potential spurious actuation of a passive containment cooling system water delivery valve as a result of a fire.

The passive containment cooling system water delivery flow and storage tank level instrumentation are conservatively assumed to be disabled as a result of a fire in this fire zone. The applicable function of verification of passive containment cooling system water delivery can be performed by visual observation via access to the passive containment cooling system air diffuser from the passive containment cooling system valve room.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.17 Fire Zone 1270 AF 12701

This fire zone is comprised of the following room(s):

Room No.	
12701	Passive containment cooling system valve room
S06	Stairwell

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire does not propagate to or from this fire zone.

The quantity of combustible materials in this fire zone is low, consisting primarily of cable insulation related to the valves and instruments in this fire zone. There are no cable concentrations. This fire zone is physically separated from fire zone 1200 AF 12541 by structural partitions and closed doorways.

Smoke and hot gases from a fire in this fire zone are exhausted by normal operation of the room exhaust fan to fire zone 1200 AF 12541, where they rise through openings in the top of that fire zone into the atmosphere. There are no combustible materials in the vicinity of the exhaust location and thus the smoke and hot gases do not cause propagation of a fire beyond this fire zone. If the exhaust fan is disabled by the fire, smoke and gases are later removed using portable fans and ductwork.

Table 9A-2 lists the safe shutdown components located in this fire zone. Although it is unlikely that all components would be damaged, a fire in this fire zone is conservatively assumed to disable all of the safe shutdown valves and instruments in this fire zone.

The valves for each passive containment cooling system water delivery path are arranged with a normally open motor-operated valve and normally closed/fail open air-operated valve in

series. If the fire causes a loss of power to the valves, the air-operated valves will open and passive containment cooling system flow, which has no adverse impact on achieving and maintaining safe shutdown, will be initiated. Refer to subsection 9A.3.7.1.2 for a discussion of potential spurious actuation of a passive containment cooling system water delivery valve as a result of a fire.

The passive containment cooling system water delivery flow and storage tank level instrumentation are conservatively assumed to be disabled as a result of a fire in this fire zone. The applicable function of verification of passive containment cooling system water delivery can be performed by visual observation via access to the passive containment cooling system air diffuser from the passive containment cooling system valve room or from the upper annulus.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.1.18 Fire Zone 1250 AF 12555

This fire zone is comprised of the following room(s):

Room No.	
12555	Main control room emergency habitability system air storage/operating deck staging area

Safe Shutdown Evaluation

The quantity and arrangement of the combustible materials in this fire zone, and the characteristics of the barriers that separate this zone from other fire zones are such that a fire does not propagate to or from this fire zone.

The quantity of combustible materials in this fire zone is normally low, consisting primarily of cable insulation, but concentrations of transient combustibles may be present in the floor area outside the main equipment hatch. This fire zone is separated from adjacent fire areas by 3-hour fire barriers and it is separated from adjacent containment fire zones 1100 AF 11500 and 1200 AF 12541 by the main equipment hatch and its enclosure and the shield building wall, which has a concrete thickness of more than one foot.

Smoke and hot gases from a fire are confined in this fire zone following automatic closure of the fire dampers on high temperature and thus do not cause propagation of the fire beyond this fire zone. Smoke and gases are removed from the fire area by reopening the fire dampers after a fire. The radiologically controlled area ventilation system exhausts the smoke and gases to the atmosphere.

This fire zone contains no components required for safe shutdown after a fire. The pressurized main control room emergency habitability system air storage bottles are not

required for safe shutdown after a fire, but are protected from fire-induced overpressure by pressure relief valves.

No fire in this zone can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2 Auxiliary Building - Nonradiologically Controlled Areas

General Arrangement

The safe shutdown systems and components located in the nonradiologically controlled area are portions of the protection and safety monitoring system and the Class 1E dc system, and containment isolation.

The safe shutdown components in the protection and safety monitoring system are the instrumentation and control cabinets located in the nonradiologically controlled area on level 3 (elevation 100′-0″). The safe shutdown components in the Class 1E dc system are the Class 1E batteries on level 1 (elevation 66′-6″) and level 2 (elevation 82′-6″) and the dc electrical equipment, also on level 2.

The nonradiologically controlled areas of the auxiliary building are designed to provide separation between the mechanical and electrical equipment areas.

The piping compartments in the nonradiologically controlled area are the main steam isolation valve compartments on levels 4 and 5 (elevations 117′-6″ and 135′-3″, respectively) and the valve/piping penetration compartment on level 3 (elevation 100′-0″). The mechanical equipment rooms in the nonradiologically controlled area are the HVAC compartments on levels 4 and 5.

The nonradiologically controlled areas of the auxiliary building are also designed to provide separation between the Class 1E and the non-Class 1E electrical equipment.

Smoke Control

Table 9A-4 identifies the ventilation systems serving fire areas containing Class 1E electrical components. This section describes the approach to smoke control for fire areas in the nonradiologically controlled portion of the auxiliary building that contain the main Class 1E electrical equipment rooms served by the nuclear island nonradioactive ventilation system (VBS). Smoke control for fire areas containing other Class 1E components, such as valves, instrumentation and electrical cable, is discussed in the text for the individual fire areas.

The Class 1E electrical equipment room fire areas have been designed to prevent the migration of smoke, hot gases, and fire suppressant to the extent that they could adversely affect safe shutdown capabilities, including operator actions. These fire areas are separated from each other and from other plant areas by 3-hour fire barriers. Smoke from a fire in the

turbine building or other nearby fire areas is prevented from affecting the Class 1E areas by isolation of the nuclear island nonradioactive ventilation system outdoor air intakes, as described in subsection 9.4.1.

The nuclear island nonradioactive ventilation system is designed to control the migration of smoke and hot gases produced by a fire. As described in subsection 9.4.1, two independent ventilation subsystems, located in separate fire areas, serve the Class 1E electrical equipment rooms. The division A and C Class 1E electrical room HVAC subsystem has three distribution headers. One header supplies the two division A electrical equipment room fire areas, a second header supplies the division C electrical equipment room fire area, and a third header supplies other related fire areas. The division B and D class 1E electrical room HVAC subsystem also has three distribution headers. One header supplies the division B electrical equipment room fire area, a second header supplies the division D electrical equipment room fire area, and a third header supplies other related fire areas.

A fire affecting a division A or C electrical equipment room fire area does not affect operation of the ventilation subsystem serving the division B & D electrical equipment room fire areas and vice versa. In addition, a fire affecting an electrical equipment room fire area affects the operation of only one of the three distribution headers in the subsystem. As described in subsection 9.4.1.2.3.2, the affected subsystem continues to provide ventilation to the remaining fire areas served by the other two distribution headers.

Similarly, the ventilation subsystem serving the main control room and the ventilation subsystem serving the remote shutdown workstation operate independently of each other and are located in separate fire areas. A fire affecting the main control room does not affect operation of the ventilation subsystem serving the remote shutdown workstation and vice versa.

The migration of smoke and hot gases produced by a fire occurring in a Class 1E electrical equipment room fire area is controlled by operation of the nuclear island nonradioactive ventilation system as described in subsection 9.4.1.2.3. Further information on smoke control is provided in the discussions for the individual fire areas.

9A.3.1.2.1 Division A Electrical Rooms

9A.3.1.2.1.1 Fire Area 1202 AF 04

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1212 AF 12101	12101	Division A battery room
• 1222 AF 12201	12201	Division A dc equipment room
• 1232 AF 12301	12301	Division A instrumentation and control room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, which includes the Division C fire area (1202 AF 03). The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Backdraft dampers are provided in the ventilation system supply and return ducts to the dc equipment room and to the instrumentation and control room, to delay smoke migration between these fire zones and facilitate operator action to preclude postulated spurious actuations.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of plastic battery cell containers and cable insulation for cables associated with the electrical equipment in this fire area. There are concentrations of battery cells on opposite walls of the battery room fire zone. There are small concentrations of cable in the electrical cabinets located on opposite walls of the dc equipment room fire zone. There are small concentrations of cable overhead and in the electrical cabinets located in the middle of the instrument and control room fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. The three fire zones in this fire area are separated from each other by 1-hour fire barriers, which limits the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. These division A electrical rooms are physically separated from the other safety-related divisions and by 3-hour fire barriers. In the event of a fire in one of these rooms, it is assumed that control of all division A components is lost. Because of the physical separation, the fire does not adversely affect the other safety-related electrical divisions. For this event, the division B, C, and D components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Control room dedicated switches which are used to initiate engineered safety features at the system level are connected to the engineered safety features actuation cabinets using two-pole, energize-to-actuate, ungrounded dc circuits.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation.

Following detection of a fire in the instrumentation and control room, the operators can close the automatic depressurization system stage 4 block valve, then remove actuation power from this division using the battery transfer switch located in the dc equipment room to disconnect the battery and remote control from the control room to remove input power from the battery charger and regulating transformer. This operator action will prevent spurious actuation of motor operated valves and squib valves resulting from multiple hot shorts in the instrumentation and control room.

Following detection of a fire in the dc equipment control room, the operators can close the automatic depressurization system stage 4 block valve, then remove cabinet power from this division using the input power switches on the instrumentation and control cabinets. This operator action will prevent spurious smoke-induced actuation of motor operated valves and squib valves resulting smoke-related integrated circuit failures in the instrumentation and control room.

Power to the passive residual heat removal heat exchanger inlet isolation valve is normally locked out at power to prevent spurious closing.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.1.2 Fire Area 1242 AF 02

This fire area is comprised of the following room(s):

Room No.	
12412	Electrical penetration room division A

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, which includes the division C electrical penetration room (in fire area 1202 AF 03). The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the containment electrical penetrations. There are small concentrations of cable at the electrical penetrations and in the overhead cable trays. This is a light hazard fire area and the rate of fire growth is expected to be slow. The boundary of this fire area extends to include the electrical penetration assemblies within the containment

annulus, which are enclosed by 3-hour fire barriers. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The division A penetration room is physically separated from the other safety-related divisions and nonsafety-related equipment by 3-hour fire barriers. In the event of a fire in this room, it is assumed that control of all division A active components is lost. Because of the physical separation, the fire does not adversely affect the other safety-related electrical divisions. For this event, the division B, C, and D components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Following detection of a fire in this fire area, the operators can close the automatic depressurization system stage 4 block valve, then remove actuation power from this division using the battery transfer switch located in the dc equipment room to disconnect the battery and remote control from the control room to remove input power from the battery charger and regulating transformer. This operator action will prevent spurious actuation of motor operated valves and squib valves resulting from multiple hot shorts in the penetration room.

Power to the passive residual heat removal heat exchanger inlet isolation valve is normally locked out at power to prevent spurious closing.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.2 Division B Electrical Rooms

9A.3.1.2.2.1 Fire Area 1201 AF 02

This fire area contains division B electrical rooms. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1211 AF 12104	12104	Division B battery room 1
• 1221 AF 12204	12204	Division B battery room 2

- 1222 AF 12207 12207 Division B dc equipment room
- 1231 AF 12304 12304 Division B instrumentation and control/penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, which includes the division D fire area (1201 AF 03). The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Backdraft dampers are provided in the ventilation system supply and return ducts to the dc equipment room and to the instrumentation and control/penetration room, to delay smoke migration between these fire zones and facilitate operator action to preclude postulated spurious actuations.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector, which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of plastic battery cell containers and cable insulation for cables associated with the electrical equipment and containment penetrations in this fire area. There are concentrations of battery cells on opposite walls of each of the two battery room fire zones. There are small concentrations of cable overhead and in the electrical cabinets located on opposite walls of the dc equipment room fire zone. There are small concentrations of cable overhead, at the

electrical penetrations, and in the electrical cabinets located in the middle of the instrumentation and control/penetration room fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. The boundary of this fire area extends to include the electrical penetration assemblies within the containment annulus, which are enclosed by 3-hour fire barriers. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. The battery rooms are also separated from the adjacent division B electrical rooms by 1-hour fire barriers, and the dc equipment room is separated from adjacent division B electrical rooms by 1-hour fire barriers, which limit the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. Division B electrical rooms are physically separated from the other safety-related divisions and nonsafety-related equipment by 3-hour fire barriers. In the event of a fire in a division B electrical room, it is assumed that control of all division B active components is lost. Because of the physical separation, the fire does not adversely affect the other safety-related electrical divisions. For this event, the division A, C, and D components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Control room dedicated switches which are used to initiate engineered safety features at the system level are connected to the engineered safety features actuation cabinets using two-pole, energize-to-actuate, ungrounded dc circuits.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation.

Following detection of a fire in the instrumentation and control/penetration room, the operators can close the automatic depressurization system stage 4 block valve, then remove actuation power from this division using the battery transfer switch located in the dc equipment room to disconnect the battery and remote control from the control room to remove input power from the battery charger and regulating transformer. This operator action will prevent

spurious actuation of motor operated valves and squib valves resulting from multiple hot shorts in the instrumentation and control/penetration room.

Following detection of a fire in the dc equipment control room, the operators can close the automatic depressurization system stage 4 block valve, then remove cabinet power from this division using the input power switches on the instrumentation and control cabinets. This operator action will prevent spurious smoke-induced actuation of motor operated valves and squib valves resulting smoke-related integrated circuit failures in the instrumentation and control room.

Power to the normal residual heat removal hot leg suction isolation valves is normally locked out at power to prevent spurious opening.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.2.2 Fire Area 1220 AF 01

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1222 AF 12212	12212	Division B reactor coolant pump trip switchgear room
• 1222 AF 12213	12213	Spare room
• 1220 AF 12211	12211	Corridor

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, including the fire area for the division C trip switchgear room (1202 AF 03). Fire areas 1200 AF 03 and 1210 AF 01 are served by the same air distribution header as this fire area, but they continue to receive ventilation because they have separate supply ducts. The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area

by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation. There are small concentrations of cable in the electrical cabinets located on opposite walls of the dc equipment room fire zone. There are small concentrations of cable overhead and in the electrical cabinets in the reactor coolant pump trip switchgear room and spare room fire zones. There are small concentrations of cable overhead and at the east end of the corridor fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. See Section 3.4 for a discussion of the consequences of a break in a fire protection line in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. A fire in this fire area is assumed to disable the safe shutdown components in the fire area.

The reactor coolant pumps can be tripped by the redundant division C reactor coolant pump trip switchgear, located in fire area 1202 AF 03. The division B and D cable tray in the fire area includes signals to the reactor trip switchgear and inputs to other division protection logic. Inputs from divisions A and C are sufficient to trip the reactor when needed, or the reactor can be tripped manually. Loss of division B and D data input to the division A and C protection logic does not disable the safe shutdown functions of the four Class 1E divisions.

Cable trays in the fire areas include signals to B and D isolation valves outside containment. Containment isolation is provided by redundant containment isolation valves, located in another fire area inside containment. Redundant division C valves control water flow from

the passive containment cooling system storage tank. The components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.3 Division C Electrical Rooms

9A.3.1.2.3.1 Fire Area 1202 AF 03

This fire area contains division C electrical rooms. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1212 AF 12102	12102	Division C battery room 1
• 1222 AF 12202	12202	Division C battery room 2
• 1222 AF 12203	12203	Division C dc equipment room
• 1232 AF 12302	12302	Division C instrumentation and control room
• 1232 AF 12312	12312	Division C reactor coolant pump trip switchgear room
• 1232 AF 12313	12313	Instrumentation and control/division C penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, which includes the division A fire area (1202 AF 04). The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation

systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Backdraft dampers are provided in the ventilation system supply and return ducts to the dc equipment room and to the instrumentation and control room, and in the supply duct to the penetration room, to delay smoke migration between these fire zones and facilitate operator action to preclude postulated spurious actuations.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of plastic battery cell containers and cable insulation for cables associated with the electrical equipment and containment penetrations in this fire area. There are concentrations of battery cells on opposite walls of each of the two battery room fire zones. There are small concentrations of cable overhead and in the electrical cabinets located on opposite walls of the dc equipment room fire zone. There are small concentrations of cable overhead and in the electrical cabinets located in the middle of the instrument and control room fire zone. There are small concentrations of cable overhead and at the electrical penetrations in the instrumentation and control/penetration room fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. The boundary of this fire area extends to include the electrical penetration assemblies within the containment annulus, which are enclosed by 3-hour fire barriers. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. The battery rooms are also separated from the adjacent division C electrical rooms by 1-hour fire barriers, and the dc equipment room is separated from adjacent division C electrical rooms by 1-hour fire barriers, which limit the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. Division C electrical rooms are physically separated from the other safety-related divisions and nonsafety-related equipment by 3-hour fire barriers. In the event of a fire in a division C electrical room, it is assumed that control of all division C components is lost. Because of the physical separation,

the fire does not adversely affect the other safety-related electrical divisions. The reactor coolant pumps can be tripped by the redundant division B reactor coolant pump trip switchgear, located in fire area 1220 AF 01. For this event, the division A, B, and D components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Control room dedicated switches which are used to initiate engineered safety features at the system level are connected to the engineered safety features actuation cabinets using two-pole, energize-to-actuate, ungrounded dc circuits.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation.

Following detection of a fire in either the instrumentation and control room or the instrumentation and control/division C penetration room, the operators can close the automatic depressurization system stage 4 block valve, then remove actuation power from this division using the battery transfer switch located in the dc equipment room to disconnect the battery and remote control from the control room to remove input power from the battery charger and regulating transformer. This operator action will prevent spurious actuation of motor operated valves and squib valves resulting from multiple hot shorts in the instrumentation and control room or the instrumentation and control/division C penetration room.

Following detection of a fire in the dc equipment control room, the operators can close the automatic depressurization system stage 4 block valve, then remove cabinet power from this division using the input power switches on the instrumentation and control cabinets. This operator action will prevent spurious smoke-induced actuation of motor operated valves and squib valves resulting smoke-related integrated circuit failures in the instrumentation and control room.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.4 Division D Electrical Rooms

9A.3.1.2.4.1 Fire Area 1201 AF 03

The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1211 AF 12105	12105	Division D battery room
• 1221 AF 12205	12205	Division D dc equipment room
• 1231 AF 12305	12305	Division D instrumentation and control/penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, which includes the division B fire area (1201 AF 02). The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Backdraft dampers are provided in the ventilation system supply and return ducts to the dc equipment room and to the instrumentation and control/penetration room, to delay smoke migration between these fire zones and facilitate operator action to preclude certain postulated spurious actuations.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of plastic battery cell containers and cable insulation for cables associated with the electrical equipment and containment penetrations in this fire area. There are concentrations of battery cells on opposite walls of the battery room fire zone. There are small concentrations of cable overhead and in the electrical cabinets located on opposite walls of the dc equipment room fire zone. There are small concentrations of cable overhead, at the electrical penetrations, and in the electrical cabinets located in the middle of the instrumentation and control/penetration room fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. The boundary of this fire area extends to include the electrical penetration assemblies within the containment annulus, which are enclosed by 3-hour fire barriers. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire

area. The three fire zones in this fire area are separated from each other by 1-hour fire barriers, which limits the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. These division D electrical rooms are physically separated from the other safety-related divisions by 3-hour fire barriers. In the event of a fire in one of these rooms, it is assumed that control of all division D components is lost. Because of the physical separation, the fire does not adversely affect the other safety-related electrical divisions. For this event, the division A, B, and C components identified in Table 9A-2 are sufficient to achieve and maintain safe shutdown.

Control room dedicated switches which are used to initiate engineered safety features at the system level are connected to the engineered safety features actuation cabinets using two-pole, energize-to-actuate, ungrounded dc circuits.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation.

Following detection of a fire in the instrumentation and control/penetration room, the operators can close the automatic depressurization system stage 4 block valve, then remove actuation power from this division using the battery transfer switch located in the dc equipment room to disconnect the battery and remote control from the control room to remove input power from the battery charger and regulating transformer. This operator action will prevent spurious actuation of motor operated valves and squib valves resulting from multiple hot shorts in the instrumentation and control/penetration room.

Following detection of a fire in the dc equipment control room, the operators can close the automatic depressurization system stage 4 block valve, then remove cabinet power from this division using the input power switches on the instrumentation and control cabinets. This operator action will prevent spurious smoke-induced actuation of motor operated valves and squib valves resulting smoke-related integrated circuit failures in the instrumentation and control room.

Power to the normal residual heat removal hot leg suction isolation valves is normally locked out at power to prevent spurious opening.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.5 Principal Class 1E Areas

9A.3.1.2.5.1 Fire Area 1242 AF 01

This fire area consists of the main control room. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1242 AF 12401A	12401	Main control area/tagging room/vestibule
• 1242 AF 12401B	12401	Shift supervisor/clerk/operator area

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors (including detectors in the subfloor spaces)
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by the main control room/technical support center HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

Since the main control room is continuously manned, a fire is likely to be initially detected by an operator. Otherwise, a fire in this fire area is detected by a fire detector, which produces visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using portable extinguishers or, if necessary, using hose streams.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation and paper. There are concentrations of cable under the floor in the north and east portions of this fire area and within the control consoles and display panels in the main control area. There are concentrations of paper in the main control area, the tagging room and offices. Most of this paper is contained within metal filing cabinets, desks, or bookcases. This is a light hazard fire area and the rate of fire growth is expected to be slow. The fire area is continuously manned and prompt manual fire suppression is expected. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. The two fire zones are also separated from each other by a 1-hour fire barrier, which limits the spread of fire within the fire area. Within fire zone 1242 AF 12401A the wall that separates the main control area from the tagging room is not fire-rated because it does not extend to the ceiling. This design improves the ceiling heat-absorbing characteristics provided for post-accident main control room habitability.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The main control room contains circuits from the four Class 1E electrical divisions. Electrical separation to and inside the control panels is maintained per industry standards. The remote shutdown workstation is provided as an alternate to the main control room. The transfer of operations to the remote shutdown workstation is controlled by a transfer switch located outside the main control room. In the event of a fire in the main control room, control may be transferred to the remote shutdown workstation, depending on the extent of the fire. For a small fire, control is maintained in the main control room, and the potential for damage or spurious signals is limited. For larger postulated fires, the main control room is evacuated and control is transferred to the remote shutdown workstation. Once control is transferred, spurious control signals potentially caused by the fire are isolated from the actuated devices by the transfer switch. In this event, the main control room is assumed to be lost for the duration of the event. Safe shutdown is controlled from the remote shutdown workstation. The extent of spurious signals is limited by the time to transfer control to the remote shutdown workstation.

Most control room controls use soft-controls which communicate over multiplexed data channels. Fire-induced spurious actuation from these multiplexed soft controls is not assumed.

Spurious actuation from control room dedicated switches which could lead to a breach of reactor coolant system pressure boundary, loss of decay heat removal function, or loss of shutdown

reactivity control is prevented by the use of dual two-pole, energize-to-actuate, ungrounded dc circuits, which require at least four simultaneous hot shorts of proper polarity for spurious actuation. Following control room evacuation, the dedicated switches are disabled by the transfer switch.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.5.2 Fire Area 1232 AF 01

This fire area is comprised of the following room(s):

Room No.	
12303	Remote shutdown workstation

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, except for adjacent stairwell fire area 1202 AF 05 which is ventilated via this fire area. The system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation and paper. There are concentrations of cable under the floor and within the control console. There are concentrations of paper, most of which is contained within metal filing cabinets or bookcases. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The remote shutdown workstation area contains circuits from the four Class 1E electrical divisions. Electrical separation to and inside the remote shutdown workstation is maintained per industry standards. The remote shutdown room is an alternate to the main control room. The transfer of operations to the remote shutdown workstation is controlled by a transfer switch set located in the remote shutdown workstation area. In the unlikely event that the fire damages the transfer switch set, causing transfer of control from the main control room to the remote shutdown workstation, the operator restores control to the main control room by de-energizing the remote shutdown multiplexer cabinets in the instrumentation and control rooms. Safe shutdown is achieved using the safe shutdown components listed in Table 9A-2.

Most remote shutdown workstation controls use soft-controls which communicate over multiplexed data channels. Fire-induced spurious actuation from these multiplexed soft controls is not assumed.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.5.3 Fire Area 1243 AF 01

This fire area is comprised of the following room(s):

Room No.	
12423	Reactor trip switchgear 1

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the reactor trip switchgear, located in the center of this small fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. This fire area contains cable from each of the four Class 1E electrical divisions. This cable provides trip input from each of the four divisions and is separated per industry standards. The safety-related trip inputs

are normally energized, so a fire in this area may result in a reactor trip. In the event the fire generates multiple hot shorts, interfering with the reactor trip signal, a reactor trip can be produced in the redundant trip cabinets located outside of this fire area in fire area 1243 AF 02. Furthermore, the reactor can be tripped with the diverse actuation system described in Section 7.7.

