CHAPTER 9

AUXILIARY SYSTEMS

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CHAPTER 9

AUXILIARY SYSTEMS

9.1 FUEL STORAGE AND HANDLING

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

Add the following subsection after DCD Subsection 9.1.4.3.7:

9.1.4.3.8 Radiation Monitoring

STD COL 9.1-6 Plant procedures require that an operating radiation monitor is mounted on any machine when it is handling fuel. Refer to DCD Subsection 11.5.6.4 for a discussion of augmented radiation monitoring during fuel handling operations.

9.1.4.4 Inspection and Testing Requirements

Add the following paragraph at the end of DCD Subsection 9.1.4.4:

STD COL 9.1-5 The above requirements are part of the plant inspection program for the light load handling system, which is implemented through procedures. In addition to the above inspections, the procedures reflect the manufacturers' recommendations for inspection.

9.1.5 OVERHEAD HEAVY LOAD HANDLING SYSTEMS

STD SUP 9.1-2 Add the following at the end of DCD Subsection 9.1.5.

The heavy loads handling program is based on NUREG-0612 and vendor recommendations. The key elements of the program are:

- Listing of heavy loads to be lifted during operation of the plant. This list will be provided once magnitudes have been accurately formalized but no later than three (3) months prior to fuel receipt.
- Listing of heavy load handling equipment as outlined in DCD Table 9.1-5 and whose characteristics are described in Subsection 9.1.5 of the DCD.

- Heavy load handling safe load paths and routing plans including descriptions of interlocks, (automatic and manual) safety devices and procedures to assure safe load path compliance. Anticipated heavy load movements are analyzed and safe load paths defined. Safe load path considerations are based on comparison with analyzed cases, previously defined safe movement areas, and previously defined restricted areas. The analyses are in accordance with Appendix A of NUREG-0612.
- Heavy load handling equipment maintenance manuals and procedures as described in Subsection 9.1.5.5.
- Heavy load handling equipment inspection and test plans, as outlined in Subsections 9.1.5.4 and 9.1.5.5.
- Heavy load handling personnel qualifications, training, and control procedures as described in Subsection 9.1.5.5.
- QA programs to monitor, implement, and ensure compliance with the heavy load-handling procedures as described in Subsection 9.1.5.5.

A quality assurance program, consistent with Paragraph 10 of NUREG-0554, is established and implemented for the procurement, design, fabrication, installation, inspection, testing, and operation of the crane. The program, as a minimum, includes the following elements:

- design and procurement document control
- instructions, procedures, and drawings
- control of purchased material, equipment, and services
- inspection
- testing and test control
- non-conforming items
- corrective action
- records

9.1.5.3 Safety Evaluation

Add the following information at the end of DCD Subsection 9.1.5.3.

STD SUP 9.1-1 There are no planned heavy load lifts outside those already described in the DCD. However, over the plant life there may be occasions when heavy loads not presently addressed need to be lifted (i.e. in support of special maintenance/ repairs). For these occasions, special procedures are generated that address, as a minimum, the following:

- The special procedure complies with NUREG-0612.
- A safe load path is determined. Mechanical and/or electrical stops are incorporated in the hardware design to prohibit travel outside the safe load path. Maximum lift heights are specified to minimize the impact of an unlikely load drop.
- Where a load drop could occur over irradiated fuel or safe shutdown equipment, the consequence of the load drop is evaluated. If the evaluation concludes that the load drop is not acceptable, an alternate path is evaluated, or the lift is prohibited.
- The lifting equipment is in compliance with applicable ANSI standards and has factors of safety that meet or exceed the requirements of the applicable standards.
- Operator training is provided prior to actual lifts.
- Inspection of crane components is performed in accordance with the manufacturer recommendations.

STD COL 9.1-6 Plant procedures require that an operating radiation monitor is mounted on any crane when it is handling fuel. Refer to DCD Subsection 11.5.6.4 for a discussion of augmented radiation monitoring during fuel handling operations.

9.1.5.4 Inservice Inspection/Inservice Testing

Add the following paragraph at the end of DCD Subsection 9.1.5.4.

STD COL 9.1-5 The above requirements are part of the plant inspection program for the overhead heavy load handling system, which is implemented through procedures. In addition to the above inspections, the procedures reflect the manufacturers' recommendations for inspection and the NUREG-0612 recommendations.

The overhead heavy load handling equipment inservice inspection procedures, as a minimum, address the following:

- Identification of components to be examined

- Examination techniques
- Inspection intervals
- Examination categories and requirements
- Evaluation of examination results

9.1.5.5 Load Handling Procedures

STD SUP 9.1-3 Load handling operations for heavy loads that are handled over, could be handled over or are in the proximity of irradiated fuel or safe shutdown equipment are controlled by written procedures. As a minimum, procedures are used for handling loads with the spent fuel cask bridge and polar cranes, and for those loads listed in Table 3.1-1 of NUREG-0612. The procedures include and address the following elements:

- The specific equipment required to handle load (e.g., special lifting devices, slings, shackles, turnbuckles, clevises, load cells, etc.).
- Qualification and training of crane operators and riggers in accordance with chapter 2-3.1 of ASME B30.2, "Overhead and Gantry Cranes."
- The requirements for inspection and acceptance criteria prior to load movement.
- The defined safe load path and provisions to provide visual reference to the crane operator and/or signal person of the safe load path envelope.
- Specific steps and proper sequence to be followed for handling load.
- Precautions, limitations, prerequisites, and/or initial conditions associated with movement of heavy loads.
- The testing, inspection, acceptance criteria and maintenance of overhead heavy load handling systems. These procedures are in accordance with the manufacturer recommendations and are consistent with ANSI B30.2 or with other appropriate and applicable ANSI standards.

Safe load paths are defined for movement of heavy loads to minimize the potential for a load drop on irradiated fuel in the reactor vessel, spent fuel pool or safe shutdown equipment. Paths are defined clearly in procedures and equipment layout drawings. Equipment layout drawings showing the safe load path are used to define safe load paths in load handling procedures. Deviation from defined safe load paths requires a written alternative procedure approved by a plant safety review committee.

9.1.6 COMBINED LICENSE INFORMATION FOR FUEL STORAGE AND HANDLING

STD COL 9.1-5 This COL Item is addressed in Subsections 9.1.4.4 and 9.1.5.4.

STD COL 9.1-6 This COL Item is addressed in Subsections 9.1.4.3.8 and 9.1.5.3.

STD COL 9.1-7 A spent fuel rack Metamic coupon monitoring program is to be implemented when the plant is placed into commercial operation. This program includes tests to monitor bubbling, blistering, cracking, or flaking; and a test to monitor for corrosion, such as weight loss measurements and or visual examination.

9.2 WATER SYSTEMS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.2.1.2.2 Component Description

WLS SUP 9.2-2 Add the following paragraph at the end of DCD Subsection 9.2.1.2.2, Component Description, Cooling Tower Subsection.

The SWS Cooling Tower is evaluated for potential impacts from interference and air restriction effects due to yard equipment layout and tower operation in an adjacent unit. Based on unit spacing, yard equipment layout, and the margins inherent in the performance requirements and design conditions of the towers, no adverse impacts were determined.

9.2.5.2.1 General Description

Replace the first and third sentences of the second paragraph of DCD Subsection 9.2.5.2.1 with the following information.

WLS COL 9.2-1 The source of water for the potable water system is the Draytonville Water District. This water supply meets or exceeds the pressure, capacity, and quality requirements in DCD Subsection 9.2.5.

9.2.5.3 System Operation

Replace the first paragraph of DCD Subsection 9.2.5.3 with the following information.

WLS COL 9.2-1 The municipal water supply system provides filtered and disinfected water to the potable water distribution system. The municipal water supply system maintains the required pressure throughout the water distribution system.

9.2.6.2.1 General Description

Replace the 3rd paragraph of DCD Subsection 9.2.6.2.1 with the following information.

The sanitary drainage system collects sanitary waste from plant restrooms and locker room facilities in the turbine building, auxiliary building, and annex building, and carries this waste off-site to the Gaffney Board of Public Works treatment plant where it is processed.

9.2.8 TURBINE BUILDING CLOSED COOLING WATER SYSTEM

WLS CDI

The turbine building closed cooling water system (TCS) provides chemically treated, demineralized cooling water for the removal of heat from nonsafety-related heat exchangers in the turbine building and rejects the heat to either the circulating water system or the raw water system.

9.2.8.1 Design Basis

9.2.8.1.1 Safety Design Basis

DCD

The turbine building closed cooling water system has no safety-related function and therefore has no nuclear safety design basis.

9.2.8.1.2 Power Generation Design Basis

The turbine building closed cooling water system provides corrosion-inhibited, demineralized cooling water to the equipment shown in Table 9.2.8-1 during normal plant operation.

WLS CDI

During power operation, the turbine building closed cooling water system provides a continuous supply of cooling water to turbine building equipment at a temperature of 105°F or less assuming a circulating water or raw water temperature of 100°F or less.

DCD

The cooling water is treated with a corrosion inhibitor and uses demineralized water for makeup. The system is equipped with a chemical addition tank to add chemicals to the system.

WLS CDI

The heat sink for the turbine building closed cooling water system is the circulating water system or raw water system. The heat is transferred to the circulating water or raw water through plate type heat exchangers which are components of the turbine building closed cooling water system.