This fire does not affect other equipment in the Class 1E divisions. Therefore, the safe shutdown components listed in Table 9A-2 are available to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.5.4 Fire Area 1243 AF 02

This fire area is comprised of the following room(s):

Room No.	
12422	Reactor trip switchgear 2

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the reactor trip switchgear, located in the center of this small fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. This fire area contains cable from each of the four Class 1E electrical divisions. This cable provides trip input from each of the four divisions and is separated per industry standards. The safety-related trip inputs are normally energized, so a fire in this area may result in a reactor trip. In the event the fire generates multiple hot shorts, interfering with the reactor trip signal, a reactor trip can be produced in the redundant trip cabinets located outside of this fire area in fire area 1243 AF 01. Furthermore, the reactor can be tripped with the diverse actuation system described in Section 7.7.

This fire does not affect other equipment in the Class 1E divisions. Therefore, the safe shutdown components listed in Table 9A-2 are available to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.5.5 Fire Area 1210 AF 01

The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1210 AF 12111	12111	Corridor
• 1212 AF 12103	12103	Spare battery room
• 1212 AF 12112	12112	Spare room
• 1212 AF 12113	12113	Spare battery charger room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas, except for fire area 1220 AF 01 which is ventilated by ducts that are isolated by a fire in this fire area. The ventilation system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

If the spare batteries are being used as a backup power source for any division, a fire in this fire area is assumed to disable that division. Smoke from a fire in this fire area does not adversely affect components associated with divisions redundant to that supplied by the spare battery. Fire area 1200 AF 03 is served by the same air distribution header as this fire area, but it continues to receive ventilation because it has a separate supply duct. Fire area 1220 AF 01 is isolated by combination fire-smoke dampers in response to a smoke detector signal. The division B reactor trip switchgear and the division B and D electrical cable in this fire area is not sensitive to the small quantity of smoke that may leak into this fire area.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of plastic battery cell containers and cable insulation for cables associated with the spare batteries and the spare battery charger. There are concentrations of battery cells on opposite walls of the spare battery room fire zone. There are small concentrations of cable along the north wall of the spare battery charger room fire zone. There are assumed to be small concentrations of ordinary combustibles in the spare room. There are small concentrations of cable overhead in the eastern portion of corridor fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. The battery room is also separated from the other fire zones within this fire area by a 1-hour fire barrier, which limits the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The spare batteries may be connected as a backup power source for any one of the four Class 1E electrical divisions. The terminations of the cables to these divisions from the spare batteries are not normally energized or connected, so a fire in this area has no impact on the unconnected divisions. If the spare batteries are being used as a backup to a Class 1E division, then the consequence of a fire in this area is the same as a fire in the battery room of the division to which they are connected.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.6 Non-Class 1E Electrical Rooms

9A.3.1.2.6.1 Fire Area 1230 AF 02

The fire area is comprised of the following room:

Room No.
12321 Non-Class 1E equipment/penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Preaction sprinklers
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the preaction sprinkler system or manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the electrical equipment and containment penetrations in this fire area. There are small concentrations of cable overhead, at the electrical penetrations, and at the electrical cabinets located along the east and west walls of room 12321. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area. An automatic suppression system is provided to increase the availability of non-safety related systems required to achieve cold shutdown.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system in this fire area is considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The electrical equipment in this area is non-Class 1E; however, some division B and D cables are routed through this area. In the event of a fire, the division B and D cabling in this area can be damaged. This damage can result in loss of control of equipment serviced by these cables. Other components in divisions B and D are not affected.

This fire can also disable the division B and D inputs to the reactor trip switchgear. The signals from the remaining two divisions are sufficient to trip the reactor. Furthermore, the reactor can be tripped with the diverse actuation system described in Section 7.7.

Spurious DAS actuation of squib valves is prevented by the use of a squib valve controller circuit which requires multiple hot shorts for actuation, physical separation of potential hot short locations, and provisions for operator action to remove power from the fire area. No postulated fire can spread to the hot short locations before the operator can remove power from the fire area.

Following detection of a fire in the non-Class 1E equipment/penetration room, the operators can close the automatic depressurization system stage 4 block valves, then remove DAS actuation power. This operator action will prevent spurious actuation of squib valves resulting from multiple hot shorts in the non-Class 1E equipment/penetration room.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

9A.3.1.2.6.2 Fire Area 1240 AF 01

The fire area is comprised of the following room:

Room No.
12421 Non-Class 1E equipment/penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the electrical equipment and containment penetrations in this fire area. There are small concentrations of cable overhead, at the electrical penetrations, and at the RCC rod control cabinets in the southern portion of room 12321. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The electrical equipment in this area is non-Class 1E; however, some division A and C cables are routed through this area. In the event of a fire, the division A and C cabling in this area can be damaged. This damage can result in loss of control of equipment serviced by these cables. Other components in divisions A and C are not affected.

This postulated fire can disable control of the division A containment isolation valves outside containment. For this event, containment isolation is provided by the redundant containment isolation valves located inside containment outside of this fire area.

Such a fire can also disable control of the division C passive containment cooling system isolation valves. The redundant division B passive containment cooling system isolation valves are not affected. Therefore, the safe shutdown capability of the passive containment cooling system is maintained.

This fire can also disable the division A and C inputs to the reactor trip switchgear. The signals from the remaining two divisions are sufficient to trip the reactor. Furthermore, the reactor can be tripped with the diverse actuation system described in Section 7.7.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.7 Mechanical/Piping Areas

9A.3.1.2.7.1 Fire Area 1201 AF 04

This fire area consists of two nuclear island nonradioactive ventilation system equipment rooms servicing divisions B and D equipment rooms. Division B and D safe shutdown equipment is located within the fire area. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1241 AF 12405	12405	Lower nuclear island nonradioactive ventilation system divisions B and D equipment room (117′-6″)
• 1251 AF 12505	12505	Upper nuclear island nonradioactive ventilation system divisions B and D equipment room (135′-3″)

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area houses and is served by the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Closure of these fire dampers interrupts the operation of the division B & D Class 1E electrical room HVAC subsystem. Operation of the independent division A & C Class 1E electrical room HVAC subsystem continues unaffected. Smoke is subsequently removed from the fire area by using portable exhaust fans and flexible ductwork. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems and subsystems. The division A and C electrical cables in fire area 1230 AF 01 are unaffected by the small quantity of smoke that may leak into that fire area. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of electrical cable insulation for cables supplying fans and valves within this fire area. There are cable concentrations overhead and in the west half of each fire zone. This is an light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area.

A fire in this fire area is conservatively assumed to disable control of all division D active components, as well as the compressed and instrument air system, component cooling water system, passive core cooling system and central chilled water system containment isolation valves within the fire area. The redundant containment isolation valves in the lines for the compressed and instrument air system, component cooling water system, passive core cooling system and central chilled water system are located inside the containment (fire area 1000 AF 01) are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The redundant steam generator 1 steam line pressure instrumentation located in fire zone 1100 AF 11300B is sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The steam generator system steam generator 1 startup feedwater flow instrumentation is assumed to be disabled. The steam generator system steam generator 1 wide range level instrumentation located in fire zone 1100 AF 11300B provides a diverse means of performing the applicable function of generating a passive residual heat removal actuation signal to achieve and maintain safe shutdown.

The redundant steam generator 2 steam line pressure instrumentation located in fire zone 1100 AF 11300B is sufficient to perform the applicable functions to achieve and maintain safe shutdown.

The steam generator system steam generator 2 startup feedwater flow instrumentation is assumed to be disabled. The steam generator system steam generator 2 wide range level instrumentation located in fire area 1000 AF 01 provides a diverse means of performing the applicable function of generating a passive residual heat removal actuation signal to achieve and maintain safe shutdown.

The remaining division A, B and C components located in other fire areas are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.7.2 Fire Area 1201 AF 05

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1241 AF 12506	12406	Lower main steam isolation valve compartment A
	12506	Upper main steam isolation valve compartment A
• 1231 AF 12306	12306	Valve/piping penetration room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Each of the two fire zones in this fire area is served by independent air handling units of the annex/auxiliary buildings nonradioactive HVAC system (VXS), located within the fire zones served. No ventilating system ducts penetrate the MSIV compartment fire zone. One supply duct enters the valve piping penetration room from the turbine building. A fire damper in this duct closes automatically on high temperature to control the spread of fire and smoke. After the fire, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems or subsystems. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the motor-operated valves, fans and other components in this fire area. Small quantities of lubricating oil are contained within the housings of some of these components. There are small concentrations of cable overhead in each room. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The recirculation type ventilation system does not contribute to the spread of the fire or smoke to other fire areas.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area.

A fire in this fire area is assumed to disable the safe shutdown components in the fire area. The redundant chemical and volume control system containment isolation valves located inside containment outside of this fire area are sufficient to perform the applicable functions to maintain containment integrity. The steam generator, main steam line, feedwater line, and blowdown line piping located inside containment outside of this fire area is sufficient to perform the applicable functions to maintain containment integrity.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.7.3 Fire Area 1201 AF 06

This fire area is comprised of the following room(s):

Room No.	
12404	Lower main steam isolation valve compartment B
12504	Upper main steam isolation valve compartment B

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by independent air handling units of the annex/auxiliary buildings nonradioactive HVAC system (VXS), located within the fire zones served. No ventilating system ducts penetrate the fire area. After the fire, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems or

subsystems. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation for cables associated with the motor-operated valves, fans and other components in this fire area. Small quantities of lubricating oil are contained within the housings of some of these components. There are small concentrations of cable overhead in each room. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The recirculation type ventilation system does not contribute to the spread of the fire or smoke to other fire areas.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area.

A fire in this fire area is assumed to disable the safe shutdown components in the fire area. The steam generator, main steam line, feedwater line, and blowdown line piping located inside containment outside of this fire area is sufficient to perform the applicable functions to maintain containment integrity.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.7.4 Fire Area 1250 AF 01

This fire area is comprised of the following room(s):

Room No.	
12501	Nuclear island nonradioactive ventilation system main control room/ division A and C equipment room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area houses and is served by the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Closure of these fire dampers interrupts the operation of the VBS division A & C Class 1E electrical room and the main control room/technical support center HVAC subsystems that are located in this fire area. Operation of the independent division B & D Class 1E electrical room HVAC subsystem continues unaffected. Smoke is removed from the fire area by using portable exhaust fans and flexible ductwork. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems or subsystems. The division B reactor coolant pump trip switchgear and the division B and D electrical cable in fire areas 1200 AF 03 and 1220 AF 01 are unaffected by the small quantity of smoke that may leak into these fire areas. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector, which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. A fire in the fire area is extinguished manually using hose streams or portable extinguishers.

This fire area contains two charcoal adsorbers, located in the nuclear island nonradioactive ventilation system supplemental air filtration units. Fixed fire suppression systems are not required for these adsorbers because of the high charcoal ignition temperature. The normal temperature of the air flowing through the charcoal adsorbers is well below 200°F, while the minimum charcoal ignition temperature is greater than 600°F. Two independent temperature sensors interface with the fire detection system, providing charcoal temperature indication and

high and high-high temperature alarms. The filtration unit fan trips at the high temperature alarm setpoint. The setpoints of both alarms are well below the charcoal ignition temperature, allowing the operator time to investigate and take corrective action. In the unlikely event of a fire in the adsorber, the filtration unit can be manually isolated and sprayed with water from a nearby hose station to cool the charcoal and extinguish the fire.

Combustible materials in this fire area are listed in Table 9A-3. Aside from the charcoal contained within the air filtration units, these materials primarily consist of electrical cable insulation for cables supplying fans and pumps within this fire area. There are cable concentrations near the ceiling and adjacent to the west wall. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

This fire area contains no components required for safe shutdown after a fire. No safe shutdown evaluation is required.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.8 Miscellaneous Areas

9A.3.1.2.8.1 Fire Area 1230 AF 01

This fire area is comprised of the following room(s):

Room No.	
12300	Corridor

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. Closure of these dampers interrupts ventilation of adjacent fire areas 1201 AF 02 (division B electrical rooms), 1202 AF 05 (stair S05), and 1232 AF 01 (remote shutdown workstation) because their ducts are routed through this corridor. The ventilation system continues to provide ventilation to other unaffected fire areas, and may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of small quantities of cable insulation for cables routed overhead through the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The Class 1E divisions A and C cable consists of fiber optic cable for data communication between divisions.

In the event of a fire in the division A and C corridor, it is assumed that data output from divisions A and C to the division B and D protection logic is lost. This loss of data does not disable the safe shutdown functions of the four Class 1E divisions.

The division A and C instrument cables serving safe shutdown components are assumed to be disabled. The division B and D instrument cables routed outside of this fire area that serve redundant safe shutdown components are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.8.2 Fire Area 1201 AF 01

This fire area is comprised of the following room(s):

Room No.	
S02	Stairwell

The stairwell serving the northwest portion of the auxiliary building is enclosed by fire barrier walls having a minimum rating of 2 hours. The structural walls are concrete and the nonstructural walls are made of gypsum boards. There are no safe shutdown components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

This fire area is served by the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Air at a positive pressure is supplied near the top of the stairwell and exfiltrates through an opening near the bottom of the stairwell. During a fire, the pressure difference across the doors in the stairwell is maintained in accordance with the guidance of NFPA 92A (Reference 4), using a dedicated stairwell pressurization fan.

9A.3.1.2.8.3 Fire Area 1202 AF 01

This fire area is comprised of the following room(s):

Room No.	
S01	Stairwell

The stairwell serving the northeast portion of the auxiliary building is enclosed by fire barrier walls having a minimum rating of 2 hours. The structural walls are concrete and the nonstructural walls are made of gypsum board. There are no safety-related components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

This fire area is served by the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Air at a positive pressure is supplied near the top of the stairwell and exfiltrates through an opening near the bottom of the stairwell. During a fire, the pressure difference across the doors in the stairwell is maintained in accordance with the guidance of NFPA 92A (Reference 4), using a dedicated stairwell pressurization fan.

9A.3.1.2.8.4 Fire Area 1202 AF 05

This fire area is comprised of the following room(s):

Room No.	
S05	Stairwell

The stairwell provides an emergency egress path from the main control room to the emergency shutdown workstation. It is enclosed by 3-hour fire barriers. These barriers are made of concrete except for some nonstructural walls which are made of gypsum board. There are no safety-related components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area.

This fire area is served by the division B & D Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Air at a positive pressure is supplied to the stairwell and exfiltrates through an opening to neighboring fire area 1232 AF 01, the remote shutdown workstation. For a fire in the remote shutdown workstation fire area combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to prevent the spread of fire and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, and may be manually realigned to the once-through ventilation mode to further minimize the potential for migration of smoke and hot gases.

9A.3.1.2.8.5 Fire Area 1202 AF 02

This fire area contains an elevator and elevator shaft serving five levels on the north side of the auxiliary building, and the associated elevator mechanical room, 12601. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detector
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

No ventilation system serves this fire area. The nuclear island nonradioactive ventilation system provides ventilation to neighboring fire areas, and may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke and hot gases. After the fire, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation and lubricant associated with the elevator hoisting machinery. There are small concentrations of these materials in the elevator mechanical room at the top of the elevator shaft. This is a light hazard fire area and the rate of fire growth is expected to be slow. Two-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

Safe Shutdown Evaluation

This fire area contains no components required for safe shutdown after a fire. No safe shutdown evaluation is required.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.2.8.6 Fire Area 1200 AF 03

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1230 AF 12311	12311	Elevation 100′-0″ corridor
• 1242 AF 12411	12411	Elevation 117′-6″ corridor

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is served by one of the three air distribution headers of the division A & C Class 1E electrical room HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS). Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The ventilation system continues to provide ventilation to the unaffected fire areas. Fire areas 1220 AF 01 and 1210 AF 01 are served by the same air distribution header as this fire area, but they continue to receive ventilation because they have separate supply ducts. The ventilation system may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke and hot gases. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of small quantities of cable insulation for cables routed overhead in each fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. Class 1E divisions B and D cables are routed through this corridor.

The division B and D control cables to the reactor trip switchgear are assumed to be disabled. Inputs from divisions A and C, which are routed in a separate fire area, are sufficient to trip the reactor when needed. The reactor can also be tripped with the diverse actuation system described in Section 7.7.

The division B and D instrument and control cables serving other safe shutdown components are assumed to be disabled. The instrument and control cables routed outside of this fire area that serve redundant safe shutdown components are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.3 Auxiliary Building - Radiologically Controlled Areas

The safe shutdown components located in the radiologically controlled areas are primarily containment isolation valves, which are located near the containment vessel in the lower annulus. Containment isolation valves are also located in the pipe chases southeast of containment. These containment isolation valves are required to either close or remain closed during a safe shutdown operation.

9A.3.1.3.1 Principal Areas

9A.3.1.3.1.1 Fire Area 1200 AF 01

This fire area includes most of the radiologically controlled areas of the auxiliary building outside the fuel handling area. This fire area contains one of the two normal residual heat removal pumps, the liquid radwaste system, spent fuel pool cooling system, chemical and volume control system makeup pump, and lower annulus areas. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1200 AF 12241	12241	Lower annulus east
• 1200 AF 12241	12242	Lower annulus southeast
• 1200 AF 12241	12243	Lower annulus southwest
• 1200 AF 12461	12461	Corridor
• 1210 AF 12151	12151	Demineralizer/filter room
• 1210 AF 12151	12155	Gaseous radwaste system equipment room
• 1210 AF 12151	12156	Liquid radwaste system equipment room
• 1210 AF 12151	12158	Degasifier discharge pump room
• 1210 AF 12151	12258	Degasifier column
• 1210 AF 12171	12171	Effluent holdup tank room A
• 1214 AF 12152	12152	Primary sample room
• 1214 AF 12154	12154	Auxiliary building sump room
• 1214 AF 12154	12254	Spent fuel pool cooling system penetration room
• 1215 AF 12161	12161	Corridor
• 1215 AF 12161	12163	Normal residual heat removal pump room B
• 1216 AF 12166	12166	Waste holdup tank room A
• 1216 AF 12167	12167	Waste holdup tank room B
• 1216 AF 12169	12168	Corridor
• 1216 AF 12169	12169	Corridor
• 1216 AF 12169	12268	Liquid radwaste system pump room
• 1216 AF 12264	12264	Chemical waste tank room
• 1216 AF 12169	12265	Waste monitor tank room C
• 1216 AF 12172	12172	Effluent holdup tank room B
• 1220 AF 12251	12251	Demineralizer/filter access area
• 1220 AF 12251	12255	Chemical and volume control system makeup pump room

•	1220 AF 12269	12259	Pipe chase
•	1220 AF 12271	12272	Spent fuel pool cooling system pump room A
•	1220 AF 12271	12273	Spent fuel pool cooling system heat exchanger room A
•	1220 AF 12271	12274	Spent fuel pool cooling system pump room B
•	1220 AF 12271	12275	Spent fuel pool cooling system heat exchanger room B
•	1224 AF 12252	12252	Radiation chemistry laboratory
•	1225 AF 12261	12261	Corridor
•	1225 AF 12261	12271	Liquid radwaste system pump room
•	1235 AF 12361	12361	Corridor
•	1250 AF 12561	12551	Access corridor
•	1250 AF 12561	12561	Component cooling water system valve room

The equipment and piping in this fire area normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Wet pipe sprinklers (Fire Zone 1220 AF 12251, room 12255)
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radiologically controlled area ventilation system (VAS) serves this fire area on a once-through basis. In the event of a fire the system continues to ventilate the fire area unless the operator decides to shut down the system, or until heat from the fire is sufficient to close the fire dampers. Fire dampers close automatically on high temperature to control the spread of fire and smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers. The radiologically controlled area ventilation system exhausts smoke and hot gases to the atmosphere.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by fire detectors which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the wet pipe sprinkler system or manually using hose streams or portable extinguishers.

Combustible materials in this large fire area are listed in Table 9A-3, and consist primarily of cable insulation for cables associated with the mechanical equipment and instrumentation in this fire area. There are small concentrations of lubricants in fire zones containing pumps. There are small concentrations of paper and plastic in the radiation chemistry laboratory fire zone. Concentrations of paper or plastic anti-contamination clothing may also be present in some fire zones. There are small concentrations of cable in the overhead cable trays in many fire zones. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within

the fire area. An automatic suppression system is provided to increase the availability of non-safety related systems required to achieve cold shutdown.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

The consequences of inadvertent operation of an automatic suppression system in this fire area or of fire suppression systems that drains to this fire area from the radwaste building, or of a break in a fire protection line in this fire area, are considered in the evaluation of internal flooding in Section 3.4.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The electrical equipment in this area is non-Class 1E; however, some division A and C cables are routed through this area. In the event of a fire, the division A and C cabling in this area can be damaged. This damage can result in loss of control of equipment serviced by these cables. Other components in divisions A and C are not affected.

The spent fuel pool cooling system containment isolation valve is conservatively assumed to be disabled as a result of a fire in this fire area. The redundant spent fuel pool cooling system containment isolation valve located inside containment is outside of this fire area and is sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.3.1.2 Fire Area 1200 AF 02

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1200 AF 12562	12462	Cask washdown pit
• 1200 AF 12562	12463	Cask loading pit
• 1200 AF 12562	12472	New fuel storage pit
• 1200 AF 12562	12563	Spent fuel storage pool
• 1200 AF 12562	12564	Fuel transfer canal
• 1230 AF 12371	12371	Rail car bay/filter storage area
• 1230 AF 12371	12374	Waste disposal container area
• 1236 AF 12372	12372	Resin transfer pump/valve room

- 1236 AF 12373 12373 Spent resin tank room
- 1246 AF 12471 12471 Solid waste system valve/piping area

The spent fuel storage pool, spent fuel handling systems and components, and the solid radwaste rooms normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Wet pipe sprinklers (Fire Zone 1230 AF 12371, room 12371 rail car bay only)
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radiologically controlled area ventilation system serves this fire area on a once-through basis. In the event of a fire the system continues to ventilate the fire area unless the operator decides to shut down the system, or until heat from the fire is sufficient to close the fire dampers. Fire dampers close automatically on high temperature to control the spread of fire and smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers. The radiologically controlled area ventilation system exhausts the smoke and hot gases to the atmosphere.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the wet pipe sprinkler system or manually using hose streams or portable extinguishers.