DCD

A surge tank is sized to accommodate thermal expansion and contraction of the fluid due to temperature changes in the system.

One of the turbine building closed cooling system pumps or heat exchangers may be unavailable for operation or isolated for maintenance without impairing the function of the system.

The turbine building closed cooling water pumps are provided ac power from the 6900V switchgear bus. The pumps are not required during a loss of normal ac power.

9.2.8.2 System Description

9.2.8.2.1 General Description

WLS CDI

Classification of equipment and components is given in Section 3.2. The system consists of two 100-percent capacity pumps, three 50-percent capacity heat exchangers (connected in parallel), one surge tank, one chemical addition tank, and associated piping, valves, controls, and instrumentation. Heat is removed from the turbine building closed cooling water system by the circulating water system via the heat exchangers. If the circulating water system is not in operation, the TCS can be aligned to reject heat to the raw water system.

DCD

The pumps take suction from a single return header. Either of the two pumps can operate in conjunction with any two of the three heat exchangers. Discharge flows from the heat exchangers combine into a single supply header. Branch lines then distribute the cooling water to the various coolers in the turbine building. The flow rates to the individual coolers are controlled either by flow restricting orifices or by control valves, according to the requirements of the cooled systems. Individual coolers can be locally isolated, where required, to permit maintenance of the cooler while supplying the remaining components with cooling water. A bypass line with a manual valve is provided around the turbine building closed cooling water system heat exchangers to help avoid overcooling of components during startup/low-load conditions or cold weather operation.

The system is kept full of demineralized water by a surge tank which is located at the highest point in the system. The surge tank connects to the system return header upstream of the pumps. The surge tank accommodates thermal expansion and contraction of cooling water resulting from temperature changes in the system. It also accommodates minor leakage into or out of the system. Water makeup to the surge tank, for initial system filling or to accommodate leakage from the system, is provided by the demineralized water transfer and storage system. The surge tank is vented to the atmosphere.

A line from the pump discharge header back to the pump suction header contains valves and a chemical addition tank to facilitate mixing chemicals into the closed loop system to inhibit corrosion in piping and components.

A turbine building closed cooling water sample is periodically taken and analyzed to verify that water quality is maintained.

9.2.8.2.2 Component Description

Surge Tank

A surge tank accommodates changes in the cooling water volume due to changes in operating temperature. The tank also temporarily accommodates leakage into or out of the system. The tank is constructed of carbon steel.

Chemical Addition Tank

The chemical addition tank is constructed of carbon steel. The tank is normally isolated from the system and is provided with a hinged closure for addition of chemicals.

Pumps

Two pumps are provided. Either pump provides the pumping capacity for circulation of cooling water throughout the system. The pumps are single stage, horizontal, centrifugal pumps, are constructed of carbon steel, and have flanged suction and discharge nozzles. Each pump is driven by an ac powered induction motor.

Heat Exchangers

Three heat exchangers are arranged in a parallel configuration. Two of the heat exchangers are in use during normal power operation and turbine building closed cooling water flow divides between them.

WLS CDI The heat exchangers are plate type heat exchangers. Turbine building closed cooling water circulates through one side of the heat exchangers while circulating water or raw water flows through the other side. During system operation, the turbine building closed cooling water in the heat exchangers is maintained at a higher pressure than the circulating water or raw water so leakage of circulating water or raw water into the closed cooling water system does not occur. The heat exchangers are constructed of titanium plates with a carbon steel frame.

Valves

DCD Manual isolation valves are provided upstream and downstream of each pump. The pump isolation valves are normally open but may be closed to isolate the non-operating pump and allow maintenance during system operation. Manual isolation valves are provided upstream and downstream of each turbine building closed cooling water heat exchanger. One heat exchanger is isolated from system flow during normal power operation. A manual bypass valve can be opened to bypass flow around the turbine building closed cooling water heat exchanger when necessary to avoid low cooling water supply temperatures.

Flow control valves are provided to restrict or shut off cooling water flow to those cooled components whose function could be impaired by overcooling. The flow control valves are air operated and fail open upon loss of control air or electrical power. An air operated valve is provided to control demineralized makeup water to the surge tank for system filling and for accommodating leakage from the system. The makeup valve fails closed upon loss of control air or electrical power.

A TCS heat exchanger can be taken out of service by closing the inlet isolation valve. Water chemistry in the isolated heat exchanger train is maintained by a continuous flow of circulating water through a small bypass valve around the inlet isolation valve.

Backwashable strainers are provided upstream of each TCS heat exchanger. They are actuated by a timer and have a backup starting sequence initiated by a high differential pressure across each individual strainer. The backwash can be manually activated.

Piping

System piping is made of carbon steel. Piping joints and connections are welded, except where flanged connections are used for accessibility and maintenance of components. Nonmetallic piping may also be used.

9.2.8.2.3 System Operation

The turbine building closed cooling water system operates during normal power operation. The system does not operate with a loss of normal ac power.

Startup

WLS CDI The turbine building closed cooling water system is placed in operation during the plant startup sequence after cooling water flow from the CWS, or RWS when applicable, is established but prior to the operation of systems that require turbine building closed cooling water flow. The system is filled by the demineralized water transfer and storage system through a fill line to the surge tank. The system is placed in operation by starting one of the pumps.

DCD

Normal Operation

During normal operation, one turbine building closed cooling water system pump and two heat exchangers provide cooling to the components listed in Table 9.2.8-1. The other pump is on standby and aligned to start automatically upon low discharge header pressure.

During normal operation, leakage from the system will be replaced by makeup from the demineralized water transfer and storage system through the automatic makeup valve. Makeup can be controlled either manually or automatically upon reaching low level in the surge tank.

Shutdown

The system is taken out of service during plant shutdown when no longer needed by the components being cooled. The standby pump is taken out of automatic control, and the operating pump is stopped.

9.2.8.3 Safety Evaluation

The turbine building closed cooling water system has no safety-related function and therefore requires no nuclear safety evaluation.

9.2.8.4 Tests and Inspections

Pre-operational testing is described in Chapter 14. The performance, structural, and leaktight integrity of system components is demonstrated by operation of the system.

9.2.8.5 Instrument Applications

Parameters important to system operation are monitored in the main control room. Flow indication is provided for individual cooled components as well as for the total system flow.

Temperature indication is provided for locations upstream and downstream of the turbine building closed cooling water system heat exchangers. High temperature of the cooling water supply alarms in the main control room. Temperature test points are provided at locations to facilitate thermal performance testing.

Pressure indication is provided for the pump suction and discharge headers. Low pressure at the discharge header automatically starts the standby pump.

Level instrumentation on the surge tank provides level indication and both low- and high-level alarms in the main control room. On low tank level, a valve in the makeup water line automatically actuates to provide makeup flow from the demineralized water transfer and storage system.

9.2.9.2.2 Component Description

Replace the paragraph in the Waste Water Retention Basin portion of DCD Subsection 9.2.9.2.2 with the following text.

Waste Water Retention Basins

WLS COL 9.2-2 There is one waste water retention basin per unit, located to the northwest of the main plant area. The basin is constructed such that its contents, dissolved or suspended, do not penetrate the liner and leach into the ground. The basin can receive waste streams for holdup or, if required, for treatment to meet specific environmental discharge requirements. The basin has a capacity of approximately 5,385,000 gallons.

The configuration and size of the waste water retention basins allows settling of solids larger than 10 microns which may be suspended in the waste water stream.

Waste water can be sampled prior to discharge from the waste water retention basin.

Basin Transfer Pumps

Two 100 percent capacity (900 gpm) submersible type pumps send the waste water from the retention basin to the common blowdown sump. The discharge piping has a design pressure of 150 psig. In the event of oily waste leakage into the retention basin, a recirculation line is provided to recycle the oil/water waste from the basin to the oil separator. Controls are provided for automatic or manual operation of the pumps based on the level of the retention basin.

Add the following subsection after DCD Subsection 9.2.10. DCD Subsections 9.2.11 and 9.2.12 are renumbered as Subsections 9.2.12 and 9.2.13, respectively.

STD DEP 1.1-1 9.2.11 RAW WATER SYSTEM

WLS SUP 9.2-1 The raw water system (RWS) is common to Units 1 and 2, and provides river water for makeup to the circulating water system (CWS) mechanical draft cooling tower basins, and treated river water for makeup to the service water system (SWS) cooling tower basins, for feed to the demineralized water treatment system (DTS) and for makeup to the fire protection system (FPS).

9.2.11.1 Design Basis

9.2.11.1.1 Safety Design Basis

The RWS serves no safety-related function and therefore has no nuclear safety design basis.

Failure of the RWS or its components will not affect the ability of safety-related systems to perform their intended function.

No interconnections exist between the RWS and any potentially radioactive system.

9.2.11.1.2 Power Generation Design Basis

The RWS provides the following services for both Units 1 and 2:

- Fill and makeup to the CWS cooling tower basins.
- Pre-treated makeup to the SWS cooling tower basins.
- Supply pre-treated river water for feed to the DTS.
- Makeup to the SWS cooling tower basins during a loss of preferred power.
- Supply pre-treated water to the primary and secondary fire water tanks.
- Provide an alternate supply of cooling water to the turbine building closed cooling water system (TCS) heat exchangers
- Provide alternate sources of make-up to the SWS during a loss of off-site power from the clarified water subsystem or the raw water supply subsystem.

The normal source of raw water to Units 1 and 2 is the Broad River. During low flow conditions in the river, Make-Up Pond B provides an alternate source for the raw water.

9.2.11.2 System Description

9.2.11.2.1 General Description

The RWS is shown in Figures 9.2-201, 202, 203, 204, and 205. Classification of components and equipment for the RWS is given in DCD Section 3.2.

The RWS consists of the following subsystems: river water subsystem (Figure 9.2-201), raw water supply subsystem (Figure 9.2-202), Make-Up Pond B subsystem (Figure 9.2-203), the clarification subsystem (Figure 9.2-204), and the clarified water subsystem (Figure 9.2-205).

River Water Subsystem

Four river water intake pumps are located at an intake structure on the Broad River. Each pump is sized to supply 100 percent of the average raw water needs for one unit. The pumps draw river water and discharge it into the Make-Up Pond A.

Raw Water Supply Subsystem

Make-Up Pond A receives water from the river water subsystem and provides residence time for settling of suspended solids out of the river water. A connection with a normally closed manual valve on the raw water intake pumps discharge header provides a second alternate supply of water to the SWS cooling tower basins.

Six raw water pumps, located at the Make-Up Pond A intake structure, forward the water to the CWS mechanical draft cooling towers of Units 1 and 2, and to the clarified water subsystem for pre-treatment. Each pump is sized to supply 50 percent of the maximum raw water needs for one unit.

Make-Up Pond B Subsystem

Four Make-Up Pond B pumps, located in an intake structure in the Make-Up Pond B, draw water from the pond and discharge it to the Make-Up Pond A. This subsystem is a backup system that operates during low flow conditions in the Broad River.

When the Broad River returns to normal flow conditions, Make-Up Pond B can be replenished by using the standby river and raw water pumps to transfer water from the Broad River into the Make-Up Pond A, and back to Make-Up Pond B.

Clarification Subsystem

The clarification subsystem is used to reduce the amount of total suspended solids (TSS) in the raw water that is provided to the DTS, SWS, and FPS. Two 100 percent clarified water transfer pumps forward product water to the clarified water subsystem.

Clarified Water Subsystem

The clarified water subsystem consists of a clarified water storage tank that stores product water from the clarification subsystem. It has an approximate capacity of 2.7 million gallons and is sized to provide normal makeup to the service and demineralized water systems to support clarifier maintenance. Two 100 percent clarified water supply pumps per unit send clarified water to the various users, including the SWS, DTS, CWS and FPS.

9.2.11.2.2 Component Description

River Water Intake Pumps

The river water intake pumps are vertical, wet pit, centrifugal electric motor driven pumps. Each pump is sized to support one operating unit. Two pumps run continuously during normal operation. The other two are on standby.

Traveling Water Screens

Four traveling screens at the inlet to the river water intake structure provide coarse screening of floating and suspended debris, and deter aquatic life from the river water from entering the intake basin. The screens are designed so that the through screen velocity is less than 0.5 feet per second to minimize the uptake of aquatic biota. Debris from the screens is washed off with spray water and sluiced to the river.

Raw Water Pumps

The raw water pumps are vertical, wet pit, centrifugal electric motor driven pumps. Two pumps per unit operate continuously during normal operation. The third pump is on standby. For each unit, two out of the three raw water pumps are powered from a diesel-backed power supply.

Make-up Pond B Pumps

Make-up Pond B pumps are vertical, wet pit, centrifugal electric motor driven pumps. These four pumps are not normally in operation.

Clarifier and Accessories

A solids contact type clarifier equipped with a motor operated recirculator and a motor operated scraper serves both units. Skid mounted alum and polymer injection pumps provide flocculants to the clarifier.

The clarifier effluent is filtered in two multimedia gravity filters and collected in the clarified water transfer tank. Skid mounted pumps inject pH adjustor and sodium hypochlorite as necessary into the clarified water downstream of the filter.

The sludge is concentrated in a sludge thickener and dewatered in a filter press. The cake is disposed of in a landfill. Decant water is recycled to the inlet of the clarifier.

Clarified Water Transfer Pumps

The clarified water transfer pumps are horizontal, centrifugal, constant speed electric motor driven pumps. One pump transfers clarified water to the clarified water storage tank, with the other on standby.

Clarified Water Storage Tank

The clarified water storage tank stores product water from the clarification subsystem. The tank is of sufficient capacity to provide makeup to the service and demineralized water systems when the system is not in operation to support clarifier maintenance.

Clarified Water Supply Pumps

The clarified water supply pumps are horizontal, centrifugal, constant speed electric motor driven pumps. One pump per unit sends clarified water to the various users, including the SWS, DTS, CWS and FPS. The clarified water supply pumps are powered from a diesel-backed power supply.

Piping

The piping is designed to accommodate transient effects that may be generated by normal starting and stopping of pumps, opening and closing of valves, or other normal operating events. The system is designed so that high points do not lead to the formation of vapor voids upon loss of system pumping.

9.2.11.3 System Operation

The RWS operates during all normal modes of operation, including startup, power operation, cooldown, shutdown, and refueling.

The normal makeup requirements, when both Units 1 and 2 are in power operation, are met with two river water intake pumps, four raw water pumps, one clarified water transfer pump, and two clarified water supply pumps in service.

During plant shutdown, when the CWS of one or both units may not be operating, the RWS can function with one pump in each set of pumps to fulfill the makeup water and TCS cooling requirements.

The raw water pumps and clarified water supply pumps are available for operation during a loss of preferred power (LOPP) to support the SWS. The normal makeup supply and primary source of SWS makeup following a LOPP are the diesel-backed clarified water supply pumps. The first alternate source of SWS makeup following a LOPP is the secondary fire water tank. The second alternate source of SWS makeup following a LOPP is the raw water pumps.

9.2.11.4 Safety Evaluation

The RWS has no safety-related functions and therefore requires no nuclear safety evaluation. It has no interconnection with any system that contains radioactive fluids.

9.2.11.5 Tests and Inspections

System performance, and structural and pressure tight integrity of system components is demonstrated by operation of the system, monitoring of system parameters such as flow and pressure, and visual inspections.

9.2.11.6 Instrumentation Applications

Pressure indication, with low and high alarms, is provided on the discharges of the river water pumps, raw water pumps, clarified water transfer pumps, and the clarified water supply pumps. A low discharge pressure signal automatically starts the designated standby pump. System malfunction is alarmed in the main control room. There are no automatic controls associated with the Make-Up Pond B subsystem.

The clarifier, sludge thickener, gravity filter, and chemical feed functions are automatically controlled. System malfunction and low water level in the clarified water storage tank is alarmed in the main control room.

The fire water tank fill valves are controlled by level and automatically open and close to fill each tank. Low low level is alarmed in the main control room.

STD DEP1.1-1

9.2.12 COMBINED LICENSE INFORMATION

9.2.12.1 Potable Water

WLS COL 9.2-1 This COL Item is addressed in Subsections 9.2.5.2.1 and 9.2.5.3.

9.2.12.2 Waste Water Retention Basins

WLS COL 9.2-2 This COL Item is addressed in Subsection 9.2.9.2.2.

STD DEP1.1-1

9.2.13 REFERENCES

9.3 PROCESS AUXILIARIES

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.3.7 COMBINED LICENSE INFORMATION

STD COL 9.3-1 This COL Item is addressed below.

Generic Issue 43, and the concerns of Generic Letter 88-14 and NUREG-1275 regarding degradation or malfunction of instrument air supply and safety-related valve failure, are addressed by the training and procedures for operations and maintenance of the instrument air subsystem and air-operated valves.

Plant systems, including the compressed and instrument air system, are maintained in accordance with procedures . Maintenance procedures are discussed in Subsection 13.5.2.2.6. The instrument air supply subsystem components are maintained and tested in accordance with manufacturers' recommendations and procedures. The safety-related air-operated valves are maintained in accordance with manufacturers' recommendations and tested in accordance with plant procedures to allow proper function on loss of air. The instrument air is periodically sampled and tested for compliance with the quality requirements of ANSI/ISA-S7.3-1981.

Operators are provided training on loss of instrument air in accordance with abnormal operating procedures. Plant systems, including the compressed and instrument air system, are operated in accordance with system operating procedures, abnormal operating procedures, and alarm response procedures which are written in accordance with Subsection 13.5.2. The training program for operations and maintenance personnel is discussed in Section 13.2.

9.4 AIR-CONDITIONING, HEATING, COOLING, AND VENTILATION SYSTEM

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.4.1.4 Tests and Inspection

Add the following information at the end of DCD Subsection 9.4.1.4:

STD COL 9.4-1a The main control room/control support area HVAC subsystem of the nuclear island nonradioactive ventilation system (VBS) is tested and inspected in accordance with ASME/ANSI AG-1-1997 and Addenda AG-1a-2000 (Reference 201), ASME N509-1989, ASME N510-1989, and Regulatory Guide 1.140.

The VBS is tested as separate components and as an integrated system. Surveillance tests are performed to monitor the condition of the system. Testing methods include:

- Visual inspection
- Duct and housing leak tests
- Airflow capacity and distribution tests
- Air-aerosol mixing uniformity test
- HEPA filter bank and adsorber bank in-place leak tests
- Duct damper bypass tests
- System bypass tests
- Air heater performance tests
- Laboratory testing of adsorbers
- Ductwork inleakage test

Testing is performed at the frequency provided in Table 1 of ASME N510-1989.