Combustible materials in this large fire area are listed in Table 9A-3, and consist primarily of cable insulation for the cables associated with the mechanical equipment and instrumentation in this fire area. There are small concentrations of lubricants associated with equipment such as the overhead cranes and the fuel handling machine. Diesel fuel may be present when there is a truck in the rail car bay. Concentrations of paper or plastic anti-contamination clothing may also be present. There are small concentrations of cable in the overhead cable trays. This is generally a light hazard fire area and the rate of fire growth is expected to be slow. Concentrations of transient compustibles in the rail car bay may produce a rapidly growing fire, so an automatic suppression system is provided in that area. Three-hour fire barriers provide adequate separation from adjacent fire areas. The roof and building exterior walls are unrated because there are no significant exposure fire hazards in nearby outdoor areas. Automatic or manual fire suppression activities prevent the fire from propagating beyond the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system or of a break in a fire protection line in this fire area are considered in the evaluation of internal flooding in Section 3.4

Safe Shutdown Evaluation

There are no safe shutdown components in this area, so a fire in this area has no impact on safe shutdown. The electrical equipment in this area is non-Class 1E; however, some division A and C cables are routed through this area. In the event of a fire, the division A and C cabling in this area can be damaged. This damage can result in loss of control of equipment serviced by these cables. Other components in divisions A and C are not affected. Safe shutdown is possible from equipment in other fire areas.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.3.1.3 Fire Area 1204 AF 01

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 1205 AF 12365	12365	Waste monitor tank room B
• 1214 AF 12354	12354	Mid-annulus access room
• 1234 AF 12351	12351	Maintenance floor staging area
• 1234 AF 12352	12352	Personnel hatch
• 1235 AF 12363	12363	Waste monitor tank room A
• 1244 AF 12452	12452	Containment air filtration system penetration room
• 1244 AF 12454	12454	Containment air filtration system/spent fuel pool cooling system/primary sampling system penetration room
• 1254 AF 12553	12553	Personnel access area
• 1244 AF 12554	12451	Security room
• 1254 AF 12554	12554	Security room
• 1264 AF 12651	12651	Radiologically controlled area ventilation system equipment room
• 1205 AF 12362	12362	Normal residual heat removal heat exchanger room
• 1215 AF 12162	12162	Normal residual heat removal pump room A
• 1220 AF 12256	12256	Containment isolation valve area
• 1220 AF 12256	12269	Pipe chase
• 1220 AF 12256	12253	Pipe chase

- 1225 AF 12262 12262 Piping/valve room

Some of the piping in this fire area normally contains radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radiologically controlled area ventilation system serves this fire area on a once-through basis. Some of the ventilation system equipment is also located within this fire area. For a fire that does not disable the ventilation system, the system continues to ventilate the fire area unless the operator decides to shut down the system, or until heat from the fire is sufficient to close the fire dampers. Fire dampers close automatically on high temperature to control the spread of fire and smoke. If the radiologically controlled area ventilation system is not affected by the fire, smoke is removed from the fire area by reopening the fire damper(s) after a fire and exhausting to the atmosphere. If the radiologically controlled area ventilation system is unavailable, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this large fire area are listed in Table 9A-3, and consist primarily of cable insulation for the cables associated with the mechanical equipment and instrumentation in this fire area. There are small concentrations of lubricants in the radiologically controlled area ventilation system equipment room fire zone. Concentrations of paper or plastic anti-contamination clothing may also be present in some fire zones. Concentrations of transient combustibles may be present in the maintenance floor staging area fire zone. There are small concentrations of cable in overhead cable trays. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. The consequences of a break

in a fire protection line in this fire area were considered in the evaluation of internal flooding in Section 3.4

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The normal residual heat removal, primary sampling system, spent fuel pool cooling system and containment air filtration system containment isolation valves are conservatively assumed to be disabled as a result of a fire in this fire area. The redundant normal residual heat removal, primary sampling system, spent fuel pool cooling system and containment air filtration system containment isolation valves located inside containment are outside of this fire area and are sufficient to perform the applicable functions to maintain containment integrity. Cable trays supplying these valves and other components are not required for safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.3.1.4 Fire Area 1220 AF 02

This fire area is comprised of the following room(s):

Room No.	
12244	Lower annulus valve area

Some of the piping in this fire area normally contains radioactive material.

Fire Detection and Suppression Features

- Fire detector
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radiologically controlled area ventilation system serves this fire area on a once-through basis. In the event of a fire the system continues to ventilate the fire area unless the operator decides to shut down the system, or until heat from the fire is sufficient to close the fire dampers. Fire damper(s) close automatically on high temperature to control the spread of fire and smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers. The radiologically controlled area ventilation system exhausts the smoke and hot gases to the atmosphere.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and consist primarily of cable insulation for cables associated with the few containment isolation valves in this fire area. There are no significant concentrations of combustible materials. This is a light hazard fire area and the rate of fire growth is expected to be slow. Three-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Fire Protection System Integrity

An evaluation of the consequences of inadvertent operation of an automatic suppression system is not required because there are no such systems in this fire area. An evaluation of the consequences of a break in a fire protection line is not required because no such lines pass through or terminate in this fire area.

Safe Shutdown Evaluation

Table 9A-2 lists the safe shutdown components located in this fire area. The chemical and volume control system and liquid radwaste system containment isolation valves are conservatively assumed to be disabled as a result of a fire in this fire area. The redundant chemical and volume control system and liquid radwaste system containment isolation valves located inside containment are outside of this fire area and are sufficient to perform the applicable functions to achieve and maintain safe shutdown.

Neither a fire nor fire suppression activities in this fire area affect the safe shutdown capability of components located in adjacent fire areas.

No fire in this fire area can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety-related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.1.3.2 Miscellaneous Areas

9A.3.1.3.2.1 Fire Area 1204 AF 02

This fire area is comprised of the following room(s):

Room No.	
S03	Stairwell

This fire area is the stairwell serving the shield building. The portion of the stairwell below the elevation of the auxiliary building roof is enclosed by fire barrier walls partially constructed of concrete and partially constructed of gypsum board, and having a minimum rating of two hours. Above the auxiliary building roof, the stairwell enclosure is not fire-rated. There are no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area.

No ventilation system directly serves this fire area.

9A.3.1.3.2.2 Fire Area 1204 AF 03

This fire area contains the elevator and elevator shaft serving the south side of the shield building. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

No ventilation system directly serves this fire area. After the fire, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation and lubricant associated with the elevator hoisting machinery which is attached to the top of the elevator car. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers provide adequate separation from adjacent fire areas below the elevation of the auxiliary building roof. Manual fire suppression activities prevent the fire from propagating beyond the nonrated building exterior walls above the roof.

Safe Shutdown Evaluation

There are no safe shutdown components in this fire area. No safe shutdown evaluation is required.

9A.3.1.3.2.3 Fire Area 1205 AF 01

This fire area is comprised of the following room(s):

Room No.	
S04	Stairwell

This stairwell serving the southeast portion of the auxiliary building is enclosed by fire barrier walls having a minimum rating of 2 hours. The structural walls are concrete and the nonstructural walls are made of gypsum board. There are no safety-related components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

The radiologically controlled area ventilation system (VAS) serves this fire area on a once-through basis. Air at a positive pressure is supplied to the stairwell and exfiltrates through small openings such as under the fire doors. For a fire in the fire area outside the stairwell in which the supply penetration is located, a fire damper closes automatically on high temperature to prevent the spread of fire and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, minimizing the potential for migration of smoke and hot gases.

9A.3.1.3.2.4 Fire Area 1205 AF 02

This fire area contains the elevator and elevator shaft serving the radiologically controlled area of the auxiliary building, and the associated elevator mechanical room, 12661. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radiologically controlled area ventilation system serves the elevator mechanical room portion of this fire on a once-through basis. There is no direct ventilation of the elevator or the elevator shaft. In the event of a fire in the mechanical room the system continues to ventilate the fire area unless the operator decides to shut down the system, or until heat from the fire is sufficient to close the fire dampers. The fire dampers close automatically on high temperature to control the spread of fire, smoke and hot gases. Smoke is removed from the elevator mechanical room by reopening the fire dampers after a fire and operating the ventilation system to exhaust them to the atmosphere. For a fire in the elevator or elevator shaft, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and primarily consist of cable insulation and lubricant associated with the elevator hoisting machinery. There are small concentrations of these materials in the elevator mechanical room at the top of the elevator shaft. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers provide adequate separation from adjacent fire areas and the fire is contained within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

Safe Shutdown Evaluation

There are no safe shutdown components in this fire area. No safe shutdown evaluation is required.

9A.3.2 Turbine Building

Figure 9A-2 identifies fire areas and fire zones within the turbine building and illustrates the fire resistance of the fire area boundaries.

A fire in the turbine building fire areas does not affect safe shutdown capability. Fire areas located in the turbine building are separated from the safety-related areas of the nuclear island by a 3-hour fire barrier wall. The closing of fire dampers in the ventilation systems serving turbine building fire areas does not affect safe shutdown systems because safe shutdown systems are served by independent ventilation systems.

Neither a fire nor fire suppression activities in turbine building fire areas affect the safe shutdown capability of components located in other fire areas.

Floor drains are sized to handle water flow from fixed automatic fire suppression systems without significant accumulation of water in the fire area. Flooding of components required for safe shutdown is not a concern because there are no safe shutdown components in the turbine building.

No fire in the turbine building can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.2.1 Fire Area 2000 AF 01

This fire area contains the main condenser, lubrication equipment, turbine-generator and auxiliaries, switchgear rooms, electrical equipment room, feedwater pumps, chemical feed equipment, chiller area, plant air compressors, digital-electrohydraulic skid, main steam piping, office area, and a sampling laboratory. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 2030 AF 20300	20300	Elevation 100′-0″ (base slab) general floor area
• 2030 AF 20300	20306	Steam generator blowdown heat exchanger area
• 2030 AF 20300	20309	Circulating water pipe trench
• 2038 AF 20300	----	Main feedwater pump area
• 2039 AF 20301	20301	Chemical storage area
• 2040 AF 20400	20400	Elevation 117′-6″ general floor area
• 2040 AF 20400	20409	Condensate polishing area
• 2040 AF 20400	20410	Access to annex building
• 2040 AF 20400	20411	Access to auxiliary building lower nuclear island nonradioactive ventilation equipment room
• 2050 AF 20500	20500	Elevation 135′-3″ general floor area
• 2050 AF 20500	20512	Access to annex building
• 2050 AF 20500	20513	Access to auxiliary building main steam isolation valve compartment B
• 2050 AF 20500	20514	Access to auxiliary building upper nuclear island nonradioactive ventilation system equipment room
• 2050 AF 20500	20515	Access to auxiliary building main steam isolation valve compartment A
• 2050 AF 20502	----	Digital-electrohydraulic skid
• 2052 AF 20504	20510	HVAC equipment area
• 2053 AF 20505	20505	Office area at elevation 149′-0″
• 2053 AF 20506	20509	Variable frequency driver power converter room
• 2057 AF 20503	20511	Generator seal oil unit
• 2060 AF 20600	20600	Elevation 161′-0″ general floor area
• 2060 AF 20600	20603	Restroom
• 2060 AF 20600	20604	Restroom
• 2060 AF 20600	20605	Surge tank platform
• 2063 AF 20601	20601	Tool room/storage area
• 2063 AF 20602	20602	Office area/engineering workstation at elevation 171′-0″

This fire area designation consists of the entire turbine building floor areas except those special areas contained within fire rated enclosures and discussed below as separate fire areas. In zones within this area where there is a potential for spills of oil or other combustibles, such as the digital-electrohydraulic skid, condensate polishing area, chemical storage area and the generator seal oil unit, spill control curbs are provided to limit the spread of fire should one occur. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors

- Automatic suppression for the oil spill areas around the turbine-generator, the generator seal oil unit, the main feedwater pump area, the digital-electrohydraulic skid, and the chemical storage area.

  Automatic suppression for the following equipment: the component cooling water pumps, the service water pumps, the start-up feedwater pumps and MCCs and control equipment at elevation 135'-3"(in the area defined by column 13.1 to 14 and P.1 to O).

  Automatic suppression is provided over elevation 100'-0" down the corridor between the condenser and the main feedwater pumps defined by column 13.1 to column 18, continuing down another corridor defined by column L.2 to column K.5 and for the equipment access area in fire zone 2030-AF-20300, room 20300.

  See Table 9A-3 for identification of the specific types of automatic suppression systems for this fire area.

- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The general area heating and ventilation subsystem of the turbine building ventilation system (VTS), as described in DCD subsection 9.4.9, uses roof mounted exhaust ventilators to pull in air through wall louvers. Dedicated roof mounted smoke and heat vents are also provided. The smoke and heat vents and, if available, the roof mounted exhaust ventilators, vent smoke to outside areas and prevent migration of smoke to adjacent fire areas. The dedicated smoke and heat vents provide additional assurance that excessive smoke and heat cannot buildup at the turbine building ceiling. The design of the smoke and heat vents is in conformance with the guidelines of NFPA 204M.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by operation of the automatic suppression system, if applicable, or manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. This area contains fire zones with a low quantity of combustible materials and other zones which have moderate to high quantities of combustible materials. Zones containing a low quantity of low heat release combustibles are generally protected by manual suppression. Zones containing moderate to high

quantities of high heat release combustibles, such as oil spill areas, are protected by automatic suppression.

The limited amount of combustible material or automatic fire suppression activities prevent fire from propagating to other fire zones in the area and prevent fire from propagating through the exterior walls or roof of the turbine building to other fire areas. The south end of the turbine building is formed by the 3-hour fire barrier exterior walls of the annex and auxiliary building. There are no concentrations of combustibles in the turbine building adjacent to these walls. Therefore, a turbine building fire will not propagate through these exterior walls of the annex or auxiliary building.

The turbine building ventilation system (VTS) serves the turbine building only and therefore does not contribute to the spread of the fire or smoke to fire areas outside the turbine building. The turbine building ventilation system does not contribute to the spread of fire or smoke to other fire areas within the turbine building because fire dampers isolate the other fire areas.

9A.3.2.2 Fire Area 2000 AF 02

This fire area is comprised of the following room(s):

Room No.	
S02	Stairwell

This stairwell serving the southwest portion of the turbine building is enclosed by fire barrier walls having a minimum rating of 2 hours. These nonstructural walls are made of exterior siding material. There are no safety-related components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. A fire protection hose riser is located in the stairwell with NFPA Class I hose connections at intermediate stair landings.

This stairwell is not served by a ventilation system.

9A.3.2.3 Fire Area 2009 AF 01

This fire area is comprised of the following room(s):

Room No.	
S01	Stairwell

This stairwell serves the northeast portion of the turbine building. It is enclosed by interior walls of gypsum board having a minimum rating of 2 hours and exterior walls of exterior siding material. There are no safety-related components or systems in this fire area which contain radioactive material. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. A fire protection hose riser is located in the stairwell with NFPA Class I hose connections at intermediate stair landings.

This stairwell is not served by a ventilation system.

9A.3.2.4 Fire Area 2009 AF 02

This fire area is comprised of the following room(s):

Room No.	
20701	Elevator machine room

This elevator serving the turbine building from elevation 100'-0" to elevation 161'-0" and its machine room are enclosed by fire barrier walls having a minimum rating of 2 hours. These nonstructural walls are metal lined gypsum board. The elevator machine room is above the elevator tower at elevation 171-0". There are no radioactive systems in this fire area.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

This fire area is not served by a ventilation system. After the fire, smoke is removed from the fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and consist primarily of cable insulation and lubricant associated with the elevator hoisting machinery. This is a light hazard fire area and the rate of fire growth is expected to be slow. Two-hour fire barriers provide adequate separation from adjacent fire areas since the fire will be contained within this fire area.

No ventilation systems penetrate the elevator enclosure.

9A.3.2.5 Fire Area 2003 AF 02

This fire area is comprised of the following room(s):

Room No.	
S03	Stairwell

This stairwell serves the northwest portion of the turbine building from elevation 149'-0" to the office area/engineering workstation at elevation 171'-0". It is enclosed by fire barrier walls having a minimum rating of 2 hours. These nonstructural walls are made of gypsum boards. There are no safety-related components and no radioactive systems in this fire area. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area.

This stairwell is not served by a ventilation system.

9A.3.2.6 Fire Area 2003 AF 01

This fire area is comprised of the following room(s):

Room No.	
20304	Auxiliary boiler room

There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Wet pipe sprinklers
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Local heating and ventilation for the auxiliary boiler room is supplied by the turbine building ventilation system (VTS) as described in DCD subsection 9.4.9. During normal operation, exhaust ventilators mounted on an exterior wall pull air in from the turbine building through wall louvers and maintain the auxiliary boiler room at a lower pressure than turbine building general areas. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Following a fire, the exhaust ventilators, if available, can be used to vent smoke to outside the turbine building.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by the automatic suppression system or manually, using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. Due to the concentration of fuel oil and lubricating oil, this fire area is an extra hazard fire area. This area has a high combustible loading and fires with high heat release rates could develop rapidly. Therefore, an automatic fire suppression system is provided. The 3-hour fire barriers that separate this fire

area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The west wall of the auxiliary boiler room is part of the exterior wall of the turbine building. Due to the explosion hazard associated with an oil fired boiler, this wall contains blowout panels to relieve the pressure of an explosion to outside the turbine building.

The auxiliary boiler room ventilation system portion of the turbine building ventilation system does not contribute to the spread of the fire or smoke to other fire areas. Fire area boundaries are equipped with fire dampers to prevent the propagation of fire between fire areas.

9A.3.2.7 This section has been deleted.

9A.3.2.8 Fire Area 2033 AF 02

This fire area is comprised of the following room(s):

Room No.	
20303	Motor driven fire pump room

There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Local heating and ventilation for the motor driven fire pump room is supplied by the turbine building ventilation system (VTS) as described in DCD subsection 9.4.9. During normal operation, a wall mounted exhaust ventilator pulls in outside air through a wall louver. Should there be a turbine building fire outside the motor driven fire pump room, the use of outside air for ventilation prevents smoke from affecting the operation of the motor driven fire pump. Following a fire, the wall mounted exhaust ventilator, if available, can be used to vent smoke to outside the turbine building. If the exhaust ventilator is not available, an exterior door can be opened.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by operation of manual hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. The fire area has a low concentration of combustibles, primarily cable insulation, with moderate heat release rates. There are no concentrations of combustibles that could challenge the fire area barrier. The 3-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

As the motor driven fire pump room ventilation system supply and exhaust are both from outside the turbine building and as no ductwork penetrates the motor driven fire pump room fire area boundary, this ventilation system does not contribute to the spread of the fire or smoke to other fire areas.

9A.3.2.9 Fire Area 2040 AF 01

This fire area is comprised of the following room(s):

Room No.	
20407	Lube oil storage room

This fire area contains the clean and dirty lube oil storage tanks and the waste oil storage tank. There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Automatic water spray system
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Local heating and ventilation for the lube oil storage room is supplied by the turbine building ventilation system (VTS) as described in DCD subsection 9.4.9. During normal operation, an exhaust ventilator mounted on an exterior wall pulls air in from the turbine building through a wall louver and maintains the lube oil storage room at a lower pressure than turbine building general areas. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Following a fire, the exhaust ventilator, if available, can be used to vent smoke to outside the turbine building.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by operation of an automatic sprinkler system or manually, using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. Due to the concentration of lubricating oil, this fire area is an extra hazard fire area. This area has a high combustible loading and fires with high heat release rates could develop rapidly. Therefore, an automatic fire suppression system is provided. The 3-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond this fire area.

The lube oil storage area ventilation system portion of the turbine building ventilation system does not contribute to the spread of the fire or smoke to other fire areas because fire dampers isolate the fire area.

9A.3.2.10 Fire Area 2043 AF 01

This fire area is comprised of the following room(s):

Room No.	
20401	Secondary sampling laboratory

There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Wet pipe sprinklers
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The turbine building ventilation system (VTS) personnel area HVAC subsystem, as described in DCD subsection 9.4.9, provides heating and cooling to the secondary sampling laboratory. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by the automatic suppression system or manually, using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. As volatile chemicals are likely to be present, this fire area is an extra hazard fire area. Due to high heat release rates, fires could develop rapidly. Therefore, an automatic fire suppression system is provided. There are no concentrations of combustibles that could challenge the fire area barrier. The 3-hour fire

barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The VTS personnel area HVAC subsystem serving the secondary sampling laboratory does not contribute to the spread of the fire or smoke to other fire areas. Fire area boundaries are equipped with fire dampers to prevent the propagation of fire between fire areas.

9A.3.2.11 Fire Area 2050 AF 01

This fire area is comprised of the following room(s):

Room No.	
20504	Turbine lube oil reservoir room

There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Automatic water spray system
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Local heating and ventilation for the turbine lube oil reservoir room is supplied by the turbine building ventilation system (VTS) as described in DCD subsection 9.4.9. During normal operation, an exhaust ventilator mounted on an exterior wall pulls air in from the turbine building through a wall louver and maintains the turbine lube oil reservoir room at a lower pressure than turbine building general areas. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Following a fire, the exhaust ventilator, if available, can be used to vent smoke to outside the turbine building.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished by operation of automatic sprinkler system or manually, using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. Due to the concentration of lubricating oil, this fire area is an extra hazard fire area. This area has a high combustible loading and fires with high heat release rates could develop rapidly. Therefore, an automatic fire suppression system is provided. The 3-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The turbine lube oil reservoir ventilation system portion of the turbine building ventilation system does not contribute to the spread of the fire or smoke to other fire areas because fire dampers isolate the fire area.

9A.3.2.12 Fire Area 2052 AF 01

This fire area is comprised of the following room(s):

Room No.	
20502	Switchgear room 1

This fire area is the turbine building switchgear room 1 and contains high voltage electrical equipment. There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The turbine building ventilation system (VTS) electrical equipment rooms HVAC subsystem, as described in DCD subsection 9.4.9, provides heating and cooling to switchgear room 1. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. The fire area has a low concentration of combustibles, primarily cable insulation, with moderate heat release rates. The 2-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The VTS electrical equipment rooms HVAC subsystem of the turbine building ventilation system serving switchgear room 1 does not contribute to the spread of the fire or smoke to other fire areas because fire dampers isolate the fire area.

9A.3.2.13 Fire Area 2053 AF 01

This fire area is comprised of the following room(s):

Room No.	
20503	Electrical equipment room

This fire area is the electrical equipment room and contains high voltage electrical equipment. There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The turbine building ventilation system (VTS) electrical equipment rooms HVAC subsystem, as described in DCD subsection 9.4.9, provides heating and cooling to the electrical equipment room. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. The fire area has a low concentration of combustibles, primarily cable insulation, with moderate heat release rates. There are no concentrations of combustibles that could challenge the fire area barrier. The 2-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The VTS electrical equipment rooms HVAC subsystem of the turbine building ventilation system serving the electrical equipment room does not contribute to the spread of the fire or smoke to other fire areas because fire dampers isolate the fire area.

9A.3.2.14 Fire Area 2053 AF 02

This fire area is comprised of the following room(s):

Room No.	
20501	Switchgear room 2

This fire area contains high voltage electrical equipment. There are no systems in this fire area which contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The turbine building ventilation system (VTS) electrical equipment rooms HVAC subsystem, as described in DCD subsection 9.4.9, provides heating and cooling to switchgear room 2. Fire dampers close automatically on high temperature to control the spread of fire and smoke. Smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally with both visual and audible alarms in the main control room and security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3. The fire area has a low concentration of combustibles, primarily cable insulation, with moderate heat release rates. There are no concentrations of combustibles that could challenge the fire area barrier. The 2-hour fire barriers that separate this fire area from the rest of the turbine building provide sufficient separation to prevent the fire from propagating beyond the fire area.

The VTS electrical equipment rooms HVAC subsystem of the turbine building ventilation system serving switchgear room 2 does not contribute to the spread of the fire or smoke to other fire areas because fire dampers isolate the fire area.

9A.3.3 Yard Area And Outlying Buildings

The fire protection system yard main and the location of hydrants and hose houses are described in subsection 9.5.1. Fire protection analysis discussions for the yard area, the administration building, and other outlying buildings are site-specific and are covered by the Combined License application.

9A.3.4 Annex Building

Figure 9A-4 identifies fire areas and fire zones within the annex building and illustrates the fire resistance of the fire area boundaries.

A fire in the annex building fire areas does not affect safe shutdown capability. A fire is confined to the fire area, and fire areas within the annex building are separated from the safety-related areas of the nuclear island by a 3-hour fire barrier wall, except for those fire areas which include portions of the auxiliary building. Closing of fire dampers in the ventilation system serving the annex building fire areas does not affect safe shutdown systems. Safe shutdown systems are generally served by independent ventilation systems. Fire areas which include portions of the auxiliary building are discussed later in this subsection.

Neither a fire nor fire suppression activities in annex building fire areas affect the safe shutdown capability of components located in other fire areas.

Floor drains are sized to handle water flow from fire protection systems without a significant accumulation of water in the fire area. Flooding of components required for safe shutdown is not a concern because there are no safe shutdown components in the annex building.

No fire in the annex building can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.4.1 Fire Area 4001 AF 01

This fire area is comprised of the following room(s):

Room No.	
S01	Stairwell

This stairwell is enclosed by fire barrier walls having a minimum rating of 2 hours. The structural walls are concrete and the nonstructural walls are made of gypsum boards. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) serves this fire area. Air at a positive pressure is supplied to the stairwell and exfiltrates through small openings such as under the fire doors. For a fire in the fire area outside the stairwell in which the supply penetration is located, a fire damper closes automatically on high temperature to prevent the spread of fire and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, minimizing the potential for migration of smoke.

9A.3.4.2 Fire Area 4001 AF 02

This fire area is comprised of the elevator shaft and elevator.