9.4.7.4 Tests and Inspections

Add the following information at the end of DCD Subsection 9.4.7.4:

STD COL 9.4-1a The exhaust subsystem of the containment air filtration system (VFS) is tested and inspected in accordance with ASME/ANSI AG-1-1997 and Addenda AG-1a-2000 (Reference 201), ASME N509-1989, ASME N510-1989, and Regulatory Guide 1.140.

The VFS is tested as separate components and as an integrated system. Surveillance tests are performed to monitor the condition of the system. Testing methods include:

- Visual inspection
- Airflow capacity and distribution tests
- HEPA filter bank and adsorber bank in-place leak tests
- System bypass tests
- Air heater performance tests
- Laboratory testing of adsorbers
- Ductwork inleakage test

Testing is performed at the frequency provided in Table 1 of ASME N510-1989.

9.4.12 COMBINED LICENSE INFORMATION

STD COL 9.4-1a This COL Item is addressed in Subsections 9.4.1.4 and 9.4.7.4.

WLS COL 9.4-1b This COL Item is addressed below.

Section 6.4 does not identify any toxic emergencies that require the main control room/control support area HVAC system to enter recirculation mode.

9.4.13 REFERENCES

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201. ASME/ANSI AG-1a-2000, Addenda to ASME AG-1-1997 Code on Nuclear Air and Gas Treatment, Section HA, “Housings.”

9.5 OTHER AUXILIARY SYSTEMS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9.5.1.2.1.3 Fire Water Supply System

STD SUP 9.5-1 Add the following information at the end of DCD Subsection 9.5.1.2.1.3:

Threads compatible with those used by the offsite fire department are provided on all hydrants, hose couplings and standpipe risers, or a sufficient number of thread adapters compatible with the offsite fire department are provided.

WLS SUP 9.2-2 Makeup water is provided to the fire water storage tanks by RWS as described in Section 9.2.11. The makeup water is filtered, treated, and monitored in the clarification process to prevent or control biofouling or microbiologically induced corrosion which meets RG 1.189 guidance.

9.5.1.6 Personnel Qualification and Training

STD COL 9.5-1 Add the following paragraph at the end of DCD Subsection 9.5.1.6.

Subsections 9.5.1.8.2 and 9.5.1.8.7 summarize the qualification and training programs that are established and implemented for the fire protection program.

Add the following subsections after DCD Subsection 9.5.1.7. DCD Subsection 9.5.1.8 is renumbered as Subsection 9.5.1.9.

STD DEP 1.1-1

9.5.1.8 Fire Protection Program

STD COL 9.5-1 The fire protection program is established such that a fire will not prevent safe shutdown of the plant and does not endanger the health and safety of the public. Fire protection at the plant uses a defense-in-depth concept that includes fire prevention, detection, control and extinguishing systems and equipment, administrative controls and procedures, and trained personnel. These defense-in-depth principles are achieved by using the following objectives.

- Prevent fires from starting.

- Detect rapidly, control, and extinguish promptly those fires that do occur.
- Provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.
- Minimize the potential for radiological releases.

9.5.1.8.1 Fire Protection Program Implementation

As indicated in Table 13.4-201, the required elements of the fire protection program are fully operational prior to receipt of new fuel for buildings storing new fuel and adjacent fire areas that could affect the fuel storage area in that reactor unit. Other required elements of the fire protection program described in this section are fully operational prior to initial fuel loading in that reactor unit.

Elements of the fire protection program are reviewed on a frequency established by procedures and updated as necessary.

9.5.1.8.1.1 Fire Protection Program Criteria

STD COL 9.5-3

STD COL 9.5-4 The fire protection program is based on the criteria of several industry and regulatory documents referenced in Subsection 9.5.5 and DCD Subsection 9.5.5, and also based on the guidance provided in Regulatory Guide 1.189. Table 9.5-201 and DCD Table 9.5.1-1 provide a cross-reference to information addressing compliance with BTP CMEB 9.5-1. Exceptions to the National Fire Protection Association (NFPA) Standards beyond those included in DCD Table 9.5.1-3 and exceptions taken to the NFPA Standards listed in Subsection 9.5.5 are identified in Table 9.5-202.

9.5.1.8.1.2 Organization and Responsibilities

STD COL 9.5-1 The organizational structure of the fire protection personnel is discussed in Subsection 13.1.1.2.10.

The site executive in charge of the fire protection program, through the engineer in charge of fire protection, is responsible for the following:

a. Programs and periodic inspections are implemented to:

    1. Minimize the amount of combustibles in safety-related areas.

    2. Determine the effectiveness of housekeeping practices.

    3. Provide for availability and acceptability of the following:

i. Fire protection system and components.

ii. Manual fire fighting equipment.

iii. Emergency breathing apparatus.

iv. Emergency lighting.

v. Portable communication equipment.

STD COL 9.5-8

vi. Fire barriers including fire rated walls, floors and ceilings, fire rated doors, dampers, etc., fire stops and wraps, and

STD COL 9.5-1

fire retardant coating. Procedures address the administrative controls in place, including fire watches, when a fire area is breached for maintenance.

STD COL 9.5-1

4. Confirm prompt and effective corrective actions are taken to correct conditions adverse to fire protection and preclude their recurrence.

b. Conducting periodic maintenance and testing of fire protection systems, components, and manual fire fighting equipment, evaluating test results, and determining the acceptability of systems under test, in accordance with established plant procedures.

c. Designing and selecting equipment related to fire protection.

d. Reviewing and evaluating proposed work activities to identify potential transient fire loads.

e. Managing the plant fire brigade, including:

1. Developing, implementing and administering the fire brigade training program.

2. Scheduling and conducting fire brigade drills.

3. Critiquing fire drills to determine if training objectives are met.

4. Performing a periodic review of the fire brigade roster and initiating changes as needed.

5. Maintaining the fire training program records for members of the fire brigade and other personnel.

6. Maintaining a sufficient number of qualified fire brigade personnel to respond to fire emergencies for each shift.

f. Developing and conducting the fire extinguisher training program.

g. Implementing a program for indoctrination of personnel gaining unescorted access to the protected area in appropriate procedures which implement the fire protection program, such as fire prevention and fire reporting procedures, plant emergency alarms, including evacuation.

h. Implementing a program for instruction of personnel on the proper handling of accidental events such as leaks or spills of flammable materials.

i. Preparing procedures to meet possible fire situations in the plant and for assuring assistance is available for fighting fires in radiological areas.

j. Implementing a program that utilizes a permit system that controls and documents inoperability of fire protection systems and equipment. This program initiates proper notifications and compensatory actions, such as fire watches, when inoperability of any fire protection system or component is identified.

k. Developing and implementing preventive maintenance, corrective maintenance, and surveillance test fire protection procedures.

l. Confirming that plant modifications, new procedures and revisions to procedures associated with fire protection equipment and systems that have significant impact on the fire protection program are reviewed by an individual who possesses the qualifications of a fire protection engineer.

m. Continuing evaluation of fire hazards during construction or modification of other units on the site. Special considerations, such as fire barriers, fire protection capability and administrative controls are provided as necessary to protect the operating unit(s) from construction or modification activities.

n. Establishing a fire prevention surveillance plan and training plant personnel on that plan.

o. Developing pre-fire plans and making them available to the fire brigade and control room.

The responsibilities of the engineer in charge of fire protection and his staff are discussed in Section 13.1.2.1.2.9.

STD COL 9.5-1

9.5.1.8.2 Fire Brigade

9.5.1.8.2.1 General

The organization of the fire brigade is discussed in Subsection 13.1.2.1.5.

To qualify as a member of the fire brigade, an individual must meet the following criteria:

a. Has attended the required training sessions for the position occupied on the fire brigade.

b. Has passed an annual physical exam including demonstrating the ability for performing strenuous activity and the use of respiratory protection.

9.5.1.8.2.2 Fire Brigade Training

A training program is established so that the capability to fight fires is developed and documented. The program consists of classroom instruction supplemented with periodic classroom retraining, practice in fire fighting, and fire drills. Classroom instruction and training is conducted by qualified individuals knowledgeable in fighting the types of fires that could occur within the plant and its environs and using onsite fire fighting equipment. Individual records of training provided to each fire brigade member, including drill critiques, are maintained as part of the permanent plant files for at least three years to document that each member receives the required training.

The fire brigade leader and at least two brigade members per shift have sufficient training and knowledge of plant safety-related systems to understand the effects of fire and fire suppressants on safe shutdown capability. The brigade leader is competent to assess the potential safety consequences of a fire and advise control room personnel. Such competence by the brigade leader may be evidenced by possession of an operator's license or equivalent knowledge of plant systems.

Personnel assigned as fire brigade members receive formal training prior to assuming brigade duties. The course subject matter is selected to satisfy the requirements of Regulatory Guide 1.189. Course material selection also includes guidance from NFPA 600 (Reference 204) and 1500 (Reference 210) as appropriate. Additional training may also include material selected from NFPA 1404 (Reference 208) and 1410 (Reference 209).

The minimum equipment provided for the fire brigade consists of personal protective equipment, such as turnout coats, boots, gloves, hard hats, emergency communications equipment, portable lights, portable ventilation equipment, and portable extinguishers. Self-contained breathing apparatus (SCBA) approved by NIOSH, using full face positive pressure masks, and providing an operating life of at least 30 minutes, are provided for selected fire brigade, emergency repair and control room personnel. At least ten masks are provided for fire brigade personnel. At least two extra air bottles, each with at least 30 minutes of operating life, are located onsite for each SCBA. An additional onsite 6-hour supply of reserve air is provided to permit quick and complete replenishment of exhausted supply air bottles. DCD Subsection 6.4.2.3 discusses the portable breathing apparatus for control room personnel. Additional SCBAs are provided near the personnel containment entrance for the exclusive use of the fire brigade. The fire brigade leader has ready access to keys for any locked fire doors.

The on-duty shift supervisor has responsibility for taking certain actions based on an assessment of the magnitude of the fire emergency. These actions include safely shutting down the plant, making recommendations for implementing the Emergency Plan, notification of emergency personnel and requesting assistance from off-duty personnel, if necessary. Emergency Plan consideration of fire emergencies includes the guidance of Regulatory Guide 1.101.

9.5.1.8.2.2.1 Classroom Instruction

Fire brigade members receive classroom instruction in fire protection and fire fighting techniques prior to qualifying as members of the fire brigade. This instruction includes:

a. Identification of the types of fire hazards along with their location within the plant and its environs.

b. Identification of the types of fires that could occur within the plant and its environs.

c. Identification of the location of onsite fire fighting equipment and familiarization with the layout of the plant including ingress and egress routes to each area.

d. The proper use of on-site fire fighting equipment and the correct method of fighting various types of fires including at least the following:

- fires involving radioactive materials
- fires in energized electrical equipment
- fires in cables and cable trays
- fires involving hydrogen
- fires involving flammable and combustible liquids or hazardous process chemicals
- fires resulting from construction or modifications (welding)
- fires involving record files

e. Review of each individual’s responsibilities under the fire protection program.

f. Proper use of communication, lighting, ventilation, and emergency breathing equipment.

g. Fire brigade leader direction and coordination of fire fighting activities.

h. Toxic and radiological characteristics of expected combustion products.

i. Proper methods of fighting fires inside buildings and confined spaces.

j. Detailed review of fire fighting strategies, procedures and procedure changes.

k. Indoctrination of the plant fire fighting plans, identification of each individual's responsibilities, and review of changes in the fire fighting plans resulting from fire protection-related plant modifications.

l. Coordination between the fire brigade and offsite fire departments that have agreed to assist during a major fire onsite is provided to establish responsibilities and duties. Educating the offsite organization in operational precautions when fighting fires on nuclear power plant sites, and awareness of special hazards and the need of radiological protection of personnel.

9.5.1.8.2.2.2 Retraining

Classroom refresher training is scheduled on a biennial basis to supplement retention of the initial training. These sessions may be concurrent with the regular planned meetings.

9.5.1.8.2.2.3 Practice

Practice sessions are held for each fire brigade and for each fire brigade member on the proper method of fighting various types of fires which might occur in the plant. These sessions are scheduled on an annual basis and provide brigade members with team experience in actual fire fighting and the use of emergency breathing apparatus under strenuous conditions encountered in fire fighting.

9.5.1.8.2.2.4 Drills

Fire brigade drills are conducted at least once per calendar quarter for each shift. Each fire brigade member participates in at least two drills annually. Drills are either announced or unannounced. At least one unannounced drill is held annually for each shift fire brigade. At least one drill is performed annually on a "back shift" for each shift's fire brigade. The drills provide for offsite fire department participation at least annually. Triennially, a randomly selected, unannounced drill shall be conducted and critiqued by qualified individuals independent of the plant staff. Training objectives are established prior to each drill and reviewed by plant management. Drills are critiqued on the following points:

a. Assessment of fire alarm effectiveness.

b. Assessment of time required to notify and assemble the fire brigade.

c. Assessment of the selection, placement, and use of equipment.

d. Assessment of the fire brigade leader's effectiveness in directing the fire fighting effort.

e. Assessment of each fire brigade member's knowledge of fire fighting strategy, procedures and simulated use of equipment.

f. Assessment of the fire brigade's performance as a team.

Performance deficiencies identified, based on these assessments, are used as the basis for additional training and repeat drills. Unsatisfactory drill performance is followed by a repeat drill within 30 days.

9.5.1.8.2.2.5 Meetings

Regular planned meetings are held at least quarterly for the fire brigade members to review changes in the fire protection program and other subjects as necessary.

STD COL 9.5-1 9.5.1.8.3 Administrative Controls

Administrative controls for the fire protection program are implemented through plant administrative procedures. Applicable industry publications are used as guidance in developing those procedures.

Administrative controls include procedures to:

a. Control actions to be taken by an individual discovering a fire, such as notification of the control room, attempting to extinguish the fire, and actuation of local fire suppression systems.

b. Control actions to be taken by the control room operator, such as sounding fire alarms, and notifying the shift manager of the type, size and location of the fire.

c. Control actions to be taken by the fire brigade after notification of a fire, including location to assemble, directions given by the fire brigade leader, the responsibilities of brigade members, such as selection of fire fighting and protective equipment, and use of preplanned strategies for fighting fires in specific areas.

d. Control actions to be taken by the security force upon notification of a fire.

e. Define the strategies established for fighting fires in safety-related areas and areas presenting a hazard to safety-related equipment, including the designation of the:

1. Fire hazards in each plant area/zone covered by a fire fighting procedure (pre-fire plan). Pre-fire plans utilize the guidance of NFPA 1620 (Reference 205).

2. Fire extinguishers best suited for controlling fires with the combustible loadings of each zone and the nearest location of these extinguishers.

3. Most favorable direction from which to attack a fire in each area in view of the ventilation direction, access hallways, stairs, and doors that are most likely to be free of fire, and the best station or elevation for fighting the fire. Access and egress routes that involve locked doors are specifically identified in the procedure with the appropriate precautions and methods for access specified.

4. Plant systems that should be managed to reduce the damage potential during a local fire and the location of local and remote controls for such management (e.g., any hydraulic or electrical system in the zone covered by the specific fire fighting procedure that could increase the hazards in the area because of overpressurization or electrical hazards).

5. Vital heat-sensitive system components that need to be kept cool while fighting a local fire. Particularly hazardous combustibles that need cooling are designated.

6. Potential radiological and toxic hazards in fire zones.

7. Ventilation system operation that ensures desired plant air distribution when the ventilation flow is modified for fire containment or smoke clearing operations.

8. Operations requiring control room and shift supervisor coordination or authorization.

9. Instructions for plant operators and other plant personnel during a fire.

f. Organize the fire brigade and assign special duties according to job title so that the fire fighting functions are covered for each shift by personnel trained and qualified to perform these functions. These duties include command control of the brigade, transporting fire suppression and support equipment to the fire scenes, applying the extinguishing agent to the fire, communication with the control room, and coordination with offsite fire departments.

STD COL 9.5-1 9.5.1.8.4 Control of Combustible Materials, Hazardous Materials and Ignition Sources

The control of combustible materials are defined by administrative procedures. These procedures impose the following controls:

a. Prohibit the storage of combustible materials (including unused ion exchange resins) in areas that contain or expose safety-related equipment.

b. Govern the handling of and limit transient fire loads such as flammable liquids, wood and plastic materials in buildings containing safety-related systems or equipment.

c. Assign responsibility to the appropriate supervisor for reviewing work activities to identify transient fire loads.

d. Govern the use of ignition sources by use of a flame permit system to control welding, flame cutting, grinding, brazing and soldering operations, and temporary electrical power cables. A separate permit is issued for each area where such work is done. If work continues over more than one shift, the permit is valid for not more than 24 hours when the plant is operating or for the duration of a particular job during plant shutdown. NFPA 51B (Reference 202) and NFPA 241 (Reference 203) are used as guidance.

e. Minimize waste, debris, scrap, and oil spills or other combustibles resulting from a work activity in the safety-related area while work is in progress and remove the same upon completion of the activity or at the end of each work shift.

f. Govern periodic inspections for accumulation of combustibles for continued compliance with these administrative controls.

g. Prohibit the storage of acetylene-oxygen and other compressed gasses in areas that contain or expose safety-related equipment or the fire protection system that serves those areas. A permit system is required to control the use of this equipment in safety-related areas of the plant.

h. Govern the use and storage of hazardous chemicals in areas that contain or expose safety-related equipment.

i. Control the use of specific combustibles in safety-related areas. Wood used in safety-related areas during maintenance, modification, or refueling operation (such as lay-down blocks or scaffolding) is treated with a flame retardant in accordance with NFPA 703 (Reference 207). Use of wood inside buildings containing systems or equipment important to safety is only permitted when suitable noncombustible substitutes are not available. Equipment or supplies (such as new fuel) shipped in untreated combustible packing containers are unpacked in safety-related areas if required for valid operating reasons. However, combustible materials are removed from the area immediately following unpacking. Such transient combustible material, unless stored in approved containers, is not left unattended during lunch breaks, shift changes, or other similar periods. Loose combustible packing material, such as wood or paper excelsior, or polyethylene sheeting, is placed in metal containers with tight-fitting self-closing metal covers. Only noncombustible panels or flame-retardant tarpaulins or approved materials of equivalent fire-retardant characteristics are used. Any other fabrics or plastic films used are certified to conform to the large-scale fire test described in NFPA 701 (Reference 206).

j. Govern the control of electrical appliances in areas that contain or expose safety-related equipment.