This elevator is enclosed by fire barrier walls having a minimum rating of 2 hours.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

A wall exhaust fan and air intake louvers provide normal ventilation for the elevator shaft. After the fire, smoke is removed from the fire area by using the wall exhaust fan or portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3, and consist primarily of cable insulation and lubricant associated with the elevator hoisting machinery. This is a light hazard fire area and the rate of fire growth is expected to be slow. Two-hour fire barriers provide adequate separation from adjacent fire areas since the fire will be contained within this fire area.

9A.3.4.3 Fire Area 4002 AF 01

This fire area is comprised of the following room(s):

Room No.	
S02	Stairwell

This stairwell serving the annex building is enclosed by fire barrier walls having a minimum rating of 2 hours. The nonstructural walls are made of gypsum boards. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

The health physics and hot machine shop HVAC system (VHS) serves this fire area. Air at a positive pressure is supplied to the stairwell and exfiltrates through small openings such as under the fire doors. For a fire in the fire area outside the stairwell in which the supply penetration is located, a fire damper closes automatically on high temperature to prevent the spread of fire

and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, minimizing the potential for migration of smoke.

9A.3.4.4 Fire Area 4002 AF 02

This fire area is comprised of the following room(s):

Room No.	
S04	Stairwell

This stairwell serving the annex building is enclosed by fire barrier walls having a minimum rating of 2 hours. The nonstructural walls are made of gypsum boards. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

The general area HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) serves this fire area. Air at a positive pressure is supplied to the stairwell and exfiltrates through small openings such as under the fire doors. For a fire in the fire area outside the stairwell in which the supply penetration is located, a fire damper closes automatically on high temperature to prevent the spread of fire and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, minimizing the potential for migration of smoke.

9A.3.4.5 Fire Area 4003 AF 01

This fire area encompasses four levels of the annex building and contains demineralized water deoxygenating equipment and air handling equipment. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4003 AF 40340	40340	Demineralized water deoxygenating room
• 4003 AF 40442	40442	Boric acid batching room
• 4003 AF 40503	40503	Lower south air handling equipment room
• 4003 AF 40503	40504	Air intake plenum 2
• 4003 AF 40601	40601	Upper south air handling equipment room
• 4003 AF 40601	40602	Air intake plenum 3

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The mechanical equipment areas HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. This action controls the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible materials such as wood and paper. Combustibles are relatively uniformly distributed throughout each fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers provide adequate separation from adjacent fire areas. The building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.6 Fire Area 4003 AF 02

This fire area is comprised of the following room(s):

Room No.	
S03	Stairwell

This stairwell serving the annex building is enclosed by fire barrier walls having a minimum rating of 2 hours. The nonstructural walls are made of gypsum boards. The quantity of combustible materials in the stairwell is negligible and no fire is postulated in this fire area. NFPA Class I hose connections are provided in the stairwell for use in fighting fires in other fire areas.

The mechanical equipment areas HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) serves this fire area. Air at a positive pressure is supplied to the stairwell and exfiltrates through small openings such as under the fire doors. For a fire in the fire area outside the stairwell in which the supply penetration is located, a fire damper closes automatically on high temperature to prevent the spread of fire and smoke into the stairwell. For fires not affecting the ventilation system, the system continues to provide ventilation to the stairwell, minimizing the potential for migration of smoke.

9A.3.4.7 Fire Area 4031 AF 01

This annex building fire area contains one train of the non-Class 1E batteries and battery charging equipment. This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4031 AF 40307	40307	Battery room 1
• 4031 AF 40308	40308	Battery charger room 1

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally, and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation. The combustible materials are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided. The battery room is also separated from the adjacent charging room by a 1-hour fire barrier, which limits the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.8 Fire Area 4031 AF 02

This annex building fire area contains one train of the non-Class 1E batteries and battery charging equipment. This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4031 AF 40309	40309	Battery room 2
• 4031 AF 40310	40310	Battery charger room 2
• 4041 AF 40411	40411	Computer room B
• 4041 AF 40411	40412	Shift turnover room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing fire zones 4031 AF 40309 and 4031 AF 40310 stops upon detection of smoke in the supply duct. Combination-fire dampers close automatically in response to a smoke detector signal or high temperature to isolate fire zone 4031 AF 40310. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be restarted and manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire dampers in the main control room/technical support center HVAC subsystem of the NI non-radioactive ventilation system (VBS) close automatically on high temperature to isolate fire zone 4041 AF 40411. Combination fire-smoke dampers close automatically in response to a smoke detector signal or high temperature to control the spread of fire and smoke. The balance of this and other VBS subsystems continue to provide ventilation to the unaffected fire areas. The subsystem may be manually realigned to the once-through ventilation mode to minimize the potential for migration of smoke and hot gases. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from the fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode. Smoke from a fire in this fire area does not affect safe shutdown components in fire areas that are served by other ventilation systems, subsystems, or air distribution headers. Safe shutdown components in these fire areas, identified in Table 9A-4, are sufficient to achieve and maintain safe shutdown.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation. The combustible materials are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided. The battery room is also separated from the adjacent charging room by a 1-hour fire barrier, which limits the spread of fire within the fire area.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.9 Fire Area 4031 AF 05

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4031 AF 40300	40300	Access area
• 4031 AF 40300	40301	Access corridor
• 4031 AF 40300	40305	Security room 2
• 4031 AF 40303	40303	Corridor
• 4031 AF 40303	40304	Restroom

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible materials such as paper, wood, and plastic. Combustibles are relatively uniformly distributed throughout each fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided Fire zones within this fire area are separated by walls as shown in Figure 9A-4. The walls for the exit corridors are rated for a minimum of 1 hour in accordance with the Uniform Building Code. The building exterior walls are not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.10 Fire Area 4031 AF 06

This fire area is comprised of the following room(s):

Room No.	
40306	Central alarm station
40302	Security room 1

This fire area contains computer and communication equipment. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible materials such as paper, wood, and plastic. Combustibles are relatively uniformly distributed throughout each fire zone. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.11 Fire Area 4032 AF 01

This fire area is comprised of the following room(s):

Room No.	
40326	Non-radiologically controlled area entry/exit area
40327	Health physics office
40350	Radiologically controlled area entry/exit area
40351	Protective clothes pickup and suitup
40352	Radiation monitoring calibration room
40353	Office
40354	Health physics counting
40355	Decontamination room
40356	Corridor

The area is used for decontamination and monitoring of personnel leaving the radiological control area of the plant. Low levels of radioactive materials may be present within the fire area.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The health physics and hot machine shop HVAC system (VHS) servicing this fire area stops upon detection of smoke in the area or in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke.

After the fire, smoke is removed from this fire area by reopening the fire dampers and starting the exhaust fans serving this area.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible material such as wood and paper. Combustibles are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided and the building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.12 Fire Area 4032 AF 02

This fire area is comprised of the following room(s):

Room No.	
40357	Containment access corridor elevation 107′-2″

This fire area is the corridor used to transport equipment and personnel through the annex building and auxiliary building to and from containment. As such, low levels of radioactive material may be present within the fire area.

Fire Detection and Suppression Features

- Fire detectors
- Wet pipe sprinklers (Elevation 107'-2")
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The auxiliary/annex building subsystem of the radiologically controlled area ventilation system (VAS) servicing this fire area alarms in the main control room upon detection of smoke in the area or in the supply or exhaust duct. Fire dampers close automatically on high temperature to isolate this fire area. The balance of the VAS auxiliary/annex building ventilation subsystem remains in operation unless plant operators determine that there is a need to manually shut down the subsystem. The balance of VAS remains in operation. These actions control the spread of fire and smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers. The ventilation exhaust system serving the area exhausts smoke to the atmosphere.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the wet pipe sprinkler system or manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible material such as wood and paper. Diesel fuel may be present when there is a truck in the containment access corridor. Combustibles are relatively uniformly distributed throughout the fire area except when transient combustibles are present. This is an ordinary hazard fire area when transient combustibles are present and the rate of fire growth may be rapid. Minimum two-hour fire barriers are provided and the building exterior wall is not rated. An automatic suppression system is provided to address transient combustibles.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.13 Fire Area 4033 AF 01

This fire area is comprised of the following room(s):

Room No.	
40358	Hot machine shop
40359	Pump seal shop

The shop is used for decontamination and repair of equipment from the radiological control area of the plant. As such, low levels of radioactive materials may be present within the fire area.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The health physics and hot machine shop HVAC system (VHS) servicing this fire area stops upon detection of smoke in the area or in the duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and starting the exhaust fans serving this area.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible materials such as wood and paper. Combustibles are relatively uniformly distributed throughout the fire area. This is an ordinary hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided. The building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.14 Fire Area 4034 AF 01

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4034 AF 40311	40311	Corridor
• 4034 AF 40311	40312	Corridor
• 4034 AF 40311	40319	Corridor
• 4034 AF 40313	40313	Office
• 4034 AF 40313	40314	Office
• 4034 AF 40313	40315	Office
• 4034 AF 40313	40316	Office
• 4034 AF 40318	40317	Office
• 4034 AF 40318	40318	ALARA briefing room and operational support center
• 4034 AF 40320	40320	Women's change room
• 4034 AF 40322	40321	Janitor closet
• 4034 AF 40322	40322	Men's change room
• 4034 AF 40322	40323	Water heater room
• 4034 AF 40322	40324	Drying area
• 4034 AF 40322	40325	Shower room

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The general area HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate portions of this fire area. These actions control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, an exhaust fan serving the change rooms, mounted on the roof over the fire area, is used to exhaust smoke to the atmosphere from the change rooms. Smoke from other areas may be exhausted using portable exhaust fans and flexible ductwork.

Fire zone 4034 AF 40311 is an exit corridor for the area and is protected with fire dampers on duct penetrations of the corridor envelope in accordance with the Uniform Building Code.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible material such as wood and paper. Combustibles are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided and the building exterior wall is not rated. Fire zones within this fire area are separated by walls as shown in Figure 9A-4. The walls of fire zone 4034 AF 40311 are rated for 1-hour in accordance with Uniform Building Code requirements for exit corridors.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.15 Fire Area 4035 AF 01

This fire area is comprised of the following room(s):

Room No.	
40341	Ancillary diesel generator room

This annex building fire area contains two diesel generator sets and one fuel storage tank. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Automatic dry pipe sprinkler system
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The mechanical equipment areas HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. These actions control the spread of fire and smoke. After the fire, smoke is removed from this fire area by using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this area is detected through the operation of the automatic dry pipe sprinkler system which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the automatic dry pipe sprinkler system. Water from the sprinklers rapidly fills and cools the small diked area under the fuel oil storage tank. If necessary the fire can also be extinguished manually.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of diesel fuel oil in the fuel oil storage tank. The tank is located in the southwest corner of the room. The remaining combustibles are relatively uniformly distributed throughout the fire area. This is an ordinary hazard fire area and the rate of heat release is expected to be moderate to high. Minimum three-hour fire barriers are provided and the building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.16 Fire Area 4041 AF 01

This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4041 AF 40403	40403	Technical support center operations area
• 4041 AF 40403	40404	Restroom
• 4041 AF 40403	40405	Rest area, kitchen
• 4041 AF 40403	40406	Conference room
• 4041 AF 40403	40407	Conference room
• 4041 AF 40403	40408	NRC room
• 4041 AF 40403	40409	Conference room
• 4041 AF 40410	40410	Computer room A
• 4041 AF 40410	40402	Corridor

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Combination fire-smoke dampers in the main control room/technical support center HVAC subsystem of the NI non-radioactive ventilation system (VBS) close automatically upon detection of smoke or on high temperature to isolate this fire area. The balance of this and other VBS subsystems continue to provide ventilation to the unaffected fire areas. This subsystem may be manually realigned to the once-through smoke exhaust ventilation mode to minimize the potential migration of smoke. If the exhaust fire-smoke damper for this fire area is operable, the damper may be reopened to further reduce the migration of smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the once-through ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible material such as wood and paper. Combustibles are relatively uniformly distributed throughout the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided and the building exterior wall is not rated Fire zones within this fire area are separated by walls as shown in Figure 9A-4. The corridor walls of fire zone 4041 AF 40410 are rated for one-hour in accordance with Uniform Building Code requirements for exit corridors.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.17 Fire Area 4041 AF 02

This fire area is comprised of the following room(s):

Room No.	
40400	Corridor
40401	Restroom

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply duct. Fire dampers close automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation. There are cable concentrations near the ceiling in the southern half of the corridor. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided.
The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.18 Fire Area 4042 AF 01

This fire area is comprised of the following room(s):

Room No.	
40413	Electrical switchgear room 1 including vertical electrical chase from room 40413 to room 40350 (floor slab Elevation 100' 0")

This annex building fire area contains the non-Class 1E switchgear for one train, and two motor generator sets and power cabinet. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The switchgear room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply or return duct. Fire dampers in the system close automatically on high temperature to isolate this fire area. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation within electrical equipment, cabinets, and raceways. There are cable concentrations near the ceiling and the exterior wall. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers provide adequate separation from adjacent fire areas. The building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.19 Fire Area 4042 AF 02

This fire area is comprised of the following room(s):

Room No.	
40414	Electrical switchgear room 2

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The switchgear room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply or return duct. Fire dampers in the system close automatically on high temperature to isolate this fire area. Other VXS subsystems continue to provide ventilation to the unaffected fire

areas. After the fire, smoke is removed from this fire area by reopening the fire dampers and operating the ventilation system in the smoke exhaust ventilation mode.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally, and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation within electrical equipment, cabinets, and raceways. There are cable concentrations near the ceiling and the exterior wall. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers provide adequate separation from adjacent fire areas. The building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.4.20 Fire Area 4051 AF 01

This fire area is comprised of the following room(s):

Room No.	
40500	North air handling equipment room
40501	Air intake plenum 1

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The equipment room HVAC subsystem of the annex/auxiliary building non-radioactive ventilation system (VXS) servicing this fire area stops upon detection of smoke in the supply or return duct. Fire dampers in the system close automatically on high temperature to isolate this fire area. Other VXS subsystems continue to provide ventilation to the unaffected fire areas. After the fire, smoke is removed from this fire area by using portable exhaust fans and flexible ductwork or by reopening the fire dampers and operating the ventilation system in the smoke exhaust mode if it is still functional.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation. There are cable concentrations along the west and south walls. This is a light hazard zone and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided and the exterior wall is not rated.

The ventilation systems contained in this fire area are equipped with fire dampers on their duct penetrations out of and into this fire area. The systems contained in this area are recirculating HVAC systems serving personnel and equipment areas in the annex building, and one train of HVAC equipment serving the main control room.

The ventilation system does not contribute to the spread of fire or smoke as described in the Smoke Control Features section above.

9A.3.4.21 Fire Area 4052 AF 01

This fire area contains the staging, storing, and assembly area for the containment. It also houses the exhaust fans for the health physics area and the containment air filtration exhaust units. The containment air filtration units remove radioactive halogens and particulates from the containment air prior to discharge to the atmosphere. Low levels of radioactive material may be present within the fire area during normal plant operation. This fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 4052 AF 40550	40550	Staging and storage area
• 4052 AF 40551	40551	Containment air filtration exhaust room A
• 4052 AF 40552	40552	Containment air filtration exhaust room B

Fire Detection and Suppression Features

- Fire detectors
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The auxiliary/annex building subsystem of the radiologically controlled area ventilation system (VAS) servicing this fire area alarms in the main control room upon detection of smoke in the area or in the supply or exhaust duct. The balance of the this and other VAS subsystems remain in operation unless plant operators determine that there is a need to manually shut down the subsystem. Fire dampers close automatically on high temperature to isolate this fire area.

These actions control the spread of fire and smoke. After the fire, smoke is removed from this fire area by reopening the fire dampers. The ventilation exhaust system serving the area exhausts smoke to the atmosphere.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished manually using hose streams or portable extinguishers.

This fire area contains two charcoal adsorbers, located in the containment air filtration system exhaust units. Fixed fire suppression systems are not required for these adsorbers because of the high charcoal ignition temperature. The normal temperature of the air flowing through the charcoal adsorbers is well below 200°F, while the minimum charcoal ignition temperature is greater than 600°F. Two independent temperature sensors interface with the fire detection system, providing charcoal temperature indication, and high and high-high temperature alarms. The filtration unit fan trips at the high temperature alarm setpoint. The setpoints of both alarms are well below the charcoal ignition temperature, allowing the operator time to investigate and take corrective action. In the unlikely event of a fire in the adsorber, the filtration unit can be manually isolated and sprayed with water from a nearby hose station to cool the charcoal and extinguish the fire.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and charcoal. The charcoal is contained within the sheet metal housings of the containment air filtration system exhaust units. There are cable concentrations along the south and west walls of the fire area. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum two-hour fire barriers are provided and the building exterior wall is not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.5 Radwaste Building

Figure 9A-5 identifies fire zones within the radwaste building fire area and illustrates the fire resistance of the fire area boundaries.

A fire in the radwaste building does not affect safe shutdown capability. A fire is confined to the fire area. The radwaste building fire area is separated from the safety-related areas of the nuclear island by a 3-hour fire barrier wall. The radwaste building is served by the dedicated radwaste building HVAC system. Closing of fire dampers in the ventilation system serving the radwaste building does not affect safe shutdown systems because the safe shutdown systems are served by other ventilation systems.

Neither a fire nor fire suppression activities in the radwaste building affect the safe shutdown capability of components located in other fire areas.

Floor drains are sized to handle water flow from fixed automatic fire protection systems without a significant accumulation of water in the fire area. Curbed areas within the radwaste building have sufficient capacity to retain fire protection water to prevent an unmonitored release to the environment.

No fire in the radwaste building can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.5.1 Fire Area 5031 AF 01

The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 5031 AF 50300	50300	Electrical/mechanical equipment room
• 5031 AF 50350	50350	Mobile systems facility
• 5031 AF 50351	50351	Waste accumulation room
• 5031 AF 50352	50352	Packaged waste storage room
• 5031 AF 50353	50353	HVAC equipment room

Various radwaste processing and packaging operations are performed utilizing the mobile system facilities. Moderate quantities of radioactive materials are present in the fire area during all modes of plant operation.

Fire Detection and Suppression Features

- Fire detectors
- Preaction sprinklers (fire zones 5031 AF 50350, -50351, and -50352)
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

The radwaste building HVAC system (VRS) stops upon actuation of the fire suppression system in this fire area or if smoke is detected in the common supply duct from the air handling units. The VRS remains in operation and an alarm is sent to the main control room and the central alarm station if a fire is detected in the duct or if the suppression system is actuated. The plant operators will determine if there is a need to manually shut down the system. The fire damper to the plant vent closes automatically on high temperature to isolate this fire area. These actions control the spread of fire and smoke. After the fire, smoke is removed from the fire area and exhausted to atmosphere by reopening the fire damper and operating the ventilation system exhaust fans.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the preaction sprinkler system or manually, using hose streams or portable extinguishers.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation and ordinary combustible materials such as cloth and trash. There are concentrations of combustibles in the waste accumulation room and potentially in the mobile systems facility. Depending upon the processes being performed in the mobile systems facility, the locations of combustible concentrations may change. This is a light hazard fire area and the rate of fire growth is expected to be slow. Minimum three-hour barriers are provided and the building exterior wall is not rated. An automatic suppression system is provided due to the localized areas of high combustible loading. This system provides confidence that the fire will be promptly extinguished, thus minimizing the potential for release of radioactivity and the radiation exposure of firefighters.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.6 Diesel Generator Building

Figure 9A-6 identifies fire areas and fire zones within the diesel generator building and illustrates the fire resistance of the fire area boundaries.

A fire in the diesel generator building does not affect safe shutdown capability. The diesel generator building is not adjacent to any building or area containing safety-related equipment. The diesel generator building heating and ventilation system is dedicated to the diesel generator building and independent of other ventilation systems.

Neither a fire nor fire suppression activities in the diesel generator building fire areas affect the safe shutdown capability of components located in other fire areas.

Floor drains are sized to handle low water flow rates. Water from fixed automatic fire protection systems flows out of the building through opened doors. Flooding of components required for safe shutdown is not a concern because there are no safe shutdown components in the diesel generator building.

No fire in the diesel building can cause spurious actions which could cause a breach in the reactor coolant boundary or defeat safety related decay heat removal capability or cause an increase in shutdown reactivity of the reactor.

9A.3.6.1 Fire Area 6030 AF 01

This fire area contains the diesel generator and supporting equipment for one train of the onsite standby ac power system. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 6030 AF 60310	60310	Diesel generator room A
• 6030 AF 60311	60311	Service module A
• 6030 AF 60313	60313	Combustion air cleaner area A

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors in the service module
- Dry pipe sprinklers in the diesel generator room
- Hose station(s)
- Portable fire extinguishers (including carbon dioxide)

Smoke Control Features

The diesel generator building ventilation system (VZS) serves this fire area by means of the engine room air handling unit, the service module air handling unit, and the standby exhaust fans. The engine room air handling unit stops upon actuation of the fire suppression system in the fire area or if smoke is detected in the supply air duct from the air handling unit. The service module air handling unit stops upon actuation of the fire suppression system in the fire area or if smoke is detected in the supply air duct from the air handling unit. The standby exhaust fans stop upon actuation of the fire suppression system in the fire area. These actions control the spread of fire and smoke. After the fire, smoke is removed from the fire area by manually turning on the ventilation exhaust fans mounted on the roof over the fire area, or by opening the roll-up door and personnel doors and utilizing portable exhaust fans.

Fire Protection Adequacy Evaluation

A fire in the diesel generator room is detected through the operation of the dry pipe sprinkler system which produces an audible alarm locally and both visual and audible alarms in the main control room and security central alarm station. A fire in the service module is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. A fire in the diesel generator room is extinguished by the automatic fire suppression system or manually, using hose streams or portable extinguishers. A fire in the service module is extinguished manually using hose streams or portable extinguishers.

The area under the diesel generator is shielded from direct impingement of the spray from the dry pipe sprinkler system, but water accumulating on the floor will find its way into this space.

The area under the diesel generator is also accessible for manual firefighting. The roll-up door permits access to this space for manual hose streams from outside the building.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation, lube oil and fuel oil. Combustibles concentrations occur at the diesel generator equipment and in the service module. This is an ordinary hazard fire area and the rate of heat release is expected to be moderate to high. Minimum three-hour fire barriers are provided and the building exterior walls are not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.6.2 Fire Area 6030 AF 02

This fire area contains the diesel generator and supporting equipment for one train of the onsite standby ac power system. The fire area is subdivided into the following fire zones:

Fire Zone	Room No.	
• 6030 AF 60320	60320	Diesel generator room B
• 6030 AF 60321	60321	Service module B
• 6030 AF 60323	60323	Combustion air cleaner area B

There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Fire detectors in the service module
- Dry pipe sprinklers in the diesel generator room
- Hose station(s)
- Portable fire extinguishers (including carbon dioxide)

Smoke Control Features

The diesel generator building ventilation system (VZS) serves this fire area by means of the engine room air handling unit, the service module air handling unit, and the standby exhaust fans. The engine room air handling unit stops upon actuation of the fire suppression system in the fire area or if smoke is detected in the supply air duct from the air handling unit. The service module air handling unit stops upon actuation of the fire suppression system in the fire area or if smoke is detected in the supply air duct from the air handling unit. The standby exhaust fans stop upon actuation of the fire suppression system in the fire area. These actions control the spread of fire and smoke. After the fire, smoke is removed from the fire area by manually turning on the ventilation exhaust fans mounted on the roof over the fire area, or by opening the roll-up door and personnel doors and utilizing portable exhaust fans.

Fire Protection Adequacy Evaluation

A fire in the diesel generator room is detected through the operation of the dry pipe sprinkler system which produces an audible alarm locally, and both visual and audible alarms in the main control room and security central alarm station. A fire in the service module is detected by a fire detector which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. A fire in the diesel generator room is extinguished by the automatic fire suppression system or manually, using hose streams or portable extinguishers. A fire in the service module is extinguished manually using hose streams or portable extinguishers.