STD COL 9.5-1

9.5.1.8.5 Control of Radioactive Materials

The plant is designed with provisions for sampling of liquids resulting from fire emergencies that may contain radioactivity and may be released to the environment. Plant operating procedures require such liquids to be collected, sampled, and analyzed prior to discharge. Liquid discharges are required to be below activity limits prior to discharge.

STD COL 9.5-1

9.5.1.8.6 Testing and Inspection

Testing and inspection requirements are imposed through administrative procedures. Maintenance or modifications to the fire protection system are subject to inspection for conformation to design requirements. Procedures governing the inspection, testing, and maintenance of fire protection alarm and detection systems, and water-based suppression and supply systems, utilize the guidance of NFPA 72 (DCD Reference 9.5.5.2) and NFPA 25 (Reference 212). Installation of portions of the system where performance cannot be verified through pre-operational tests, such as penetration seals, fire retardant coatings, cable routing, and fire barriers are inspected. Inspections are performed by individuals knowledgeable of fire protection design and installation requirements. Open flame or combustion-generated smoke is not used for leak testing or similar procedures such as air flow determination.

Inspection and testing procedures address the identification of items to be tested or inspected, responsible organizations for the activity, acceptance criteria, documentation requirements and sign-off requirements.

Fire protection materials subject to degradation (such as fire stops, seals and fire retardant coatings) are visually inspected periodically for degradation or damage. Fire hoses are hydrostatically tested in accordance with NFPA 1962 (Reference 201). Hoses stored in outside hose stations are tested annually and interior standpipe hoses are tested every three years.

The fire protection system is periodically tested in accordance with plant procedures. Testing includes periodic operational tests and visual verification of damper and valve positions. Fire doors and their closing and latching mechanisms are also included in these procedures.

STD COL 9.5-6 The preoperational testing program describes the procedures for confirming that the as-installed configuration of fire barriers matches the tested configurations. The procedures describe the process for identifying and dispositioning deviations.

9.5.1.8.7 Personnel Qualification and Training

STD COL 9.5-1 The engineer in charge of fire protection is responsible for the formulation and implementation of the fire protection program and meets the qualification requirements listed in Subsection 13.1.2.1.2.9.

Qualification and training of other plant personnel involved in the fire protection program is governed by plant qualification procedures and is conducted by personnel qualified by training and experience in these areas. These classifications include training personnel, maintenance personnel assigned to work on the fire protection system, and operations personnel assigned to system operation and testing.

9.5.1.8.8 Fire Doors

STD COL 9.5-3 Fire doors separating safety-related areas are self-closing or provided with closing mechanisms and are inspected semiannually to verify that the automatic hold open, release and closing mechanisms and latches are operable. Watertight and missile resistant doors are not provided with closing mechanisms. Fire doors with automatic hold open and release mechanisms are inspected daily to verify that the doorways are free of obstructions.

Fire doors separating safety-related areas are normally closed and latched. Fire doors that are locked closed are inspected weekly to verify position. Fire doors that are closed and latched are inspected daily to assure that they are in the closed position. Fire doors that are closed and electrically supervised at a continuously manned location are not inspected.

9.5.1.8.9 Emergency Planning

STD COL 9.5-3 Emergency planning is described in Section 13.3.

STD DEP 1.1-1

9.5.1.9 Combined License Information

9.5.1.9.1 Qualification Requirements for Fire Protection Program

STD COL 9.5-1

This COL Item is addressed as follows:

Qualification requirements for individuals responsible for development of the Fire Protection Program are discussed in Subsections 9.5.1.6 and 9.5.1.8.7.

Training of firefighting personnel is discussed in Subsections 9.5.1.8, 9.5.1.8.2, and 9.5.1.8.7.

Administrative procedures and controls governing the Fire Protection Program during plant operation are discussed in Subsections 9.5.1.8.1.2, 9.5.1.8.3, 9.5.1.8.4, 9.5.1.8.5 and 9.5.1.8.6.

Fire protection system maintenance is discussed in Subsection 9.5.1.8.6.

9.5.1.9.2 Fire Protection Analysis Information

WLS COL 9.5-2

This COL Item is addressed in Subsection 9A.3.3.

9.5.1.9.3 Regulatory Conformance

STD COL 9.5-3

This COL Item is addressed in Subsections 9.5.1.8.1.1, 9.5.1.8.8, and 9.5.1.8.9 and in Table 9.5-201.

9.5.1.9.4 NFPA Exceptions

STD COL 9.5-4

This COL item is addressed in Subsection 9.5.1.8.1.1.

9.5.1.9.6 Verification of Field Installed Fire Barriers

STD COL 9.5-6

This COL Item is addressed in Subsection 9.5.1.8.6.

9.5.1.9.7 Establishment of Procedures to Minimize Risk for Fire Areas Breached During Maintenence

STD COL 9.5-8 This COL Item is addressed in Subsection 9.5.1.8.1.2.a.3.vi.

Add the following subsections at the end of DCD Subsection 9.5.2.2.3.

9.5.2.2.3.1 Offsite Interfaces

WLS COL 9.5-9 The offsite communications system is used for emergency communications between the Station and various emergency organizations. The offsite interfaces are divided into two categories: the NRC interface, and State, Local and Corporate interfaces.

9.5.2.2.3.1.1 NRC Offsite Interfaces

In the event of an emergency at the Station, offsite interfaces with the NRC are required for notification and continued communication. The primary means of communication between the Station and the NRC is the Emergency Telephone System (ETS). The ETS provides a reliable communication link to the NRC Operations Center.

The ETS provides voice and data communication between the Station and the NRC headquarters. Calls using the ETS phones are connected directly to Duke's long distance provider over Duke's private fiber optic network. The design utilizes existing corporate telecommunications equipment to provide access to long distance lines without having to go through a local telephone company switch.

Onsite systems supporting the ETS phones are provided with alternate or backup power sources with automatic transfer capability to maintain continuity of communication in the event the normal power source is lost. The design addresses the recommendations of IE Bulletin BL-80-15 "Possible Loss of Emergency Notification System (ENS) With Loss of Offsite Power".

9.5.2.2.3.1.2 State, Local and Corporate Offsite Interfaces

In the event of an emergency at the Station, notification and activation of the State, Local and Corporate emergency response network is established. This network requires communication interfaces between the Station and the following offsite agencies:

- North Carolina State Emergency Operations Center
- South Carolina Warning Point
- Cherokee County Warning Point
- Cleveland County Warning Point

- York County Warning Point
- Duke Energy Emergency Operating Facility (EOF)

The primary means of communication between the station and these offsite agencies is the selective signaling system. The selective signaling system uses Duke telecommunication interfaces to dedicated private lines leased from the local telephone companies to provide reliable communication links with these offsite organizations. The design utilizes existing corporate telecommunications equipment to complete calls without having to go through a local telephone company switch.

Onsite systems supporting the selective signaling system are provided with sufficient alternate or backup power sources having automatic transfer capability to maintain continuity of communication in the event the normal power source is lost. The design addresses the recommendations of IE Bulletin BL-80-15 “Possible Loss of Emergency Notification System (ENS) With Loss of Offsite Power.”

9.5.2.2.3.1.3 Other Interfaces

Communication between the station and offsite radiological monitoring teams is by a radio system. Each radio is powered by a non-essential ac source and has a built-in battery backup.

As an alternative to ground-based communications mentioned above, in the event of a natural disaster the Station also maintains a satellite phone system. The phone system is portable, self-contained, and intended for use with communications with the NRC.

WLS COL 9.5-10 9.5.2.2.3.2 Emergency Offsite Communications

9.5.2.2.3.2.1 NRC Communication Interfaces

The ETS system provides the primary method for voice and data communication from the Station control room or Technical Support Center (TSC) to the NRC Operations Center. As a minimum, the following communication links are provided to support the NRC functional areas:

(1) dedicated telephone for the NRC Emergency Notification System (ENS)

(1) dedicated telephone for the NRC Health Physics Network (HPN)

(4) dedicated telephones for use by NRC personnel for dialing onsite and offsite locations. These phones also support the following NRC communications requirements:

- Reactor Safety Counterpart Link (RSCL)

- Protective Measures Counterpart Link (PMCL)
- Management Counterpart Link (MCL)
- Operations Center LAN (OCL)

(2) dedicated telephones for the Emergency Response Data Systems (ERDS)

The dedicated telephones in the ETS use Duke Energy fiber optic lines to public long distance lines. The design utilizes existing corporate telecommunications equipment to provide access to long distance lines without having to go through a local telephone company switch. The associated equipment is provided with sufficient alternate or backup power sources having automatic transfer capability to maintain continuity of communication in the event the normal power source is lost.

The secondary means of communication between the station and the NRC are commercial telephone company lines.

9.5.2.2.3.2.2 State, Local and Corporate Offsite Interfaces

The primary means of communication between the station and these offsite agencies is the selective signaling system. The selective signaling system uses Duke telecommunication interfaces to dedicated private lines leased from the local telephone companies to provide reliable communication links with these offsite organizations. The design utilizes existing corporate telecommunications equipment to complete calls without having to go through a local telephone company switch.

Onsite systems supporting the selective signaling system are provided with sufficient alternate or backup power sources having automatic transfer capability to maintain continuity of communication in the event the normal power source is lost. The design addresses the recommendations of IE Bulletin BL-80-15 “Possible Loss of Emergency Notification System (ENS) With Loss of Offsite Power.”