The area under the diesel generator is shielded from direct impingement of the spray from the dry pipe sprinkler system, but water accumulating on the floor will find its way into this space. The area under the diesel generator is also accessible for manual firefighting. The roll-up door permits access to this space for manual hose streams from outside the building.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of electrical cable insulation, lube oil and fuel oil. Combustibles concentrations occur at the diesel generator equipment and in the service module. This is an ordinary hazard fire area and the rate of heat release is expected to be moderate to high. Minimum three-hour fire barriers are provided and the building exterior walls are not rated.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.6.3 Fire Area 6030 AF 03

This fire area is comprised of the following room(s):

Room No.	
60312	Diesel fuel day tank vault A

This fire area contains the fuel oil day tank for one train of the onsite standby ac power diesel generator. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Dry pipe sprinklers
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Fire dampers in the diesel generator building ventilation system (VZS) close automatically on high temperature to isolate this fire area. The tank vault exhaust fan stops upon actuation of the fire suppression system in this fire area.. These actions control the spread of fire and smoke.

After the fire, smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected through the operation of the dry pipe sprinkler system which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the automatic dry pipe sprinkler system. Water from the sprinklers rapidly fills and cools the small diked area under the tank. If necessary, the fire can also be extinguished manually.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of diesel fuel oil in the oil storage tank. Due to the small vault size and the size of the storage tank, the combustible loading is uniform throughout the fire area. This is an ordinary hazard fire area and the rate of heat release is expected to be high. Minimum three-hour fire barriers are provided.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.6.4 Fire Area 6030 AF 04

This fire area is comprised of the following room(s):

Room No.	
60322	Diesel fuel day tank vault B

This fire area contains the fuel oil day tank for one train of the onsite standby ac power diesel generator. There are no systems in this fire area which normally contain radioactive material.

Fire Detection and Suppression Features

- Dry pipe sprinklers
- Hose station(s)
- Portable fire extinguishers

Smoke Control Features

Fire dampers in the diesel generator building ventilation system (VZS) close automatically on high temperature to isolate this fire area. The tank vault exhaust fan stops upon actuation of the fire suppression system in this fire area.. These actions control the spread of fire and smoke. After the fire, smoke is removed from the fire area using portable exhaust fans and flexible ductwork.

Fire Protection Adequacy Evaluation

A fire in this fire area is detected through the operation of the dry pipe sprinkler system which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. The fire is extinguished by the automatic dry pipe sprinkler system. Water from the sprinklers rapidly fills and cools the small diked area under the tank. If necessary, the fire can also be extinguished manually.

Combustible materials in this fire area are listed in Table 9A-3 and primarily consist of diesel fuel oil in the oil storage tank. Due to the small vault size and the size of the storage tank, the combustible loading is uniform throughout the fire area. This is an ordinary hazard fire area and the rate of heat release is expected to be high. Minimum three-hour fire barriers are provided.

The ventilation system does not contribute to the spread of the fire or smoke as described in the Smoke Control Features section above.

9A.3.7 Special Topics

9A.3.7.1 Evaluation of Spurious Actuation

The potential for spurious actuation of equipment as a result of fire damage to electrical circuits is considered for each fire area containing safety-related equipment. As discussed in subsection 9A.2.7.1, one spurious actuation or signal is postulated at a time (except for high-low pressure interfaces). Principal spurious actuation are discussed below. In no case does the spurious actuation of equipment prevent safe shutdown.

9A.3.7.1.1 High-Low Pressure Interfaces

NRC Generic Letter 81-12 requests the identification and evaluation of high-low pressure interfaces between the reactor coolant system and interfacing systems such as the normal residual heat removal system. Per the Generic Letter, these interfaces typically contain two redundant and independent motor-operated valves in series. On a typical pressurized water reactor plant, these two valves and their control and power cables may be subject to a single fire. Potential high-low pressure system interfaces of particular interest are discussed below.

Reactor Coolant System Valve Actuation

NRC Generic Letter 81-12 specifically addresses the reactor coolant/residual heat removal system interface on pressurized water reactors. For AP600, the reactor coolant system to normal residual heat removal system interface is similar to the typical pressurized water reactor configuration. However, the normal residual heat removal system is not a safety-related system and is not required for safe shutdown. To preclude the spurious opening of the interface valves as a result of a fire, the power to the valves is locked out during power operations. Thus, spurious actuation of the reactor coolant system to normal residual heat removal system interface valves does not occur and the safe shutdown capability is not affected.

Automatic Depressurization System Valve Actuation

The automatic depressurization system valves are not considered to be high-low pressure interface valves when postulating spurious actuation following a fire. The safety issue related to high-low pressure interfaces is expressed in NRC Generic Letter 81-12. The concern is that the spurious opening of two or more isolation valves which form the boundary between the reactor coolant system and a low pressure system could lead to damage to the low pressure system and a loss of coolant outside the containment. Since automatic depressurization system valve actuation cannot damage a low pressure system, and since the system is entirely within containment, the automatic depressurization valves do not represent a high-low pressure interface as described in NRC Generic Letter 81-12.

Spurious actuation of automatic depressurization system stage 4 squib valves is prevented by the use of a squib valve controller circuit which requires multiple hot shorts for actuation, physical separation of potential hot short locations, and provisions for operator action to remove power from the fire zone. No postulated fire can spread to the hot short locations before the operator can remove power from the fire zone.

Automatic depressurization system stages 1, 2, and 3 consist of parallel paths, each path having two motor-operated valves in series. Spurious stage 1, 2, or 3 actuation is prevented by the use of physical separation of control circuits for the two series valves and provisions for operator action to remove power from the fire zone. No postulated fire can spread to the hot short locations before the operator can remove power from the fire zone.

Reactor Coolant System Reactor Vessel Head Vent Valve Actuation

The reactor vessel head vent valves are connected to the reactor vessel head and discharge to the IRWST. The head vent valves are not required to operate following a fire. There are four head vent valves arranged in two flow paths with two series valves in each path. The head vent valves are fail-closed dc powered solenoid valves, and each valve is powered by a separate, safety-related power supply as shown on Table 9A-2. In the event that a spurious signal were to open a head vent valve, the flow path is blocked by the closed series head vent valve. The cables for the control of one head vent valve in each flow path is enclosed in steel conduit up to the valve to prevent a fire inside containment from spuriously actuating two head vent valves in one flow path. Therefore, a single fire is not postulated to result in an uncontrolled LOCA.

The head vent valves are controlled from switches mounted on the safety panels in the control room. Each safety panel contains a switch for controlling each head vent valve (4 switches per panel). Each switch is a three-position, hold-in-position switch (open-neutral-close). If both switches are in the neutral position, soft control of the valve from the operator's console is allowed. If both switches are in the open position the valve will open. Either switch in the close position will close the valve. If one switch is in neutral position and one in the open position, the valve will hold its previous position but soft control is defeated. During a fire, switches on one panel may be shorted but none of the head vent valves will be opened because the switches on the other panel will be deactivated before the fire shorts them.

9A.3.7.1.2 Other Spurious Actuation

Principal spurious actuation not involving high-low pressure interfaces are discussed below.

Passive Core Cooling System Passive Residual Heat Removal Heat Exchanger Inlet Valve Actuation

One normally open valve is provided to isolate the inlet line to the passive residual heat removal heat exchanger. To preclude the spurious closing of the inlet valve as a result of a fire, the power to the valve is locked out during power operations. Thus, spurious closing of the passive core cooling passive residual heat removal heat exchanger inlet valve does not occur and the safe shutdown capability is not affected.

Passive Containment Cooling System Valve Actuation

Two valves in series isolate each of the two discharge flow paths from the passive containment cooling system storage tank. For purposes of system reliability, one valve in each flow path is normally open and the other is normally closed. Electrical division assignments are shown in Table 9A-2.

Spurious actuation of one of these valves is assumed to occur where a fire affects its electrical circuity. Such a fire can occur in the main control room, an electrical equipment fire area, in the passive containment cooling system valve room, or in fire areas or fire zones through which the applicable electrical cables are routed.

Spurious actuation of one of these valves causes a passive containment cooling system flow path to be disabled or inadvertently opened, depending on which valve is affected. If a normally closed valve spuriously opens, passive containment cooling system water delivery from that flow path will be initiated which does not adversely affect the capability to achieve and maintain safe shutdown. If one of the normally open valves were spuriously closed to prevent passive containment cooling system water delivery through that flow path when called upon during the safe shutdown process, the redundant passive containment cooling system water delivery flow path would be sufficient to achieve and maintain safe shutdown.

Containment Isolation Valve Actuation

Spurious actuation of a containment isolation valve is assumed to occur where a fire affects its electrical circuitry. Each containment penetration has redundant means of containment isolation.

Reactor Trip Switchgear

The reactor trip switchgear receives signals from each of the four Class 1E electrical divisions. The signals are de-energized to trip. Also, two out of four signals are required to trip. There are two redundant sets of trip switchgear in separate fire areas. There is no single spurious signal which could prevent the reactor from being tripped.

Reactor Coolant Pump Trip Switchgear

There are two redundant sets of reactor coolant pump trip switchgear in separate fire areas. One is controlled from division B; the other from division C. Thus, a spurious signal in either train will not prevent trip of the reactor coolant pumps.

9A.3.7.2 Protection of Accident Mitigation Equipment

Based on the guidance in BTP CMEB 9.5-1, redundant trains of safety-related equipment used to mitigate the consequences of a design basis accident (but not required for safe shutdown following a fire) are separated so that a fire within one train will not damage the redundant train. Both trains are permitted to be damaged by a single exposure fire.

Either diverse methods of performing the accident mitigation function or adequate separation is provided.

9A.4 References

1. NUREG-0800, U. S. Nuclear Regulatory Commission Standard Review Plan, Section 9.5.1, "Fire Protection Program," Revision 3, July 1981, including Branch Technical Position (BTP) CMEB 9.5-1, "Guidelines for Fire Protection for Nuclear Power Plants," Revision 2, July 1981.

2. Fire Protection Handbook, Edited by A. E. Cote, National Fire Protection Association, 16th edition.

3. NRC Generic Letter 81-12, February 20, 1981.

4. NFPA 92A-1993, "Recommended Practice for Smoke Control Systems."

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Table 9A-1

HEAT OF COMBUSTION VALUES

Material	Units	Heat of Combustion Btu/Unit
Acetylene	Pounds	21,500
Alcohol (Ethyl)	Gallons	84,100
Alcohol (Methyl)	Gallons	64,800
Batteries (cases, Note 1)	Cells	200,000
Cable Insulation	Pounds	10,200
Charcoal	Pounds	14,600
Cloth (cotton)	Pounds	8,000
Fuel Oil	Gallons	144,000
Gasoline	Gallons	128,000
Hydrogen	Pounds	61,000
Lube Oil	Gallons	151,000
Lubricant	Pounds	19,800
Methane	Pounds	23,900
Paper	Pounds	7,700
Plastic	Pounds	13,200
Propane	Pounds	21,700
Rubber	Pounds	12,200
Trash	Pounds	7,700
Volatiles (Note 2)	Gallons	136,000
Wood	Pounds	8,400

Notes:

1. Heat of combustion value depends on equipment selection.

2. Miscellaneous volatile liquids such as kerosene and toluene.

Table 9A-2 (Sheet 1 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11105	RCS	Reactor Vessel (MV-01)				
	RXS	Source Range Excore Detectors	NE-001A	NE-001C	NE-001B	NE-001D
		Intermediate Range Excore Detectors	NE-002A	NE-002C	NE-002B	NE-002D
		Power Range Excore Detectors (Lower)	NE-003A	NE-003C	NE-003B	NE-003D
		Power Range Excore Detectors (Upper)	NE-004A	NE-004C	NE-004B	NE-004D
1000 AF 01/ 1100 AF 11204	RCS	Hot Leg 1 Wide Range Pressure	PT-140A	PT-140C		
1000 AF 01/ 1100 AF 11206	PXS	Core Makeup Tank A Discharge Isolation Valve			V015A	V014A
	SFS	Suction Line Containment Isolation Valve			V034	
	RCS	Hot Leg 2 Wide Range Pressure			LT-140B	PT-140D

Table 9A-2 (Sheet 2 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11207		Core Makeup Tank B Discharge Isolation Valve	V015B	V014B		
1000 AF01/ 1100 AF 11208	RNS	Suction from IRWST Cont. Isolation Valve			V023	
		Return from CVS Cont. Isolation Valve			V061	
1000 AF 01/ 1100 AF 11300A	PSS	Containment Air Sample Cont. Isolation Valve			V008	
		Liquid Sample Line Cont. Isolation Valve			V010A	V010B
	RCS	Cold Leg 2A Flow			FT-103B	FT-103D
		Cold Leg 2B Flow			FT-104B	FT-104D
	VFS	Containment Purge Discharge Cont. Isolation Valve				V009
	VFS	Containment Purge Inlet Cont. Isolation Valve				V004

Table 9A-2 (Sheet 3 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11300A	PXS	IRWST Level			LT-046	LT-048
		IRWST Gutter Isolation Valve		V130A	V130B	
		Core Makeup Tank (MT-02A)				
	PCS	Containment Pressure			PT-006	PT-008
	SGS	Steam Generator 2 Wide Range Level			LT-014	LT-018
1000 AF 01/ 1100 AF 11300B	CCS	Outlet Line Cont. Isolation Valve	V207			
	CVS	Letdown Containment Isolation Valve	V045			
		Makeup Line Cont. Isolation Valve	V091			
		RCS Purification Stop Valve (RCPB)	V001	V002		
	IDS	Class 1E Electrical Penetrations	EY-P11Z	EY-P27Z		
		Class 1E Electrical Penetrations	EY-P12Y	EY-P29Y		
		Class 1E Electrical Penetrations	EY-P13Y	EY-P28Y		
		Class 1E Cable Trays	Note 1	Note 1		
	PCS	Containment Pressure	PT-005	PT-007		

Table 9A-2 (Sheet 4 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11300B	PXS	PRHR Heat Exchanger Control Valve		V108B	V108A	
		IRWST Level	LT-045	LT-047		
		Core Makeup Tank (MT-02B)				
	RCS	Pressurizer Pressure	PT-191A	PT-191C		
		Reference Leg Temperature	TE-193A	TE-193C		
		Pressurizer Level	LT-195A	LT-195C		
		PRHR Heat Exchanger Outlet Temperature		TE-161		
		Cold Leg 1A Flow	FT-101A	FT-101C		
		Cold Leg 1B Flow	FT-102A	FT-102C		
		Cold Leg 2A Flow	FT-103A	FT-103C		
		Cold Leg 2B Flow	FT-104A	FT-104C		
	SGS	Steam Generator 1 Narrow Range Level	LT-001	LT-003		
		Steam Generator 2 Narrow Range Level	LT-005	LT-007		
		Steam Generator 2 Wide Range Level	LT-013	LT-017		
		Steam Generator 1 Wide Range Level	LT-011	LT-015		
		SG1 Steam Line Pressure	PT-030	PT-032		
		SG2 Steam Line Pressure	PT-034	PT-036		
	WLS	Sump Discharge Cont. Isolation Valve	V055			
		RCDT Gas Outlet Cont. Isolation Valve	V067			

Table 9A-2 (Sheet 5 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11301	RCS	Reactor Head Vent Valve	V150A	V150C	V150B	V150D
		RCP 1A Bearing Water Temperature	TE-211A	TE-211C	TE-211B	TE-211D
		RCP 1B Bearing Water Temperature	TE-212A	TE-212C	TE-212B	TE-212D
		Cold Leg 1A Temperature (Narrow Range)	TE-121A			TE-121D
		Cold Leg 1B Temperature (Narrow Range)		TE-121C	TE-121B	
		Cold Leg 1A Temperature (Wide Range)	TE-125A			
		Cold Leg 1B Temperature (Wide Range)		TE-125C		
		Hot Leg 1 Temperature (Narrow Range)	TE-131A	TE-131C		
		Hot Leg 1 Temperature (Narrow Range)	TE-132A	TE-132C		
		Hot Leg 1 Temperature (Narrow Range)	TE-133A	TE-133C		
		Hot Leg 1 Temperature (Wide Range)		TE-135A		
		Pressurizer Pressure			PT-191B	PT-191D
		Reference Leg Temperature			TE-193B	TE-193D
		Pressurizer Level			LT-195B	LT-195D
		RCP Shaft Speed	ST-281	ST-282		
		Cold Leg 1A Flow			FT-101B	FT-101D
		Cold Leg 1B Flow			FT-102B	FT-102D
	SGS	Steam Generator 1 Wide Range Level			LT-012	LT-016

Table 9A-2 (Sheet 6 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11302	RCS	RCP 2A Bearing Water Temperature	TE-213A	TE-213C	TE-213B	TE-213D
		RCP 2B Bearing Water Temperature	TE-214A	TE-214C	TE-214B	TE-214D
		Cold Leg 2B Temperature (Narrow Range)	TE-122A			TE-122D
		Cold Leg 2A Temperature (Narrow Range)		TE-122C	TE-122B	
		Cold Leg 2A Temperature (Wide Range)			TE-125B	
		Cold Leg 2B Temperature (Wide Range)				TE-125D
		Hot Leg 2 Temperature (Narrow Range)			TE-131B	TE-131D
		Hot Leg 2 Temperature (Narrow Range)			TE-132B	TE-132D
		Hot Leg 2 Temperature (Narrow Range)			TE-133B	TE-133D
		Hot Leg 2 Temperature (Wide Range)			TE-135B	
		RCP Shaft Speed			ST-283	ST-284

Table 9A-2 (Sheet 7 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11500	IDS	Class 1E Cable Trays			Note 1	Note 1
		Class 1E Electrical Penetrations			EY-P30Z	EY-P14Z
		Class 1E Electrical Penetrations			EY-P31Y	EY-P15Y
		Class 1E Electrical Penetrations			EY-P32Y	EY-P16Y
	IIS	Core Exit Temperature		TE-002	TE-001	
		Core Exit Temperature		TE-003	TE-004	
		Core Exit Temperature		TE-005	TE-006	
		Core Exit Temperature		TE-008	TE-009	
		Core Exit Temperature		TE-010	TE-013	
		Core Exit Temperature		TE-012	TE-014	
		Core Exit Temperature		TE-015	TE-018	
		Core Exit Temperature		TE-016	TE-019	
		Core Exit Temperature		TE-017	TE-022	
		Core Exit Temperature		TE-020	TE-023	
		Core Exit Temperature		TE-021	TE-024	
		Core Exit Temperature		TE-025	TE-027	
		Core Exit Temperature		TE-026	TE-029	

Table 9A-2 (Sheet 8 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1000 AF 01/ 1100 AF 11500		Core Exit Temperature		TE-030	TE-031	
		Core Exit Temperature		TE-033	TE-034	
		Core Exit Temperature		TE-035	TE-036	
		Core Exit Temperature		TE-038	TE-037	
	SGS	Steam Generator 1 Narrow Range Level			LT-002	LT-004
		Steam Generator 2 Narrow Range Level			LT-006	LT-008
	VWS	Fan Coolers Return Cont. Isolation Valve			V082	
1000 AF 01/ 1200 AF 12341		None				
1000 AF 01/ 1200 AF 12541	IDS	Class 1E Cables		Note 1	Note 1	
1000 AF 01/ 1270 AF 12701	IDS	Class 1E Cables		Note 1	Note 1	
	PCS	PCCWST Isolation Valve		V001A	V001B	
		PCCWST Series Isolation Valve		V002A	V002B	
		PCS Water Delivery Flow		FT-001	FT-002	
		PCS Water Delivery Flow			FT-003	
		PCS Storage Tank Level		LT-010	LT-011	
1200 AF 01	IDS	Class 1E Cable Trays	Note 1	Note 1		
	SFS	Suction Line Cont. Isolation Valve	V035			

Table 9A-2 (Sheet 9 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1200 AF 01						
1200 AF 03	IDS	Class 1E Cable Trays			Note 1	Note 1
1201 AF 02	IDSB	24 Hr Battery 1A			DB-1A	
		24 Hr Battery 1B			DB-1B	
		72 Hr Battery 2A			DB-2A	
		72 Hr Battery 2B			DB-2B	
		125 Vdc Distribution Panel			DD-1	
		208/120 Vac Distribution Panel			EA-1	
		208/120 Vac Distribution Panel			EA-2	
		208/120 Vac Distribution Panel			EA-3	
		125 Vdc Switchboard			DS-1	
		125 Vdc Switchboard			DS-2	
		208/120 Vac Inverter			DU-1	
		208/120 Vac Inverter			DU-2	
		Regulating Transformer			DT-1	
		Battery Charger			DC-1	
		Battery Charger			DC-2	
		Voltage to Class 1E Battery Charger			--- 002	
		Voltage to Class 1E Battery Charger			--- 006	
	PMS	ESFAC Bay 1			JD-ESFB1	
		ESFAC Bay 2			JD-ESFB2	
		Protection Logic Cabinet			JD-ILCB1	
		Protection Logic Cabinet			JD-ILCB2	
		Protection Logic Cabinet			JD-ILCB3	

Table 9A-2 (Sheet 10 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1201 AF 02	PMS	Integrated Protection Cabinet Bay			JD-IPCB1	
		Integrated Protection Cabinet Bay			JD-IPCB2	
		Integrated Protection Cabinet Bay			JD-IPCB3	
		Integrated Protection Cabinet Bay			JD-IPCB4	
		MCR Multiplexer			JD-MUXB1	
		RSW Multiplexer			JD-MUXB2	
		QDPS Cabinet			JD-QDPB1	
	IDSB	Electrical Penetration			EY-P32Y	
		125 Vdc MCC			DK-1	
		Electrical Penetration			EY-P30Z	
		Electrical Penetration			EY-P31Y	
	PMS	QDPS I/O Cabinet			JD-QDPB2	
1201 AF 03	IDSD	Battery 1A				DB-1A
		Battery 1B				DB-1B
		125 Vdc Distribution Panel				DD-1
		208/120 Vac Distribution Panel				EA-1
		208/120 Vac Distribution Panel				EA-2
		125 Vdc Switchboard				DS-1
		208/120 Vac Inverter				DU-1
		Regulating Transformer				DT-1
		Battery Charger				DC-1
		Voltage to Class 1E Battery Charger				--- 004
		Voltage to Class 1E Battery Charger				--- 008
	PMS	ESFAC Bay 1				JD-ESFD1
		ESFAC Bay 2				JD-ESFD2
		Protection Logic Cabinet				JD-ILCD1
		Protection Logic Cabinet				JD-ILCD2
		Protection Logic Cabinet				JD-ILCD3

Table 9A-2 (Sheet 11 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1201 AF 03	PMS	Integrated Protection Cabinet Bay				JD-IPCD1
		Integrated Protection Cabinet Bay				JD-IPCD2
		Integrated Protection Cabinet Bay				JD-IPCD3
		Integrated Protection Cabinet Bay				JD-IPCD4
		MCR Multiplexer				JD-MUXD1
		RSW Multiplexer				JD-MUXD2
	IDSD	125 Vdc MCC				DK-1
		Electrical Penetration				EY-P14Z
		Electrical Penetration				EY-P15Y
		Electrical Penetration				EY-P16Z
1201 AF 04	IDS	Class 1E Cable Trays				Note 1
	CAS	Instrument Air Supply Cont. Isolation Valve				V014
	CCS	Inlet Line Cont. Isolation Valve				V200
	CCS	Outlet Line Cont. Isolation Valve				V208
	PXS	Nitrogen Supply Cont. Isolation Valve				V042
	VWS	Fan Coolers Supply Cont. Isolation Valve				V058
		Fan Coolers Return Cont. Isolation Valve				V086
	SGS	SG 1 Steam Line Pressure			PT-031	PT-033
		SG 1 Startup Feedwater Flow			FT-055A	FT-055B
		SG 2 Steam Line Pressure			PT-035	PT-037
		SG 2 Startup Feedwateer Flow			FT-056A	FT-056B
1201 AF 05	CVS	Hydrogen Addition Cont. Isolation Valve				V092

Table 9A-2 (Sheet 12 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1201 AF 05	SGS	Steam Gen. Blowdown Cont. Isolation Valve			V075A	V074A
		Steam Gen. Blowdown Cont. Isolation Valve			V074B	V075B
		PORV and Block Valve-SG 1 Cont. Isolation Valves			V027A	V233A
		Steam Line Cond. Drain Cont. Isolation Valve				V036A
		Main Steam Line Cont. Isolation Valve			V040A	V040A
		Startup Feedwater Cont. Isolation Valve				V067A
		Main Steam Line Cond. Drain Control Valve			V086A	
		MSIV Bypass Cont. Isolation Valve			V240A	V240A
1201 AF 06	SGS	PORV and Block Valve SG 2 Cont. Isolation Valve			V233B	V027B
		Steam Line Cond. Drain Cont. Isolation Valve				V036B
		Main Steam Line Cont. Isolation Valve			V040B	V040B
		Main Feedwater Cont. Isolation Valve			V057B	V057B
		Startup Feedwater Cont. Isolation Valve			V067B	
		Steam Line Cond. Drain Control Valve			V086B	
		MSIV Bypass Cont. Isolation Valve			V240B	V240B

Table 9A-2 (Sheet 13 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1202 AF 03	IDSC	24 Hr Battery 1A		DB-1A		
		24 Hr Battery 1B		DB-1B		
		72 Hr Battery 2A		DB-2A		
		72 Hr Battery 2B		DB-2B		
		125 Vdc Distribution Panel		DD-1		
		208/120 Vac Distribution Panel		EA-1		
		208/120 Vac Distribution Panel		EA-2		
		208/120 Vac Distribution Panel		EA-3		
		125 Vdc Switchboard		DS-1		
		125 Vdc Switchboard		DS-2		
		208/120 Vac Inverter		DU-1		
		208/120 Vac Inverter		DU-2		
		Regulating Transformer		DT-1		
		Battery Charger		DC-1		
		Battery Charger		DC-2		
		Voltage to Class 1E Battery Charger		---003		
		Voltage to Class 1E Battery Charger		---007		
	PMS	ESFAC Bay 1		JD-ESFC1		
		ESFAC Bay 2		JD-ESFC2		
		Protection Logic Cabinet		JD-ILCC1		
		Protection Logic Cabinet		JD-ILCC2		
		Protection Logic Cabinet		JD-ILCC3		
		Integrated Protection Cabinet Bay		JD-IPCC1		
		Integrated Protection Cabinet Bay		JD-IPCC2		
		Integrated Protection Cabinet Bay		JD-IPCC3		
		Integrated Protection Cabinet Bay		JD-IPCCA		

Table 9A-2 (Sheet 14 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1202 AF 03	PMS	MCR Multiplexer		JD-MUXC1		
		RSW Multiplexer		JD-MUXC2		
		QDPS Cabinet		JD-QDPC1		
		QDPS I/O Cabinet		JD-QDPC2		
	ECS	4160V RCP 1A Switchgear		ES-51		
		4160V RCP 2A Switchgear		ES-53		
		4160V RCP 1B Switchgear		ES-61		
		4160V RCP 2B Switchgear		ES-63		
	IDSC	Electrical Penetration		EY-P27Z		
		Electrical Penetration		EY-P29Y		
		Electrical Penetration		EY-P28Y		
		125 Vdc MCC		DK-1		
1202 AF 04	IDSA	Battery 1A	DB-1A			
		Battery 1B	DB-1B			
		125 Vdc Distribution Panel	DD-1			
		208/120 Vac Distribution Panel	EA-1			
		208/120 Vac Distribution Panel	EA-2			
		125 Vdc Switchboard	DS-1			
		208/120 Vac Inverter	DU-1			
		Regulating Transformer	DT-1			
		Battery Charger	DC-1			
		Voltage to Class 1E Battery Charger	--- 001			
		Voltage to Class 1E Battery Charger	--- 005			
	PMS	ESFAC Bay 1	JD-ESFA1			
		ESFAC Bay 2	JD-ESFA2			
		Protection Logic Cabinet	JD-ILCA1			
		Protection Logic Cabinet	JD-ILCA2			

Table 9A-2 (Sheet 15 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1202 AF 04	PMS	Protection Logic Cabinet	JD-ILCA3			
		Integrated Protection Cabinet Bay	JD-IPCA1			
		Integrated Protection Cabinet Bay	JD-IPCA2			
		Integrated Protection Cabinet Bay	JD-IPCA3			
		Integrated Protection Cabinet Bay	JD-IPCA4			
		MCR Multiplexer	JD-MUXA1			
		RSW Multiplexer	JD-MUXA2			
1204 AF 01	IDS	Class 1E Cable Trays	Note 1			
	VFS	Containment Purge Inlet Cont. Isolation Valve	V003			
	PSS	Liquid Sample Line Cont. Isolation Valve	V011			
		Sample Return Line Cont. Isolation Valve	V023			
		Air Sample Line Cont. Isolation Valve	V046			
	SFS	Discharge Line Cont. Isol. Valve	V038			
	VFS	Containment Purge Discharge Cont. Isolation Valve	V010			
	RNS	Discharge Cont. Isolation Valve	V011			
		Suction Header Cont. Isolation Valve	V022			

Table 9A-2 (Sheet 16 of 17)

SAFE SHUTDOWN COMPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1210 AF 01	IDS	Spare Battery (DB-1A)	Note 1	Note 1	Note 1	Note 1
		Spare Battery (DB-1B)	Note 1	Note 1	Note 1	Note 1
		Spare Battery Charger (DC-1)	Note 1	Note 1	Note 1	Note 1
		Spare Fuse Transfer Box (DF-1)	Note 1	Note 1	Note 1	Note 1
1220 AF 01	IDS	Class 1E Cable Trays			Note 1	Note 1
	ECS	4160V RCP 1A Switchgear			ES-52	
		4160V RCP 2A Switchgear			ES-54	
	ECS	4160V RCP 1B Switchgear			ES-62	
		4160 RCP 2B Switchgear			ES-64	
1220 AF 02	CVS	Letdown Containment Isolation Valve				V047
		Makeup Line Cont. Isolation Valve				V090
	WLS	Sump Discharge Cont. Isolation Valve				V057
		RCDT Gas Outlet Cont. Isolation Valve				V068
1230 AF 01	IDS	Class 1E Cable Trays	Note 1	Note 1		
1230 AF 02	IDS	Class 1E Cable Trays			Note 1	Note 1

Table 9A-2 (Sheet 17 of 17)

SAFE SHUTDOWN COPONENTS

Fire Area/ Fire Zone	System	Description	Class 1E Division A	C	B	D
1232 AF 01		Remote Shutdown Workstation				
	IDS	Class 1E Cable Trays	Note 1	Note 1	Note 1	Note 1
		Transfer Switch Set	Note 1	Note 1	Note 1	Note 1
1240 AF 01	IDS	Class 1E Cable Trays	Note 1	Note 1		
1242 AF 01		MCR Workstation				
	IDS	Class 1E Cable Trays	Note 1	Note 1	Note 1	Note 1
1242 AF 02	IDSA	Class 1E Electrical Penetration	EY-P11Z			
		Class 1E Electrical Penetration	EY-P12Y			
		Class 1E Electrical Penetration	EY-P13Y			
		125 Vac MCC	DK-1			
1243 AF 01		Reactor Trip Switchgear I				
	IDS	Class 1E Cables	Note 1	Note 1	Note 1	Note 1
1243 AF 02		Reactor Trip Switchgear II				
	IDS	Class 1E Cables	Note 1	Note 1	Note 1	Note 1

Note:
1. This represents equipment such as cables that have no associated tag number.

Table 9A-3 (Sheet 1 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1000 AF 01	YES								3	SMOKE HEAT	SEE ZONE
1100 AF 11105			CABLE INS	C	100	1.0E+06					HOSE STATION
REACTOR CAVITY		260	NET CAT.	C	TOTAL:	1.0E+06	3900	2			
1100 AF 11204			CABLE INS	C	100	1.0E+06					HOSE STATION
VERTICAL ACCESS/ RCDT ROOM		790	NET CAT.	C	TOTAL:	1.0E+06	1300	1			
1100 AF 11206			CABLE INS	C	200	2.0E+06					HOSE STATION
PXS VALVE/ ACCUMULATOR ROOM A		790	NET CAT.	C	TOTAL:	2.0E+06	2600	1			
1100 AF 11207			CABLE INS	C	200	2.0E+06					HOSE STATION
PXS VALVE/ ACCUMULATOR ROOM B		750	NET CAT.	C	TOTAL:	2.0E+06	2700	1			
1100 AF 11208			CABLE INS	C	200	2.0E+06					HOSE STATION
RNS VALVE ROOM		310	NET CAT.	C	TOTAL:	2.0E+06	6600	5			
1100 AF 11209			CABLE INS	C	500	5.1E+06					HOSE STATION
CVS ROOM		570	NET CAT.	C	TOTAL:	5.1E+06	8900	7			
1100 AF 11300A			CABLE INS	C	2500	2.6E+07					HOSE STATION
MAINTENANCE FLOOR			TRASH	B	500	3.9E+06					
SOUTHEAST			VOLATILES	E	10	1.4E+06					
		1550	NET CAT.	D	TOTAL:	3.1E+07	20,000	15			
1100 AF 11300B			CABLE INS	C	10000	1.0E+08					WATER SPRAY
MAINTENANCE FLOOR			TRASH	B	1000	7.7E+06					HOSE STATION
NORTH			VOLATILES	E	40	5.4E+06					
		3725	NET CAT.	D	TOTAL:	1.2E+08	31,000	23			
1100 AF 11300C			NEGLIGIBLE								HOSE STATION
MAINTENANCE FLOOR WEST											
1100 AF 11301			CABLE INS	C	500	5.1E+06					HOSE STATION
SG COMPARTMENT 1		810	NET CAT.	C	TOTAL:	5.1E+06	6300	5			
1100 AF 11302			CABLE INS	C	500	5.1E+06					HOSE STATION
SG COMPARTMENT 2		620	NET CAT.	C	TOTAL:	5.1E+06	8200	6			
1100 AF 11303			CABLE INS	C	200	2.0E+06					HOSE STATION
PRESSURIZER COMPARTMENT		220	NET CAT.	C	TOTAL:	2.0E+06	9300	7			
1100 AF 11303A			CABLE INS	C	100	1.0E+06					HOSE STATION
LOWER ADS VALVE AREA		144	NET CAT.	C	TOTAL:	1.0E+06	7100	5			
1100 AF 11303B			CABLE INS	C	100	1.0E+06					HOSE STATION
UPPER ADS VALVE AREA		144	NET CAT.	C	TOTAL:	1.0E+06	7100	5			

Table 9A-3 (Sheet 2 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1100 AF 11500			CABLE INS	C	12000	1.2E+08					HOSE STATION
OPERATING DECK AND			PAPER	C	500	3.9E+06					
REFUELING CAVITY		VOLATILES		E	55	7.5E+06					
			LUBE OIL	E	10	1.5E+06					
		11150	NET CAT.	D	TOTAL:	1.4E+08	12000	9			
1200 AF 12341			CABLE INS	C	4000	4.1E+07					NONE
MIDDLE ANNULUS			RUBBER	D	1200	1.5E+07					
		1845	NET CAT.	D	TOTAL:	5.5E+07	30000	22			
1200 AF 12541			CABLE INS	C	500	5.1E+06					NONE
UPPER ANNULUS		1685	NET CAT.	C	TOTAL:	5.1E+06	3000	1			
1270 AF 12701			CABLE INS	C	500	5.1E+06					NONE
PCS VALVE ROOM		800	NET CAT.	C	TOTAL:	5.1E+06	6400	5			
1250 AF 12555			CABLE INS	C	4000	4.1E+07					HOSE STATION
VES AIR STORAGE/			PAPER	C	1000	7.7E+06					
OPERATING DECK			TRASH	B	1000	7.7E+06					
STAGING AREA			CLOTH	B	500	4.0E+06					
			WOOD	C	500	4.2E+06					
			PLASTIC	D	500	6.6E+06					
			RUBBER	D	100	1.2E+06					
			VOLATILES	E	10	1.4E+06					
		1200	NET CAT.	D	TOTAL:	7.4E+07	61000	49			
FIRE AREA TOTAL:		27363	NET CAT.	D	TOTAL:	4.5E+08	16000	12			
1200 AF 01	YES								3	SMOKE	SEE ZONE
1200 AF 12241			CABLE INS	C	200	2.0E+06					HOSE STATION
LOWER ANNULUS		1800	NET CAT.	C	TOTAL:	2.0E+06	1100	1			
1200 AF 12461			CABLE INS	C	1000	1.0E+07					HOSE STATION
CORRIDOR			TRASH	B	200	1.5E+06					
		480	NET CAT.	C	TOTAL:	1.2E+07	24000	19			
1210 AF 12151			CABLE INS	C	8000	8.2E+07					HOSE STATION
DEMIN./FILTER,			LUBE OIL	E	10	1.5E+06					
WLS & WGS			VOLATILES	E	10	1.4E+06					
EQUIPMENT ROOMS		PAPER	C		100	7.7E+05					
		1890	NET CAT.	D	TOTAL:	8.5E+07	45000	34			
1210 AF 12171			CABLE INS	C	2000	2.0E+07					HOSE STATION
EFFLUENT HOLDUP		PAPER	C		500	3.9E+06					
TANK ROOM A			VOLATILES	E	10	1.4E+06					
		785	NET CAT.	D	TOTAL:	2.6E+07	33000	25			

Table 9A-3 (Sheet 3 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1214 AF 12152			CABLE INS	C	500	5.1E+06					HOSE STATION
PRIMARY SAMPLE			PAPER	C	100	7.7E+05					
ROOM			PLASTIC	D	200	2.6E+06					
		280	NET CAT.	D	TOTAL:	8.5E+06	30000	23			
1214 AF 12154			CABLE INS	C	200	2.0E+06					HOSE STATION
AUX. BLDG SUMP AND		190	NET CAT.	C	TOTAL:	2.0E+06	11000	8			
SFS PENETRATION ROOM											
1215 AF 12161			CABLE INS	C	1500	1.5E+07					HOSE STATION
RNS PUMP ROOM B		LUBE OIL		E	5	7.6E+05					
AND CORRIDOR		785	NET CAT.	D	TOTAL:	1.6E+07	20000	16			
1216 AF 12166			CABLE INS	C	200	2.0E+06					HOSE STATION
WASTE HOLDUP			VOLATILES	E	10	1.4E+06					
TANK ROOM A		280	NET CAT.	E	TOTAL:	3.4E+06	12000	9			
1216 AF 12167			CABLE INS	C	200	2.0E+06					HOSE STATION
WASTE HOLDUP			VOLATILES	E	10	1.4E+06					
TANK ROOM B		300	NET CAT.	E	TOTAL:	3.4E+06	11000	9			
1216 AF 12169			CABLE INS	C	1000	1.0E+07					HOSE STATION
WLS PUMP ROOM/			LUBE OIL	E	5	7.6E+05					
CORRIDOR			VOLATILES	E	10	1.4E+06					
		475	NET CAT.	E	TOTAL:	1.1E+07	23000	17			
1216 AF 12172			CABLE INS	C	2000	2.0E+07					HOSE STATION
EFFLUENT HOLDUP		PAPER	C	500	3.9E+06						
TANK ROOM B			VOLATILES	E	10	1.4E+06					
		795	NET CAT.	D	TOTAL:	2.6E+07	32000	24			
1216 AF 12264			CABLE INS	C	500	5.1E+06					HOSE STATION
WASTE MONITOR			VOLATILES	E	10	1.4E+06					
TANK ROOM C & CHEM.		660	NET CAT.	E	TOTAL:	6.5E+06	9800	7			
WASTE TANK ROOM											
1220 AF 12251			CABLE INS	C	7000	7.1E+07					WET PIPE (6)
DEMIN/FILTER			PAPER	C	1000	7.7E+06					SPRINKLER
ACCESS AREA AND			PLASTIC	D	200	2.6E+06					HOSE STATION
CVS MAKEUP PUMP		LUBE OIL		E	5	7.6E+05					
ROOMS			VOLATILES	E	10	1.4E+06					
		1750	NET CAT.	D	TOTAL:	8.4E+07	48000	37			
1220 AF 12269			CABLE INS	C	100	1.0E+06					HOSE STATION
EL 92'-6" PIPE CHASE		800	NET CAT.	C	TOTAL:	1.0E+06	1300	1			
1220 AF 12271			CABLE INS	C	5000	5.1E+07					HOSE STATION
SFS EQUIPMENT ROOMS			LUBE OIL	E	10	1.5E+06					
			VOLATILES	E	10	1.4E+06					
		1190	NET CAT.	D	TOTAL:	5.4E+07	45000	34			

Table 9A-3 (Sheet 4 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1224 AF 12252			CABLE INS	C	800	8.2E+06					HOSE STATION
RADIOACTIVE			PAPER	C	500	3.9E+06					
CHEMISTRY			PLASTIC	D	500	6.6E+06					
LABORATORY			VOLATILES	E	5	6.8E+05					
		285	NET CAT.	D	TOTAL:	1.9E+07	68000	55			
1225 AF 12261			CABLE INS	C	3000	3.1E+07					HOSE STATION
WLS PUMP ROOM			LUBE OIL	E	5	7.6E+05					
AND CORRIDOR			VOLATILES	E	5	6.8E+05					
		865	NET CAT.	D	TOTAL:	3.2E+07	37000	28			
1235 AF 12361			CABLE INS	C	2000	2.0E+07					HOSE STATION
CORRIDOR			TRASH	B	500	3.9E+06					
		480	NET CAT.	C	TOTAL:	2.4E+07	51000	39			
1250 AF 12561			CABLE INS	C	1000	1.0E+07					HOSE STATION
CCS VALVE ROOM AND			VOLATILES	E	5	6.8E+05					
ACCESS CORRIDOR		630	NET CAT.	D	TOTAL:	1.1E+07	17000	13			
FIRE AREA TOTAL:		14720	NET CAT.	D	TOTAL:	4.3E+08	29000	22			HOSE STATION
1200 AF 02	YES								3/0	SMOKE	SEE ZONE
1200 AF 12562			CABLE INS	C	10000	1.0E+08					HOSE STATION
FUEL HANDLING AREA			PAPER	C	1500	1.2E+07					
			WOOD	C	1000	8.4E+06					
			TRASH	B	1000	7.7E+06					
			CLOTH	B	500	4.0E+06					
			PLASTIC	D	500	6.6E+06					
			LUBE OIL	E	15	2.3E+06					
			VOLATILES	E	5	6.8E+05					
		4725	NET CAT.	D	TOTAL:	1.4E+08	30000	23			
1230 AF 12371			CABLE INS	C	3000	3.1E+07					WET PIPE (6)
RAIL CAR BAY/			PAPER	C	1000	7.7E+06					SPRINKLER
FILTER STORAGE AREA			WOOD	C	1000	8.4E+06					HOSE STATION
			TRASH	B	1000	7.7E+06					
			LUBE OIL	E	10	1.5E+06					
			FUEL OIL	E	100	1.4E+07					
		1460	NET CAT.	D	TOTAL:	7.0E+07	48000	37			
1236 AF 12372			CABLE INS	C	200	2.0E+06					HOSE STATION
RESIN TRANSFER PUMP/			LUBE OIL	E	5	7.6E+05					
VALVE ROOM		80	NET CAT.	E	TOTAL:	2.8E+06	35000	26			
1236 AF 12373			CABLE INS	C	200	2.0E+06					HOSE STATION
SPENT RESIN TANK ROOM		70	NET CAT.	C	TOTAL:	2.0E+06	29000	22			
1246 AF 12471			CABLE INS	C	200	2.0E+06					HOSE STATION
WSS VALVE/PIPING AREA		90	NET CAT.	C	TOTAL:	2.0E+06	23000	17			
FIRE AREA TOTAL:		6425	NET CAT.	D	TOTAL:	2.2E+08	34000	26			HOSE STATION

Table 9A-3 (Sheet 5 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1200 AF 03	YES								3	SMOKE	HOSE STATION
1230 AF 12311			CABLE INS	C	1200	1.2E+07					
CORRIDOR		355	NET CAT.	C	TOTAL:	1.2E+07	34000	25			
1242 AF 12411			CABLE INS	C	1200	1.2E+07					
CORRIDOR		300	NET CAT.	C	TOTAL:	1.2E+07	41000	30			
FIRE AREA TOTAL:		655	NET CAT.	C	TOTAL:	2.4E+07	37000	28			
1201 AF 01	NO								2	NONE	NONE
STAIRWELL S02			NEGLIGIBLE								
1201 AF 02	YES								3	SMOKE	HOSE STATION
1211 AF 12104			BATTERIES	A	120	2.4E+07					
DIVISION B BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM 1		560	NET CAT.	C	TOTAL:	3.4E+07	61000	50			
1221 AF 12204			BATTERIES	A	120	2.4E+07					
DIVISION B BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM 2		560	NET CAT.	C	TOTAL:	3.4E+07	61000	50			
1222 AF 12207			CABLE INS	C	2500	2.6E+07					
DIVISION B		395	NET CAT.	C	TOTAL:	2.6E+07	65000	54			
DC EQUIPMENT ROOM											
1231 AF 12304			CABLE INS	C	3500	3.6E+07					
DIVISION B I&C/		585	NET CAT.	C	TOTAL:	3.6E+07	61000	50			
PENETRATION ROOM											
FIRE AREA TOTAL:		2100	NET CAT.	C	TOTAL:	1.3E+08	62000	51			
1201 AF 03	YES								3	SMOKE	HOSE STATION
1211 AF 12105			BATTERIES	A	120	2.4E+07					
DIVISION D BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM		560	NET CAT.	C	TOTAL:	3.4E+07	61000	50			
1221 AF 12205			CABLE INS	C	3500	3.6E+07					
DIVISION D DC		560	NET CAT.	C	TOTAL:	3.6E+07	64000	53			
EQUIPMENT ROOM											
1231 AF 12305			CABLE INS	C	3500	3.6E+07					
DIVISION D I&C/		550	NET CAT.	C	TOTAL:	3.6E+07	65000	55			
PENETRATION ROOM											
FIRE AREA TOTAL:		1670	NET CAT.	C	TOTAL:	1.1E+08	63000	53			

Table 9A-3 (Sheet 6 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1201 AF 04	YES								3	SMOKE	HOSE STATION
1241 AF 12405			CABLE INS	C	3000	3.1E+07					
LOWER VBS B&D			PAPER	C	1000	7.7E+06					
EQUIPMENT ROOM			VOLATILES	E	5	6.8E+05					
		670	NET CAT.	C	TOTAL:	3.9E+07	58000	47			
1251 AF 12505			CABLE INS	C	3000	3.1E+07					
UPPER VBS B&D			PAPER	C	1000	7.7E+06					
EQUIPMENT ROOM			VOLATILES	E	5	6.8E+05					
		705	NET CAT.	C	TOTAL:	3.9E+07	55000	44			
FIRE AREA TOTAL:		1375	NET CAT.	C	TOTAL:	7.8E+07	57000	46			
1201 AF 05	YES								3	SMOKE	HOSE STATION
1231 AF 12306			CABLE INS	C	2500	2.6E+07					
VALVE/PIPING		600	NET CAT.	C	TOTAL:	2.6E+07	43000	31			
PENETRATION ROOM											
1241 AF 12506			CABLE INS	C	3000	3.1E+07					
MSIV COMPARTMENT A			LUBE OIL	E	40	6.0E+06					
		705	NET CAT.	C	TOTAL:	3.7E+07	52000	40			
FIRE AREA TOTAL:		1305	NET CAT.	C	TOTAL:	6.2E+07	48000	37			
1201 AF 06	YES								3	SMOKE	HOSE STATION
MSIV COMPARTMENT B			CABLE INS	C	3000	3.1E+07					
			LUBE OIL	E	40	6.0E+06					
FIRE AREA TOTAL :		695	NET CAT.	E	TOTAL:	3.7E+07	53000	40			
1202 AF 01	NO								2	NONE	NONE
STAIRWELL S01			NEGLIGIBLE								
1202 AF 02	NO								2	SMOKE	HOSE STATION
NORTHEAST ELEVATOR			CABLE INS	C	600	6.1E+06					
SHAFT/MACHINE ROOM			LUBRICANT	E	5	9.9E+04					
FIRE AREA TOTAL:		205	NET CAT.	E	TOTAL:	6.2E+06	30000	23			