The secondary means of communication between the station and offsite state, local and corporate interfaces are commercial telephone company lines.

A radio system provides a backup means of communication between the station and these offsite communication points. Communications by radio with the state and local agencies can be achieved either by using the Duke network or by using the radio network operated by each state agency. Communication between the station, offsite radiological monitoring teams, and the EOF can also be achieved by using the Duke radio network.

The site radio system is powered by a non-essential ac source and has a built-in battery backup.

9.5.2.5 Combined License Information

9.5.2.5.1 Offsite Interfaces

WLS COL 9.5-9 This COL Item is addressed in Subsection 9.5.2.2.3.1

9.5.2.5.2 Emergency Offsite Communications

WLS COL 9.5-10 This COL Item is addressed in Subsection 9.5.2.2.3.2

9.5.2.5.3 Security Communications

STD COL 9.5-11 This COL Item is addressed in the Physical Security Plan.

Add the following subsection after DCD Subsection 9.5.4.5.1.

9.5.4.5.2 Fuel Oil Quality

STD COL 9.5-13 The diesel fuel oil testing program requires testing both new fuel oil and stored fuel oil. High fuel oil quality is provided by specifying the use of ASTM Grade 2D fuel oil with a sulfur content as specified by the engine manufacturer.

A fuel sample is analyzed prior to addition of ASTM Grade 2D fuel oil to the storage tanks. The sample moisture content and particulate or color is verified per ASTM 4176 (Reference 213). In addition, kinetic viscosity is tested to be within the limits specified in Table 1 of ASTM D975 (Reference 214). The remaining critical parameters per Table 1 of ASTM D975 are verified compliant within 7 days.

Fuel oil quality is verified by sample every 92 days to meet ASTM Grade 2D fuel oil criteria. The addition of fuel stabilizers and other conditioners is based on sample results.

The fuel oil storage tanks are inspected on a monthly basis for the presence of water. Any accumulated water is to be removed.

9.5.4.7 Combined License Information

STD COL 9.5-13 This COL Item is addressed in Subsection 9.5.4.5.2.

9.5.5 REFERENCES

201. National Fire Protection Association, “Standard for Inspection, Care, and Use of Fire Hose Couplings, and Nozzles and the Service Testing of Fire Hose,” NFPA 1962, 2003.

202. National Fire Protection Association, “Standard for Fire Prevention During Welding, Cutting, and Other Hot Work,” NFPA 51B, 2003.

203. National Fire Protection Association, “Standard for Safeguarding Construction, Alteration, and Demolition Operations,” NFPA 241, 2004.

204. National Fire Protection Association, “Standard on Industrial Fire Brigades,” NFPA 600, 2005.

205. National Fire Protection Association, “Recommended Practice for Pre-incident Planning,” NFPA 1620, 2003.

206. National Fire Protection Association, "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films," NFPA 701, 2004.

207. National Fire Protection Association, “Standard for Fire-Retardant Treated Wood and Fire-Retardant Coatings for Building Materials,” NFPA 703, 2006.

208. National Fire Protection Association, “Standard for Fire Service Respiratory Protection Training,” NFPA 1404, 2006.

209. National Fire Protection Association, “Standard on Training for Initial Emergency Scene Operations,” NFPA 1410, 2005.

210. National Fire Protection Association, “Standard on Fire Department Occupational Safety and Health Program,” NFPA 1500, 2007.

211. NFPA-804, 2001, “Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants.”

212. National Fire Protection Association, “Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems,” NFPA 25, 2008.

213. American Society of Mechanical Engineers, "Standard Test Method for Free Water and Particulate Contamination in Distillate Fuels (Visual Inspection Procedures)," ASTM D4176-04e1.

214. American Society of Mechanical Engineers, "Standard Specification for Diesel Fuel Oils," ASTM D975-08.

STD COL 9.5-3
STD COL 9.5-4

TABLE 9.5-201 (Sheet 1 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[a]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Fire Protection Program			
1. Direction of fire protection program; availability of personnel.	C.1.a(1)	C	Comply. Subsections 9.5.1.8.1.2 and 13.1.1.2.10 address this requirement.
2. Defense-in-depth concept; objective of fire protection program.	C.1.a(2)	C	Comply. Subsections 9.5.1.8 and 9.5.1.8.1 address this requirement.
3. Management responsibility for overall fire protection program; delegation of responsibility to staff.	C.1.a(3)	C	Comply. Subsections 9.5.1.8.1.2, 13.1.2.1.2.9 and 13.1.1.2.10
4. The staff should be responsible for:	C.1.a(3)	C	Comply. Subsection 13.1.2.1.2.9 addresses this requirement.
a. Fire protection program requirements.			
b. Post-fire shutdown capability.			
c. Design, maintenance, surveillance, and quality assurance of fire protection features.			
d. Fire prevention activities.			
e. Fire brigade organization and training.			
f. Prefire planning.			

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TABLE 9.5-201 (Sheet 2 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
5. The organizational responsibilities and lines of communication pertaining to fire protection should be defined through the use of organizational charts and functional descriptions.	C.1.a(4)	C	Comply. Organization and lines of communication are addressed in Figure 13.1-201. Functional descriptions are addressed in Subsections 13.1.1.2.10, 13.1.1.3.1.3, 13.1.2.1.2.9, and 13.1.2.1.5.
6. Personnel qualification requirements for fire protection engineer, reporting to the position responsible for formulation and implementation of the fire protection program.	C.1.a(5)(a)	C	Comply. Subsection 13.1.2.1.2.9 addresses this requirement.
7. The fire brigade members' qualifications should include a physical examination for performing strenuous activity, and the training described in Position C.3.d.	C.1.a(5)(b)	C	Comply. Subsections 9.5.1.8.2.1 and 9.5.1.8.2.2 address these requirements.
8. The personnel responsible for the maintenance and testing of the fire protection systems should be qualified by training and experience for such work.	C.1.a(5)(c)	C	Comply. Subsection 9.5.1.8.7 addresses this requirement.

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TABLE 9.5-201 (Sheet 3 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
9. The personnel responsible for the training of the fire brigade should be qualified by training and experience for such work.	C.1.a(5)(d)	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.
10. The following NFPA publications should be used for guidance to develop the fire protection program: No. 4, No. 4A, No. 6, No. 7, No. 8, and No. 27.	C.1.a(6)	AC	Alternate Compliance. The NFPA codes cited in BTP CMEB 9.5-1 are historical. Current NFPA codes are referenced for guidance for the fire protection program. Subsection 9.5.1.8.1.1 addresses this requirement.
11. On sites where there is an operating reactor, and construction or modification of other units is underway, the superintendent of the operating plant should have a lead responsibility for site fire protection.	C.1.a(7)	C	Comply. Subsection 13.1.1.2.10 addresses this requirement.

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TABLE 9.5-201 (Sheet 4 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Fire Protection Analysis			
14. Fires involving facilities shared between units should be considered.	C.1.b	C	Comply. The FHA demonstrates the plant's ability to perform safe shutdown functions and minimize radioactive releases to the environment. Postulated fires in shared facilities that do not contain SSCs important to safety and do not contain radioactive materials do not affect these functions
15. Fires due to man-made site-related events that have a reasonable probability of occurring and affecting more than one reactor unit should be considered.	C.1.b	C	Comply. Subsections 2.2.3 and 3.5 establish that these events are not credible.
Fire Suppression System Design Basis			
22. Fire protection systems should retain their original design capability for potential man-made, site-related events that have a reasonable probability of occurring at a specific plant site.	C.1.c(4)	C	Comply. Subsections 2.2.3 and 3.5 establish that these events are not credible.

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TABLE 9.5-201 (Sheet 5 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Fire Protection Program Implementation			
26. The fire protection program for buildings storing new reactor fuel and for adjacent fire areas that could affect the fuel storage area should be fully operational before fuel is received at the site.	C.1.e(1)	C	Comply. Subsection 9.5.1.8.1 addresses this requirement.
27. The fire protection program for an entire reactor unit should be fully operational prior to initial fuel loading in that unit.	C.1.e(2)	C	Comply. Subsection 9.5.1.8.1 addresses this requirement.
28. Special considerations for the fire protection program on reactor sites where there is an operating reactor and construction or modification of other units is under way.	C.1.e(3)	C	Comply. Subsection 9.5.1.8.1.2.m addresses this requirement.
29. Establishing administrative controls to maintain the performance of the fire protection system and personnel.	C.2	C	Comply. Subsection 9.5.1.8.1.2 addresses this requirement.
Fire Brigade			
30. The guidance in Regulatory Guide 1.101 should be followed as applicable.	C.3.a	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.

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TABLE 9.5-201 (Sheet 6 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
31. Establishing site brigade: minimum number of fire brigade members on each shift; qualification of fire brigade members; competence of brigade leader.	C.3.b	C	Comply. Subsections 9.5.1.8.2.2 and 13.1.2.1.5 address this requirement.
32. The minimum equipment provided for the brigade should consist of turnout coats, boots, gloves, hard hats, emergency communications equipment, portable ventilation equipment, and portable extinguishers.	C.3.c	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.
33. Recommendations for breathing apparatus for fire brigade, damage control, and control room personnel.	C.3.c	C	Comply. Subsection 9.5.1.8.2.2 and DCD Subsection 6.4.3.1address these requirements.
34. Recommendations for the fire brigade training program.	C.3.d	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.
Quality Assurance Program			
35. Establishing quality assurance (QA) programs by applicants and contractors for the fire protection systems for safety-related areas; identification of specific criteria for quality assurance programs.	C.4	C	Comply. Chapter 17 and DCD Subsection 9.5.1.7 address this requirement.