Table 9A-3 (Sheet 7 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1202 AF 03	YES								3	SMOKE	HOSE STATION
1212 AF 12102			BATTERIES	A	120	2.4E+07					
DIVISION C BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM 1		560	NET CAT.	C	TOTAL:	3.4E+07	61000	50			
1222 AF 12202			BATTERIES	A	120	2.4E+07					
DIVISION C BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM 2		560	NET CAT.	C	TOTAL:	3.4E+07	61000	50			
1222 AF 12203			CABLE INS	C	2500	2.6E+07					
DIVISION C DC		395	NET CAT.	C	TOTAL:	2.6E+07	65000	54			
EQUIPMENT ROOM											
1232 AF 12302			CABLE INS	C	3500	3.6E+07					
DIVISION C I&C ROOM		550	NET CAT.	C	TOTAL:	3.6E+07	65000	55			
1232 AF 12312			CABLE INS	C	1500	1.5E+07					
DIVISION C RCP TRIP		395	NET CAT.	C	TOTAL:	1.5E+07	39000	29			
SWITCHGEAR ROOM											
1232 AF 12313			CABLE INS	C	2500	2.6E+07					
I&C/DIVISION C		555	NET CAT.	C	TOTAL:	2.6E+07	46000	35			
PENETRATION ROOM											
FIRE AREA TOTAL:		3015	NET CAT.	C	TOTAL:	1.7E+08	57000	45			
1202 AF 04	YES								3	SMOKE	HOSE STATION
1212 AF 12101			BATTERIES	A	120	2.4E+07					
DIVISION A BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM		525	NET CAT.	C	TOTAL:	3.4E+07	65000	55			
1222 AF 12201			CABLE INS	C	3500	3.6E+07					
DIVISION A DC		525	NET CAT.	C	TOTAL:	3.6E+07	68000	58			
EQUIPMENT ROOM											
1232 AF 12301			CABLE INS	C	3500	3.6E+07					
DIVISION A I&C ROOM		550	NET CAT.	C	TOTAL:	3.6E+07	65000	55			
FIRE AREA TOTAL:		1600	NET CAT.	C	TOTAL:	1.1E+08	66000	56			
1202 AF 05	NO								3	SMOKE	NONE
STAIRWELL S05			NEGLIGIBLE								

Table 9A-3 (Sheet 8 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1204 AF 01	YES								3	SMOKE	HOSE STATION
1205 AF 12362			CABLE INS	C	500	5.1E+06					
RNS HX ROOM			VOLATILES	E	10	1.4E+06					
		275	NET CAT.	E	TOTAL:	6.5E+06	23000	18			
1205 AF 12365			CABLE INS	C	500	5.1E+06					
WASTE MONITOR			PAPER	C	100	7.7E+05					
TANK ROOM B			VOLATILES	E	5	6.8E+05					
		330	NET CAT.	D	TOTAL:	6.6E+06	20000	15			
1214 AF 12354			CABLE INS	C	200	2.0E+06					
MID ANNULUS		200	NET CAT.	C	TOTAL:	2.0E+06	10000	8			
ACCESS ROOM											
1215 AF 12162			CABLE INS.	C	500	5.1E+06					
RNS PUMP ROOM A			LUBE OIL	E	5	7.6E+05					
		205	NET. CAT.	D	TOTAL	5.9E+06	29000	22			
1220 AF 12256			CABLE INS.	C	400	4.1E+06					
EL 92'-6" PIPE		1000	NET CAT.	C	TOTAL:	4.1E+06	4100	2			
CHASE/VALVE ROOM											
1225 AF 12262			CABLE INS.	C	200	2.0E+06					
PIPING/VALVE ROOM			VOLATILES	E	5	6.8E+05					
		475	NET. CAT.	C	TOTAL:	2.7E+06	6000	4			
1234 AF 12351			CABLE INS	C	4000	4.1E+07					
MAINTENANCE			PAPER	C	1000	7.7E+06					
FLOOR STAGING AREA			WOOD	C	1000	8.4E+06					
			TRASH	B	1000	7.7E+06					
			CLOTH	B	500	4.0E+06					
			PLASTIC	D	500	6.6E+06					
			RUBBER	D	200	2.4E+06					
			VOLATILES	E	50	6.8E+06					
		1100	NET CAT.	E	TOTAL:	8.4E+07	77000	58			
1234 AF 12352			CABLE INS	C	500	5.1E+06					
ELEVATION 107'-2"			TRASH	B	200	1.5E+06					
PERSONNEL HATCH	265	NET CAT.		C	TOTAL:	6.6E+06	25000	19			
1235 AF 12363			CABLE INS	C	500	5.1E+06					
WASTE MONITOR			PAPER	C	100	7.7E+05					
TANK ROOM A			VOLATILES	E	5	6.8E+05					
		275	NET CAT.	D	TOTAL:	6.6E+06	24000	18			
1244 AF 12452			CABLE INS	C	500	5.1E+06					
VFS PENETRATION ROOM		265	NET CAT.	C	TOTAL:	5.1E+06	19000	14			
1244 AF 12454			CABLE INS	C	200	2.0E+06					
VFS/SFS/PSS		190	NET CAT.	C	TOTAL:	2.0E+06	11000	8			
PENETRATION ROOM											

Table 9A-3 (Sheet 9 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability(5)
1254 AF 12553			CABLE INS	C	5000	5.1E+07					
ELEVATION 135'-3"			PAPER	C	1000	7.7E+06					
PERSONNEL ACCESS			TRASH	B	500	3.9E+06					
AREA			VOLATILES	E	10	1.4E+06					
		1350	NET CAT.	D	TOTAL:	6.4E+07	47000	36			
1254 AF 12554			CABLE INS	C	400	4.1E+06					
SECURITY ROOMS			PAPER	C	1000	7.7E+06					
		190	NET CAT.	C	TOTAL:	1.2E+07	62000	51			
1264 AF 12651			CABLE INS	C	5000	5.1E+07					
VAS EQUIPMENT			LUBE OIL	E	10	1.5E+06					
ROOM			VOLATILES	E	10	1.4E+06					
		1480	NET CAT.	D	TOTAL:	5.4E+07	36000	27			
FIRE AREA TOTAL:		7600	NET CAT.	D	TOTAL:	2.6E+08	34000	26			
1204 AF 02	NO								2/0	NONE	NONE
STAIRWELL S03			NEGLIGIBLE								
1204 AF 03 STATION	NO								2/0	SMOKE	H O S E
SHIELD BLDG			CABLE INS	C	600	6.1E+06					
ELEVATOR			LUBRICANT	E	5	9.9E+04					
FIRE AREA TOTAL:		195	NET CAT.	C	TOTAL:	6.2E+06	32000	24			
1205 AF 01	NO								2	NONE	NONE
STAIRWELL S04			NEGLIGIBLE								
1205 AF 02 STATION	NO								2	SMOKE	H O S E
SOUTHEAST ELEVATOR			CABLE INS	C	600	6.1E+06					
SHAFT/MACHINE ROOM			LUBRICANT	E	5	9.9E+04					
FIRE AREA TOTAL:		195	NET CAT.	C	TOTAL:	6.2E+06	32000	24			

Table 9A-3 (Sheet 10 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1210 AF 01	YES								3	SMOKE	HOSE STATION
1210 AF 12111			CABLE INS	C	3000	3.1E+07					
CORRIDOR			TRASH	B	500	3.9E+06					
		1535	NET CAT.	C	TOTAL:	3.4E+07	22000	16			
1212 AF 12103			BATTERIES	A	120	2.4E+07					
SPARE BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM		825	NET CAT.	C	TOTAL:	3.4E+07	41000	30			
1212 AF 12112			CABLE INS	C	500	5.1E+06					
SPARE ROOM			PAPER	C	1000	7.7E+06					
			PLASTIC	D	500	6.6E+06					
			CLOTH	B	100	8.0E+05					
			TRASH	B	100	7.7E+05					
			VOLATILES	E	10	1.4E+06					
		340	NET CAT.	D	TOTAL:	2.2E+07	66000	53			
1212 AF 12113			CABLE INS	C	1500	1.5E+07					
SPARE BATTERY CHARGER ROOM		190	NET CAT.	C	TOTAL:	1.5E+07	81000	73			
FIRE AREA TOTAL:		2890	NET CAT.	C	TOTAL:	1.1E+08	37000	27			
1220 AF 01	YES								3	SMOKE	HOSE STATION
1220 AF 12211			CABLE INS	C	3000	3.1E+07					
CORRIDOR			TRASH	B	500	3.9E+06					
		1510	NET CAT.	C	TOTAL:	3.4E+07	23000	17			
1222 AF 12212			CABLE INS	C	1500	1.5E+07					
DIVISION B RCP TRIP SWITCHGEAR ROOM		340	NET CAT.	C	TOTAL:	1.5E+07	45000	34			
1222 AF 12213			CABLE INS	C	1000	1.0E+07					
SPARE ROOM AND			PAPER	C	200	1.5E+06					
MOTOR CONTROL CTRS			TRASH	B	100	7.7E+05					
		190	NET CAT.	C	TOTAL:	1.3E+07	66000	56			
FIRE AREA TOTAL:		2040	NET CAT.	C	TOTAL:	6.2E+07	31000	23			
1220 AF 02	YES								3	SMOKE	HOSE STATION
LOWER ANNULUS VALVE AREA			CABLE INS	C	500	5.1E+06					
FIRE AREA TOTAL:		290	NET CAT.	C	TOTAL:	5.1E+06	18000	13			

Table 9A-3 (Sheet 11 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1230 AF 01	YES								3	SMOKE	HOSE STATION
CORRIDOR			CABLE INS	C	2500	2.6E+07					
FIRE AREA TOTAL:		770	NET CAT.	C	TOTAL:	2.6E+07	33000	24			
1230 AF 02	YES								3	SMOKE	HOSE STATION
NON-1E EQUIPMENT/ PENETRATION ROOM			CABLE INS	C	3500	3.6E+07					PREACTION SPRINKLER
FIRE AREA TOTAL:		870	NET CAT.	C	TOTAL:	3.6E+07	41000	30			
1232 AF 01	YES								3	SMOKE	HOSE STATION
REMOTE SHUTDOWN WORKSTATION			CABLE INS	C	1500	1.5E+07					
			PAPER	C	1000	7.7E+06					
			PLASTIC	D	500	6.6E+06					
FIRE AREA TOTAL:		410	NET CAT.	C	TOTAL:	3.0E+07	72000	63			
1240 AF 01	YES								3	SMOKE	HOSE STATION
NON-1E EQUIPMENT/ PENETRATION ROOM			CABLE INS	C	3500	3.6E+07					
FIRE AREA TOTAL:		800	NET CAT.	C	TOTAL:	3.6E+07	45000	34			
1242 AF 01	YES								3	SMOKE	HOSE STATION
1242 AF 12401A			CABLE INS	C	4000	4.1E+07					
MCR MAIN CONTROL			PAPER	C	3500	2.7E+07					
AREA/TAGGING			PLASTIC	D	1000	1.3E+07					
ROOM/VESTIBULE		1545	NET CAT.	C	TOTAL:	8.1E+07	52000	41			
1242 AF 12401B			CABLE INS	C	2000	2.0E+07					
MCR SHIFT SUP'R/			PAPER	C	3500	2.7E+07					
CLERK/OPERATOR			PLASTIC	D	1000	1.3E+07					
AREAS		845	NET CAT.	C	TOTAL:	6.1E+07	72000	63			
FIRE AREA TOTAL:		2390	NET CAT.	C	TOTAL:	1.4E+08	59000	48			

Table 9A-3 (Sheet 12 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
1242 AF 02	YES								3	SMOKE	HOSE STATION
DIVISION A ELECTRICAL PENETRATION ROOM			CABLE INS	C	2000	2.0E+07					
FIRE AREA TOTAL:		450	NET CAT.	C	TOTAL:	2.0E+07	45000	34			
1243 AF 01	YES								3	SMOKE	HOSE STATION
REACTOR TRIP SWITCHGEAR 1			CABLE INS	C	500	5.1E+06					
FIRE AREA TOTAL:		95	NET CAT.	C	TOTAL:	5.1E+06	54000	42			
1243 AF 02	YES								3	SMOKE	HOSE STATION
REACTOR TRIP SWITCHGEAR 2			CABLE INS	C	500	5.1E+06					
FIRE AREA TOTAL:		95	NET CAT.	C	TOTAL:	5.1E+06	54000	42			
1250 AF 01	NO								3	SMOKE	HOSE STATION
VBS MCR/A&C EQUIPMENT ROOM			CABLE INS	C	12000	1.2E+08					
			CHARCOAL	C	5000	7.3E+07					
			LUBE OIL	E	20	3.0E+06					
			VOLATILES	E	10	1.4E+06					
FIRE AREA TOTAL:		3575	NET CAT.	D	TOTAL:	2.0E+08	56000	44			
2000 AF 01	NO								0	SEE ZONE	SEE ZONE
2030 AF 20300 ELEVATION 100'-0" (BASE SLAB) GENERAL FLOOR AREA			CABLE INS	C	70000	7.1E+08				HEAT	WET PIPE SPRINKLERS (6) HOSE STATION
			LUBE OIL	E	3000	4.5E+08					
			PLASTIC	D	10000	1.3E+08					
			VOLATILES	E	250	3.4E+07					
			FUEL OIL	E	100	1.4E+07					
			TRASH	B	500	3.9E+06					
		33082	NET CAT.	E	TOTAL:	1.4E+09	41000	31			
2038 AF 20300 MAIN FEEDWATER PUMP AREA			CABLE INS	C	2000	2.0E+07				HEAT	PREACTION SPRINKLERS
			LUBE OIL	E	1500	2.3E+08					
			PLASTIC	D	100	1.3E+06					
			VOLATILES	E	55	7.5E+06					
			TRASH	B	200	1.5E+06					
		1550	NET CAT.	E	TOTAL:	2.6E+08	166000	124			

Table 9A-3 (Sheet 13 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
2039 AF 20301			CABLE INS	C	250	2.6E+06				HEAT	WATER SPRAY
CHEMICAL			LUBE OIL	E	200	3.0E+07					HOSE STATION
STORAGE AREA			PLASTIC	D	100	1.3E+06					
			VOLATILES	E	550	7.5E+07					
			TRASH	B	250	1.9E+06					
		1465	NET CAT.	E	TOTAL:	1.1E+08	76000	57			
2040 AF 20400			CABLE INS	C	70000	7.1E+08				HEAT	WET PIPE
ELEVATION 117'-6"			LUBE OIL	E	1000	1.5E+08					SPRINKLERS
GENERAL FLOOR AREA			PLASTIC	D	5000	6.6E+07					HOSE STATION
			VOLATILES	E	55	7.5E+06					
			TRASH	B	1000	7.7E+06					
		34425	NET CAT.	E	TOTAL:	9.5E+08	27000	21			
2050 AF 20500			CABLE INS	C	70000	7.1E+08				HEAT	WET PIPE
ELEVATION 135'-3"			LUBE OIL	E	4000	6.0E+08					SPRINKLERS
GENERAL FLOOR AREA			PLASTIC	D	5000	6.6E+07					HOSE STATION
			VOLATILES	E	100	1.4E+07					
			HYDROGEN	E	25	3.8E+06					
			TRASH	B	500	3.9E+06					
		31653	NET CAT.	E	TOTAL:	1.4E+09	44000	33			
2050 AF 20502			CABLE INS	C	500	5.1E+06				SMOKE	WATER SPRAY
DEH SKID			LUBE OIL	E	200	3.0E+07					HOSE STATION
			PLASTIC	D	100	1.3E+06					
			TRASH	B	100	7.7E+05					
		125	NET CAT.	E	TOTAL:	3.7E+07	299000	224			
2052 AF 20504			CABLE INS	C	500	5.1E+06				SMOKE	HOSE STATION
HVAC EQUIPMENT			PAPER	C	1000	7.7E+06					
AREA			PLASTIC	D	500	6.6E+06					
			RUBBER	D	50	6.1E+05					
			TRASH	B	50	3.9E+05					
		2472	NET CAT.	D	TOTAL:	2.0E+07	8300	7			
2053 AF 20505			CABLE INS	C	500	5.1E+06				SMOKE	HOSE STATION
ELEVATION 149'-0"				PAPER		C	2000	1.5E+07			
OFFICE AREA			PLASTIC	D	1000	1.3E+07					
			RUBBER	D	250	3.1E+06					
			TRASH	B	50	3.9E+05					
		1691	NET CAT.	D	TOTAL:	3.7E+07	22000	17			
2053 AF 20506			CABLE INS	C	500	5.1E+06				SMOKE	HOSE STATION
VFD POWER			PLASTIC	D	1000	1.3E+07					
CONVERTER ROOM			TRASH	B	50	3.9E+05					
		848	NET CAT.	D	TOTAL:	1.9E+07	22000	17			
2057 AF 20503			CABLE INS	C	2000	2.0E+07				HEAT	WATER SPRAY
GENERATOR SEAL			LUBE OIL	E	400	6.0E+07					HOSE STATION
OIL UNIT			PLASTIC	D	300	4.0E+06					
			VOLATILES	E	55	7.5E+06					
			TRASH	B	200	1.5E+06					
		160	NET CAT.	E	TOTAL:	9.4E+07	586000	240			

Table 9A-3 (Sheet 14 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
2060 AF 20600			CABLE INS	C	750	7.7E+06				HEAT	WET PIPE
ELEVATION 161'-0"			LUBE OIL	E	200	3.0E+07					SPRINKLERS
GENERAL FLOOR AREA			PLASTIC	D	2000	2.6E+07					HOSE STATION
			VOLATILES	E	55	7.5E+06					
			TRASH	B	1000	7.7E+06					
		36107	NET CAT.	E	TOTAL:	7.9E+07	2200	2			
2063 AF 20601			CABLE INS	C	500	5.1E+06				SMOKE	HOSE STATION
TOOL ROOM/			PAPER	C	500	3.9E+06					
STORAGE AREA			PLASTIC	D	500	6.6E+06					
			RUBBER	D	100	1.2E+06					
			TRASH	B	50	3.9E+05					
		311	NET CAT.	D	TOTAL:	1.7E+07	55000	43			
2063 AF 20602			CABLE INS	C	200	2.0E+06				SMOKE	HOSE STATION
OFFICE AREA/			PAPER	C	1000	7.7E+06					
ENGINEERING			PLASTIC	D	500	6.6E+06					
WORKSTATION			RUBBER	D	100	1.2E+06					
			TRASH	B	50	3.9E+05					
		311	NET CAT.	D	TOTAL:	1.8E+07	58000	45			
FIRE AREA TOTAL:		144200	NET CAT.	E	TOTAL:	2.9E+09	20000	15			
2000 AF 02	NO								2	NONE	NONE
STAIRWELL S02			NEGLIGIBLE								
2003 AF 01	NO								3/0	HEAT	WET PIPE SPRINKLER
AUXILIARY BOILER			FUEL OIL	E	2000	2.9E+08					HOSE STATION
ROOM			CABLE INS	C	1500	1.5E+07					
			LUBE OIL	E	100	1.5E+07					
			PLASTIC	D	1000	1.3E+07					
			TRASH	B	1000	7.7E+06					
			VOLATILES	E	250	3.4E+07					
FIRE AREA TOTAL:		1808	NET CAT.	E	TOTAL:	3.7E+08	206000	155			
2003 AF 02	NO										
STAIRWELL S03			NEGLIGIBLE						2	NONE	NONE
2009 AF 01	NO								2	NONE	NONE
STAIRWELL S01			NEGLIGIBLE								

Table 9A-3 (Sheet 15 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
2009 AF 02	NO								2	SMOKE	HOSE STATION
ELEVATOR			CABLE INS	C	300	3.1E+06					
			LUBE OIL	E	5	9.9E+04					
FIRE AREA TOTAL:		65	NET CAT.	E	TOTAL:	3.2E+06	49000	36			
2033 AF 02	NO								3/0	SMOKE	HOSE STATION
FPS MOTOR DRIVEN			CABLE INS	C	1000	1.0E+07					
PUMP ROOM			LUBE OIL	E	25	3.8E+06					
			PLASTIC	D	100	1.3E+06					
			TRASH	B	75	5.8E+05					
			VOLATILES	E	10	1.4E+06					
FIRE AREA TOTAL:		394	NET CAT.	E	TOTAL:	1.7E+07	44000	33			
2040 AF 01	NO								3	HEAT	WET PIPE SPRINKLER
CLEAN & DIRTY LUBE			CABLE INS	C	1000	1.0E+07					HOSE STATION
OIL STORAGE ROOM			LUBE OIL	E	21500	3.2E+09					
			TRASH	B	100	7.7E+05					
FIRE AREA TOTAL:		732	NET CAT.	E	TOTAL:	3.3E+09	4450000	3338			
2043 AF 01	NO								3/0	HEAT	WET PIPE SPRINKLER
SECONDARY SAMPLING			CABLE INS	C	500	5.1E+06					HOSE STATION
LABORATORY			LUBE OIL	E	110	1.7E+07					
			PLASTIC	D	1000	1.3E+07					
			TRASH	B	1000	7.7E+06					
			VOLATILES	E	250	3.4E+07					
FIRE AREA TOTAL:		1384	NET CAT.	E	TOTAL:	7.7E+07	55000	42			

Table 9A-3 (Sheet 16 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
2050 AF 01	NO								3	HEAT	WATER SPRAY HOSE STATION
LUBE OIL RESERVOIR ROOM			CABLE INS	C	500	5.1E+06					
			LUBE OIL	E	12600	1.9E+09					
			PLASTIC	D	100	1.3E+06					
			TRASH	B	500	3.9E+06					
			VOLATILES	E	100	1.4E+07					
FIRE AREA TOTAL:		1169	NET CAT.	E	TOTAL:	1.9E+09	1648000	1236			
2052 AF 01	NO								2/0	SMOKE	HOSE STATION
TURBINE BUILDING SWITCHGEAR ROOM #1			CABLE INS	C	9000	9.2E+07					
			PLASTIC	D	500	6.6E+06					
			TRASH	B	100	7.7E+05					
			VOLATILES	E	5	6.8E+05					
FIRE AREA TOTAL:		1854	NET CAT.	C	TOTAL:	1.0E+08	54000	43			
2053 AF 01	NO								2/0	SMOKE	HOSE STATION
ELECTRICAL EQUIPMENT ROOM			CABLE INS	C	500	5.1E+06					
			LUBE OIL	E	10	1.5E+06					
			PLASTIC	D	1000	1.3E+07					
			TRASH	B	100	7.7E+05					
			VOLATILES	E	5	6.8E+05					
FIRE AREA TOTAL:		1340	NET CAT.	D	TOTAL:	2.1E+07	16000	11			
2053 AF 02	NO								2/0	SMOKE	HOSE STATION
TURBINE BUILDING SWITCHGEAR ROOM #2			CABLE INS	C	9000	9.2E+07					
			PLASTIC	D	500	6.6E+06					
			TRASH	B	100	7.7E+05					
			VOLATILES	E	5	6.8E+05					
FIRE AREA TOTAL:		2039	NET CAT.	C	TOTAL:	1.0E+08	49000	37			
4001 AF 01	NO								2	NONE	NONE
STAIRWELL S01			NEGLIGIBLE								

Table 9A-3 (Sheet 17 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4001 AF 02	NO								2	SMOKE	HOSE STATION
ELEVATOR			LUBRICANT	E	5	9.9E+04					
FIRE AREA TOTAL:		65	NET CAT.	E	TOTAL:	9.7E+04	1500	1			
4002 AF 01	NO								2	NONE	NONE
STAIRWELL S02			NEGLIGIBLE								
4002 AF 02	NO								2	NONE	NONE
STAIRWELL S04			NEGLIGIBLE								
4003 AF 01	NO								2/0	SMOKE	HOSE STATION
4003 AF 40340			CABLE INS	C	1530	1.6E+07					
DEMINERALIZED WATER			PAPER	C	100	7.7E+05					
DEOXYGENATING ROOM			WOOD	C	900	7.6E+06					
			PLASTIC	D	30	4.0E+05					
			TRASH	B	50	3.9E+05					
			LUBE OIL	E	7	1.1E+06					
			VOLATILES	E	10	1.4E+06					
		500	NET CAT.	D	TOTAL:	2.7E+07	54000	41			
4003 AF 40442			CABLE INS	C	180	1.8E+06					
BORIC ACID			PAPER	C	100	7.7E+05					
BATCHING ROOM			WOOD	C	600	5.0E+06					
			PLASTIC	D	50	6.6E+05					
			LUBRICANT	E	5	9.9E+04					
		730	NET CAT.	D	TOTAL:	8.4E+06	11500	8			
4003 AF 40503			CABLE INS	C	6200	6.3E+07					
LOWER SOUTH AIR			PAPER	C	10	7.7E+04					
HANDLING EQUIPMENT			RUBBER	D	100	1.2E+06					
ROOM			PLASTIC	D	300	4.0E+06					
			TRASH	B	5	3.9E+04					
			VOLATILES	E	10	1.4E+06					
		3070	NET CAT.	D	TOTAL:	7.0E+07	23000	17			
4003 AF 40601			CABLE INS	C	6200	6.3E+07					
UPPER SOUTH AIR			PAPER	C	10	7.7E+04					
HANDLING EQUIPMENT			RUBBER	D	100	1.2E+06					
ROOM			PLASTIC	D	300	4.0E+06					
			TRASH	B	5	3.9E+04					
			LUBE OIL	E	15	2.3E+06					
			VOLATILES	E	10	1.4E+06					
		3070	NET CAT.	D	TOTAL:	7.2E+07	24000	17			
FIRE AREA TOTAL:		7370	NET CAT.	D	TOTAL:	1.8E+08	24400	18			

Table 9A-3 (Sheet 18 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4003 AF 02	NO								2	NONE	NONE
STAIRWELL S03			NEGLIGIBLE								
4031 AF 01	NO								2	SMOKE	HOSE STATION
4031 AF 40307			BATTERIES	A	120	2.4E+07					
BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM #1		770	NET CAT.	C	TOTAL:	3.4E+07	44000				
4031 AF 40308			CABLE INS	C	2000	2.0E+07					
BATTERY CHARGER			PAPER	C	200	1.5E+06					
ROOM #1			PLASTIC	D	500	6.6E+06					
		740	NET CAT.	C	TOTAL:	2.9E+07	39000				
FIRE AREA TOTAL:		1510	NET CAT.	D	TOTAL:	6.3E+07	42000	31			
4031 AF 02	NO								2	SMOKE	HOSE STATION
4031 AF 40309			BATTERIES	A	120	2.4E+07					
BATTERY			CABLE INS	C	1000	1.0E+07					
ROOM #2		740	NET CAT.	C	TOTAL:	3.4E+07	46000				
4031 AF 40310			CABLE INS	C	2000	2.0E+07					
BATTERY CHARGER			PAPER	C	200	1.5E+06					
ROOM #2			PLASTIC	D	500	6.6E+06					
		720	NET CAT.	C	TOTAL:	2.9E+07	40000				
4031 AF 40411			CABLE INS	C	1000	1.0E+07					
COMPUTER ROOM B,			PLASTIC	D	100	1.3E+06					
SHIFT TURNOVER ROOM			WOOD	C	250	2.1E+06					
			CLOTH	B	50	4.0E+05					
		1315	NET CAT.	C	TOTAL:	1.4E+07	11000	8			
FIRE AREA TOTAL:		2135	NET CAT.	D	TOTAL:	7.7E+07	36000	27			

Table 9A-3 (Sheet 19 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4031 AF 05	NO								2/0	SMOKE	HOSE STATION
4031 AF 40300			CABLE INS	C	1000	1.0E+07					
ACCESS CORRIDOR,			PAPER	C	1200	9.2E+06					
ACCESS AREA,			PLASTIC	D	500	6.6E+06					
SECURITY ROOM #2			WOOD	C	500	4.2E+06					
			CLOTH	B	200	1.6E+06					
		1920	NET CAT.	D	TOTAL:	3.2E+07	17000	12			
4031 AF 40303			CABLE INS	C	2000	2.0E+07					
CORRIDOR AND			PAPER	C	1000	7.7E+06					
RESTROOM			PLASTIC	D	500	6.6E+06					
			WOOD	C	500	4.2E+06					
			CLOTH	B	500	4.0E+06					
		1600	NET CAT.	D	TOTAL:	4.3E+07	27000	20			
FIRE AREA TOTAL:		3520	NET CAT.	D	TOTAL:	7.5E+07	21000	16			
4031 AF 06	NO								2	SMOKE	HOSE STATION
CENTRAL ALARM			CABLE INS	C	1075	1.1E+07					
STATION & SECURITY			PAPER	C	200	1.5E+06					
ROOM #1			PLASTIC	D	175	2.3E+06					
			WOOD	C	500	4.2E+06					
			CLOTH	B	100	8.0E+05					
			TRASH	B	20	1.5E+05					
FIRE AREA TOTAL:		640	NET CAT.	D	TOTAL:	2.0E+07	31000	23			
4032 AF 01	NO								2/0	SMOKE	HOSE STATION
HEALTH PHYSICS			CABLE INS	C	4000	4.1E+07					
AREA			WOOD	C	3400	2.9E+07					
			PLASTIC	D	500	6.6E+06					
			RUBBER	D	50	6.1E+05					
			CLOTH	B	1000	8.0E+06					
			PAPER	C	4000	3.1E+07					
			TRASH	B	400	3.1E+06					
			VOLATILES	E	10	1.4E+06					
FIRE AREA TOTAL:		6280	NET CAT.	D	TOTAL:	1.2E+08	19000	14			
4032 AF 02	NO								2/0	SMOKE	HOSE STATION
CONTAINMENT			CABLE INS	C	4800	4.9E+07					WET PIPE
ACCESS CORRIDOR			PAPER	C	5000	3.9E+07					SPRINKLER
			PLASTIC	D	200	2.6E+06					
			FUEL OIL	E	100	1.4E+07					
			VOLATILES	E	50	6.8E+06					
FIRE AREA TOTAL:		2210	NET CAT.	D	TOTAL:	1.1E+08	50000	39			

Table 9A-3 (Sheet 20 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4033 AF 01	NO								2/0	SMOKE	HOSE STATION
HOT MACHINE SHOP			ACETYLENE	E	150	3.2E+06					
			LUBE OIL	E	20	3.0E+06					
			WOOD	C	1500	1.3E+07					
			CABLE INS	C	3610	3.7E+07					
			LUBRICANT	E	30	5.9E+05					
			PLASTIC	D	150	2.0E+06					
			RUBBER	D	300	3.7E+06					
			CLOTH	B	100	8.0E+05					
			PAPER	C	50	3.9E+05					
			TRASH	B	50	3.9E+05					
			VOLATILES	E	20	2.7E+06					
FIRE AREA TOTAL:		2290	NET CAT.	E	TOTAL:	6.6E+07	29000	22			
4034 AF 01	NO								2/0	SMOKE	NONE
4034 AF 40311			CABLE INS	C	2000	2.0E+07					
CORRIDORS			CLOTH	B	500	4.0E+06					
			PAPER	C	1000	7.7E+06					
			PLASTIC	D	500	6.6E+06					
			WOOD	C	500	4.2E+06					
		1570	NET CAT.	C	TOTAL:	4.3E+07	27000	21			
4034 AF 40313			CABLE INS	C	200	2.0E+06					
OFFICES			CLOTH	B	200	1.6E+06					
			PAPER	C	7000	5.4E+07					
			PLASTIC	D	250	3.3E+06					
			WOOD	C	500	4.2E+06					
		1010	NET CAT.	C	TOTAL:	6.5E+07	64000	54			
4034 AF 40318			CABLE INS	C	1000	1.0E+07					
ALARA BRIEFING			CLOTH	B	500	4.0E+06					
ROOM & OFFICE			PAPER	C	4000	3.1E+07					
			PLASTIC	D	250	3.3E+06					
			WOOD	C	500	4.2E+06					
		1370	NET CAT.	C	TOTAL:	5.3E+07	38000	29			
4034 AF 40320			CABLE INS	C	1000	1.0E+07					
WOMEN'S CHANGE			CLOTH	B	760	6.1E+06					
ROOM			PAPER	C	560	4.3E+06					
			PLASTIC	D	280	3.7E+06					
			TRASH	B	50	3.9E+05					
			WOOD	C	2300	1.9E+07					
		1230	NET CAT.	C	TOTAL:	4.4E+07	36000	26			

Table 9A-3 (Sheet 21 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4034 AF 40322			CABLE INS	C	1000	1.0E+07					
MEN'S CHANGE			CLOTH	B	1740	1.4E+07					
ROOM			PAPER	C	1440	1.1E+07					
			PLASTIC	D	720	9.5E+06					
			TRASH	B	100	7.7E+05					
			WOOD	C	5500	4.6E+07					
		2860	NET CAT.	C	TOTAL:	9.2E+07	32000	24			
FIRE AREA TOTAL:		8040	NET CAT.	C	TOTAL:	3.0E+08	37000	27			
4035 AF 01	NO		FUEL OIL	E	500	7.2E07			3/0	NONE	DRY PIPE
ANCILLARY DIESEL			LUBE OIL	E	16	2.4E06					SPRINKLERS
GENERATOR			CABLE INS	C	20	2.0E05					HOSE STATION
ROOM			PLASTIC	D	20	2.6E05					
			VOLATILES	E	10	1.4E06					
			CLOTH	B	10	8.0E04					
FIRE AREA TOTAL		230	NET CAT.	E	TOTAL	7.6E07	332,000	249			
4041 AF 01	NO								2/0	SMOKE	HOSE STATION
4041 AF 40403			CABLE INS	C	4000	4.1E+07					
TECHNICAL SUPPORT			PAPER	C	1500	1.2E+07					
CENTER			PLASTIC	D	200	2.6E+06					
			WOOD	C	1000	8.4E+06					
			CLOTH	B	50	4.0E+05					
			TRASH	B	20	1.5E+05					
		3660	NET CAT.	C	TOTAL:	6.4E+07	17000	13			
4041 AF 40410			CABLE INS	C	1000	1.0E+07					
COMPUTER ROOM A,			PLASTIC	D	100	1.3E+06					
CORRIDOR			WOOD	C	250	2.1E+06					
			CLOTH	B	50	4.0E+05					
		1315	NET CAT.	C	TOTAL:	1.4E+07	11000	8			
FIRE AREA TOTAL:		4975	NET CAT.	C	TOTAL:	7.8E+07	16000	12			
4041 AF 02	NO								2	SMOKE	HOSE STATION
CORRIDOR AND			CABLE INS	C	3000	3.1E+07					
RESTROOM			PLASTIC	D	20	2.6E+05					
			TRASH	B	20	1.5E+05					
FIRE AREA TOTAL:		1280	NET CAT.	C	TOTAL:	3.1E+07	24000	18			

Table 9A-3 (Sheet 22 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
4042 AF 01	NO								2/0	SMOKE	HOSE STATION
ELECTRICAL			CABLE INS	C	10000	1.0E+08					
SWITCHGEAR ROOM #1			PLASTIC	D	1100	1.5E+07					
FIRE AREA TOTAL:		3260	NET CAT.	D	TOTAL:	1.2E+08	36000	27			
4042 AF 02	NO								2/0	SMOKE	HOSE STATION
ELECTRICAL			CABLE INS	C	10000	1.0E+08					
SWITCHGEAR ROOM #2			PLASTIC	D	1300	1.7E+07					
FIRE AREA TOTAL:		3230	NET CAT.	D	TOTAL:	1.2E+08	37000	28			
4051 AF 01	NO								2/0	SMOKE	HOSE STATION
NORTH AIR HANDLING			CABLE INS	C	12300	1.3E+08					
EQUIPMENT ROOM			PAPER	C	10	7.7E+04					
			LUBE OIL	E	20	3.0E+06					
			PLASTIC	D	350	4.6E+06					
			RUBBER	D	100	1.2E+06					
			TRASH	B	5	3.9E+04					
			VOLATILES	E	10	1.4E+06					
FIRE AREA TOTAL:		7310	NET CAT.	D	TOTAL:	1.4E+08	19000	14			
4052 AF 01	NO								2/0	SMOKE	HOSE STATION
4052 AF 40550			CABLE INS	C	10200	1.0E+08					
STAGING AND			PAPER	C	50	3.9E+05					
STORAGE AREAS			LUBE OIL	E	20	3.0E+06					
			LUBRICANT	E	10	2.0E+05					
			PLASTIC	D	160	2.1E+06					
			RUBBER	D	50	6.1E+05					
			ACETYLENE	E	50	1.1E+06					
			TRASH	B	50	3.9E+05					
			VOLATILES	E	10	1.4E+06					
		8380	NET CAT.	D	TOTAL:	1.1E+08	14000				
4052 AF 40551			CABLE INS	C	500	5.1E+06					
CONTAINMENT AIR			CHARCOAL	C	2500	3.7E+07					
FILTRATION EXHAUST		600	NET CAT.	D	TOTAL:	4.2E+07	69000				
ROOM A											
4052 AF 40552			CABLE INS	C	500	5.1E+06					
CONTAINMENT AIR			CHARCOAL	C	2500	3.7E+07					
FILTRATION EXHAUST		600	NET CAT.	D	TOTAL:	4.2E+07	69000				
ROOM B											
FIRE AREA TOTAL:		9580	NET CAT.	E	TOTAL:	2.0E+08	20500	15			

Table 9A-3 (Sheet 23 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
5031 AF 01	NO								0	SEE ZONE	SEE ZONE
5031 AF 50300			CABLE INS	C	2200	2.2E+07				HEAT	HOSE
ELECTRICAL/			PLASTIC	D	200	2.6E+06					STATION
MECHANICAL			LUBE OIL	E	2	3.0E+05					
EQUIPMENT ROOM			VOLATILES	E	10	1.4E+06					
		1031	NET CAT.	E	TOTAL:	2.5E+07	25000	18			
5031 AF 50350			LUBE OIL	E	70	1.1E+07				HEAT	PREACTION
MOBILE SYSTEMS			LUBRICANT	E	20	4.0E+05					SPRINKLERS
FACILITY			CABLE INS	C	4300	4.4E+07					HOSE STATION
			CLOTH	B	70	5.6E+05					
			PLASTIC	D	250	3.3E+06					
			BATTERIES	A	1	2.0E+05					
			GASOLINE	E	60	7.7E+06					
			WOOD	C	400	3.4E+06					
			RUBBER	D	1400	1.7E+07					
			VOLATILES	E	10	1.4E+06					
			ACETYLENE	E	30	6.5E+05					
		6300	NET CAT.	E	TOTAL:	8.9E+07	14000	11			
5031 AF 50351			LUBE OIL	E	300	4.5E+07				HEAT	PREACTION
WASTE ACCUMULATION			CABLE INS	C	1500	1.5E+07					SPRINKLERS
ROOM			CLOTH	B	10000	8.0E+07					HOSE STATION
			PAPER	C	2500	1.9E+07					
			TRASH	B	31000	2.4E+08					
			PLASTIC	D	500	6.6E+06					
			WOOD	C	400	3.4E+06					
			RUBBER	D	500	6.1E+06					
			VOLATILES	E	10	1.4E+06					
		1500	NET CAT.	E	TOTAL:	4.2E+08	277000	208			
5031 AF 50352			CABLE INS	C	500	5.1E+06				HEAT	PREACTION
PACKAGED WASTE			PLASTIC	D	50	6.6E+05					SPRINKLERS
STORAGE ROOM			WOOD	C	400	3.4E+06					HOSE STATION
		810	NET CAT.	D	TOTAL:	9.1E+06	11000	8			
5031 AF 50353			CABLE INS	C	1100	1.1E+07				HEAT	HOSE STATION
HVAC EQUIPMENT			PLASTIC	D	20	2.6E+05					
ROOM			LUBE OIL	E	2	3.0E+05					
			VOLATILES	E	10	1.4E+06					
		840	NET CAT.	D	TOTAL:	1.3E+07	16000	11			
FIRE AREA TOTAL:		10481	NET CAT.	E	TOTAL:	5.5E+08	53000	40			

Table 9A-3 (Sheet 24 of 25)

FIRE PROTECTION SUMMARY

Fire Area/ Zone[1]	Safety Area?[2]	Floor Area, Sq Ft	Combust. Material[3]	Fire Sev. Cat.	Amount	Heat Value (Btu)	Comb. Load, Btu/ Sq Ft	Equiv. Dur. (Min)	Boundary Fire Res.[4] (Hours)	Detect. Cap.	Fixed Suppression Capability[5]
6030 AF 01	NO								3/0	SEE ZONE	SEE ZONE
6030 AF 60310			CABLE INS	C	1000	1.0E+07				NONE	DRY PIPE
DIESEL GENERATOR		FUEL OIL		E	100	1.4E+07					SPRINKLERS
ROOM A			LUBE OIL	E	500	7.6E+07					HOSE STATION
		1450	NET CAT.	E	TOTAL:	1.0E+08	69000	52			
6030 AF 60311			CABLE INS	C	2000	2.0E+07				SMOKE	HOSE STATION
SERVICE MODULE A		PAPER	C	100	7.7E+05						
		300	NET CAT.	C	TOTAL:	2.1E+07	71000	62			
6030 AF 60313			CABLE INS	C	500	5.1E+06				NONE	HOSE STATION
COMBUSTION AIR			PAPER	C	1000	7.7E+06					
CLEANER AREA A		290	NET CAT.	C	TOTAL:	1.3E+07	44000	33			
FIRE AREA TOTAL:		2040	NET CAT.	E	TOTAL:	1.3E+08	66000	49			
6030 AF 02	NO								3/0	SEE ZONE	SEE ZONE
6030 AF 60320			CABLE INS	C	1000	1.0E+07				NONE	DRY PIPE
DIESEL GENERATOR		FUEL OIL		E	100	1.4E+07					SPRINKLERS
ROOM B			LUBE OIL	E	500	7.6E+07					HOSE STATION
		1450	NET CAT.	E	TOTAL:	1.0E+08	69000	52			
6030 AF 60321			CABLE INS	C	2000	2.0E+07				SMOKE	HOSE STATION
SERVICE MODULE B		PAPER	C	100	7.7E+05						
		300	NET CAT.	C	TOTAL:	2.1E+07	71000	62			
6030 AF 60323			CABLE INS	C	500	5.1E+06				NONE	HOSE STATION
COMBUSTION AIR			PAPER	C	1000	7.7E+06					
CLEANER AREA B		290	NET CAT.	C	TOTAL:	1.3E+07	44000	33			
FIRE AREA TOTAL:		2040	NET CAT.	E	TOTAL:	1.3E+08	66000	49			
6030 AF 03	NO								3	NONE	DRY PIPE SPRINKLERS
DIESEL FUEL DAY TANK VAULT A			FUEL OIL	E	1500	2.2E+08					HOSE STATION
FIRE AREA TOTAL:		100	NET CAT.	E	TOTAL:	2.2E+08	2160000	1620			
6030 AF 04	NO								3	NONE	DRY PIPE SPRINKLERS
DIESEL FUEL DAY TANK VAULT B			FUEL OIL	E	1500	2.2E+08					HOSE STATION
FIRE AREA TOTAL:		100	NET CAT.	E	TOTAL:	2.2E+08	2160000	1620			

Table 9A-3 (Sheet 25 of 25)

FIRE PROTECTION SUMMARY

Notes:

1. The first four digits of the fire area and fire zone numbers indicate the building, level and building area in which the fire area/zone is located. When the third or fourth digit is a zero, the fire area/zone spans more than one level or building area. The last two digits in a fire area number are a sequence number only. The last five digits in a fire zone number coincide with the room number of a prominent room in the fire zone.

2. A YES indication in the Safety Area column means that one or more safety-related components are located in the fire area.

3. Estimated quantities of combustible materials are shown. Where the presence of transient combustibles is anticipated, their presence is indicated by the listing of volatiles or trash. The units and heat of combustion values for the combustible materials are shown in Table 9A-1.

4. The boundary fire resistance for each fire area represents the minimum resistance, in hours, for the surrounding walls, floor, and ceiling, except that:

   - A non-rated barrier capable of qualifying as a three-hour barrier is considered to have a resistance of three hours, provided that penetrations are adequately sealed.
   - Stairwells, elevator shafts and the like, which are enclosed by two-hour (minimum) fire barrier walls, may comprise a portion of the boundary of a fire area having a three hour resistance.
   - Building exterior walls below grade (soil on the outside) are considered to have a fire resistance of at least three hours even though they are not fire-rated.

   A boundary fire resistance designation such as "3/0" indicates that part of the fire area boundary consists of nonrated building exterior walls/roof above grade, but that the minimum resistance of the fire barriers separating the fire area from adjacent fire areas is three hours. For detailed information about the fire resistance of fire area boundaries see Figures 9A-1 through 9A-6.

5. The fixed suppression capability is indicated for each fire area. Unless otherwise indicated, sprinkler and spray systems are automatic. Where a hose station is indicated, one or more hose streams are available. In addition to fixed suppression capability, portable extinguishers are provided throughout the plant.

6. Partial suppression coverage in this zone. See DCD 9A.3, Fire Protection Analysis Results, for details.

Table 9A-4

VENTILATION SYSTEMS SERVING FIRE AREAS CONTAINING CLASS 1E COMPONENTS

Ventilation Systems Serving Fire Areas Containing Class 1E Division A and C Components

Fire Area	RCA	Class 1E Components	Ventilation System - Subsystem	Distribution Header
1202 AF 04	No	Division A batteries and equipment	VBS - A&C	AC-1
1242 AF 02	No	Division A equipment and penetrations	VBS - A&C	AC-1
1202 AF 03	No	Division C batteries, equipment & penetrations	VBS - A&C	AC-2
1230 AF 01	No	Division A & C cable only	VBS - B&D	BD-3
1240 AF 01	No	Division A & C cable only	VXS - Equip. room	Aux. building
1200 AF 01	Yes	Division A valves; division A & C cable	VAS - Aux/annex	Aux/annex
1204 AF 01	Yes	Division A valves	VAS - Aux/annex	Aux/annex
1200 AF 02	Yes	Division A & C cable only	VAS - Fuel handling	Fuel handling

Ventilation Systems Serving Fire Areas Containing Class 1E Division B and D Components

Fire Area	RCA	Class 1E Components	Ventilation System - Subsystem	Distribution Header
1201 AF 02	No	Division B batteries, equipment & penetrations	VBS - B&D	BD-1
1201 AF 03	No	Division D batteries, equipment & penetrations	VBS - B&D	BD-2
1201 AF 04	No	Division D valves	VBS - B&D	BD-Common
1200 AF 03	No	Division B & D cable only	VBS - A&C	AC-3
1220 AF 01	No	Division B equipment; division B & D cable	VBS - A&C	AC-3
1201 AF 05	No	Division B & D valves & instrumentation	VXS	Self-contained
1201 AF 06	No	Division B & D valves & instrumentation	VXS	Self-contained
1230 AF 02	No	Division B & D cable only	VXS - Equip. Room	Aux. building
1220 AF 02	Yes	Division D valves	VAS - Aux/annex	Aux. building

Ventilation Systems Serving Principal Class 1E Fire Areas

Fire Area	RCA	Description	Ventilation System - Subsystem	Distribution Header
1242 AF 01	No	Main control room	VBS - MCR/TSC	MCR
1232 AF 01	No	Remote shutdown workstation	VBS - B&D	BD-3
1210 AF 01	No	Spare battery fire area	VBS - A&C	AC-3
1243 AF 01	No	Reactor trip switchgear I	VXS - Equip. room	Aux. building
1243 AF 02	No	Reactor trip switchgear II	VXS - Equip. room	Aux. building
1000 AF 01	Yes	Containment/shield building	VFS	A and B

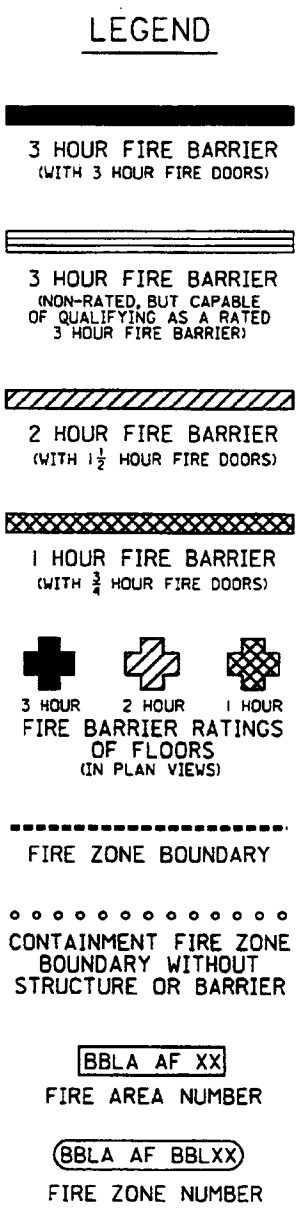

Figure 9A-1 (Sheet 1 of 16)

*[Fire Areas Legend]**

*NRC Staff approval is required prior to implementing a change in this information; see DCD Introduction Section 3.5.

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