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TABLE 9.5-201 (Sheet 7 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Building Design			
50. Fire doors should be inspected semiannually to verify that automatic hold-open, release, and closing mechanisms and latches are operable.	C.5.a (5)	C	Comply. Subsection 9.5.1.8.8 addresses this requirement.
51. Alternative means for verifying that fire doors protect the door opening as required in case of fire.	C.5.a (5)	C	Comply. Subsection 9.5.1.8.8 addresses this requirement.
52. The fire brigade leader should have ready access to keys for any locked fire doors.	C.5.a (5)	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.
55. Stairwells serving as escape routes, access routes for firefighting, or access routes to areas containing equipment necessary for safe shutdown should be enclosed in masonry or concrete towers with a minimum fire resistance rating of 2 hours and self-closing Class B fire doors.	C.5.a(6)	C	Comply. Subsection 9A.3.3 addresses this requirement for miscellaneous buildings located in the yard.
56. Fire exit routes should be clearly marked.	C.5.a (7)	C	Comply. DCD Subsection 9.5.1.2.1.1 addresses this requirement.
71. Water drainage from areas that may contain radioactivity should be collected, sampled, and analyzed before discharge to the environment.	C.5.a(14)	C	Comply. Capability is provided. Subsection 9.5.1.8.5 addresses this requirement.

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TABLE 9.5-201 (Sheet 8 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Control of Combustibles			
80. Use of compressed gases inside buildings should be controlled.	C.5.d (2)	C	Comply. Subsection 9.5.1.8.4g addresses this requirement.
Lighting and Communication			
111. A portable radio communications system should be provided for use by the fire brigade and other operations personnel required to achieve safe plant shutdown.	C.5.g (4)	C	Comply. Subsections 9.5.1.8.1.2.a.3.v, 9.5.1.8.2.2, and DCD Subsections 9.5.2 and 9.5.2.2.1 address this requirement.
Water Sprinkler and Hose Standpipe Systems			
149. All valves in the fire protection system should be periodically checked to verify position.	C.6.c (2)	C	Comply. Subsection 9.5.1.8.6 addresses this requirement.
157. The fire hose should be hydrostatically tested in accordance with NFPA 1962. Hoses stored in outside hose houses should be tested annually. The interior standpipe hose should be tested every 3 years.	C.6.c (6)	C	Comply. Subsection 9.5.1.8.6 addresses this requirement.
Primary and Secondary Containment			
174. Self-contained breathing apparatus should be provided near the containment entrances for fire fighting and damage control personnel. These units should be independent of any breathing apparatus provided for general plant activities.	C.7.a (2)	C	Comply. Subsection 9.5.1.8.2.2 addresses this requirement.

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TABLE 9.5-201 (Sheet 9 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[(a)]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Main Control Room Complex			
180. Breathing apparatus for main control room operators should be readily available.	C.7.b	C	Comply. DCD Subsection 6.4.2.3 addresses this requirement.
Cooling Towers			
225. Cooling towers should be of noncombustible construction or so located and protected that a fire will not adversely affect any safety-related systems or equipment.	C.7.q	C	Comply. Subsection 9A.3.3 addresses this requirement.
Storage of Acetylene-Oxygen Fuel Gases			
228. Gas cylinder storage locations should not be in areas that contain or expose safety-related equipment or the fire protection systems that serve those safety-related areas.	C.8.a	C	Comply. Subsection 9.5.1.8.4.g addresses this requirement.
229. A permit system should be required to use this equipment in safety-related areas of the plant.	C.8.a	C	Comply. Subsection 9.5.1.8.4.g addresses this requirement.
Storage Areas for Ion Exchange Resins			
230. Unused ion exchange resins should not be stored in areas that contain or expose safety-related equipment.	C.8.b	C	Comply. Subsection 9.5.1.8.4.a addresses this requirement.

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TABLE 9.5-201 (Sheet 10 of 10)
AP1000 FIRE PROTECTION PROGRAM COMPLIANCE WITH
BTP CMEB 9.5-1[a]

BTP CMEB 9.5-1 Guideline	Paragraph	Comp	Remarks
Hazardous Chemicals			
231. Hazardous chemicals should not be stored in areas that contain or expose safety-related equipment.	C.8.c	C	Comply. Subsection 9.5.1.8.4.h addresses this requirement.

a) This table supplements DCD Table 9.5.1-1.

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TABLE 9.5-202[a]
EXCEPTIONS TO NFPA STANDARD REQUIREMENTS

Requirement	AP1000 Exception or Clarification
NFPA 804 (Reference 211) contains requirements specific to light water reactors.	Compliance with portions of this standard is as identified within DCD Section 9.5.1 and WCAP-15871. The intake structure is non-combustible construction, does not provide any safety function, and does not contain any equipment important to safety. Automatic sprinkler protection is not warranted and is not provided.

a) This table supplements DCD Table 9.5.1-3.

APPENDIX 9A
FIRE PROTECTION ANALYSIS

This section of the referenced DCD is incorporated by reference with the following departures and/or supplements.

9A.2 FIRE PROTECTION ANALYSIS METHODOLOGY

9A.2.1 Fire Area Description

WLS DEP 18.8-1 Add the following information at the end of the first paragraph in DCD Subsection 9A.2.1:

Figure 9A-201 replaces DCD Figure 9A-3 (sheet 1), to reflect the relocation of the Operations Support Center.

9A.3.3 Yard Area and Outlying Buildings

Replace the second sentence of DCD Subsection 9A.3.3 with the following information.

WLS COL 9.5-2 Miscellaneous yard areas do not contain safety-related components or systems, do not contain radioactive materials, and are so located that a fire or effects of a fire, including smoke, will not adversely affect any safety-related systems or equipment. Miscellaneous areas include such structures, for example, as maintenance shops, warehouses, training/office centers, and flammable and combustible material storage tanks. The three intake structures (river water, Make-Up Pond A, and Make-Up Pond B) are non-safety-related, do not contain any safety-related equipment, and are remotely located from safety-related structures, systems and components. National Fire Protection Association (NFPA) Standard 804 (Reference 203), Paragraph 8.28, requires automatic sprinkler protection for the intake structures. Due to the non-combustible construction, remote location, and the absence of safety-related equipment and systems, an exception to the automatic sprinkler protection is justified. The miscellaneous areas are located outside of the nuclear island, which is separated from the other yard areas by 3-hour fire rated barriers. Water-based fire suppression systems are provided as determined by the fire hazards analysis and are supplied by a branch line from the underground yard fire water system.

The administrative building is a separate detached building located in the yard. The building does not contain any equipment required for safe shutdown, nor contain any radioactive systems or components. The building is so located and protected that a fire or byproducts of a fire does not adversely affect any safety-related systems or equipment. The administrative building is remotely located from HVAC air intakes such that smoke and products of combustion do not affect any safety-related plant areas. The administrative building is typical of an office environment. Based on the NFPA Fire Protection Handbook, 16th Edition (DCD Section 9A.4, Reference 2), Table 7-9C, for a general office use for a private building, the total fire load would be equivalent to 7.7 BTU/ft^2. For conservatism, a total fire load of 10.0 BTU/ft^2 is assumed. The heat potential associated with this fire load is 80,000 BTU/ft^2, which corresponds to an equivalent fire duration of one hour per Table 7-9B of DCD Section 9A.4, Reference 2. Severity is slight per Table 7-9E of DCD Section 9A.4, Reference 2. In accordance with DCD Subsection 9A.2.4, for a combustible loading greater than 80,000 BTU/ft^2 automatic and manual suppression systems and fire detection are required. Fixed automatic sprinklers and hose stations supplied by a branch line from the underground yard fire water system are provided for the administrative building. Portable extinguishers are provided throughout. A fire in this fire area is detected by a fire detection 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 wet pipe sprinkler system or manually using hose streams or portable extinguishers. The administrative building is served by a dedicated HVAC system, which does not interface with other ventilation systems serving safety-related areas. Smoke is removed from the building using portable exhaust fans and flexible ductwork.

The cooling towers are non-combustible construction and are not used as the ultimate heat sink or for fire protection purposes. Therefore, the guidance specified in BTP CMEB 9.5-1 is not applicable. The cooling towers serve no safety function and have no safety design basis. The cooling towers do not contain any equipment capable of releasing radioactivity to the atmosphere. The cooling tower fill is a PVC material with a flame spread rating of 25 or less, which is considered non-combustible per Regulatory Guide 1.189. There are limited combustibles, primarily cabling, located in the fan housings at the top of the tower structures. There are limited combustibles located in the circulating water intake structure, primarily cabling. The combustible loading is estimated to be less than one hour. In accordance with DCD Subsection 9A.2.4 for a combustible loading of up to 80,000 BTU/ft^2 (one hour), manual suppression and fire detection are required. Due to the limited combustibles and location of the fan housings, manual suppression and detection is not warranted. A fire in the intake structure is detected by a fire detection system which produces an audible alarm locally and both visual and audible alarms in the main control room and the security central alarm station. Portable extinguishers are provided in the area for manual suppression. The cooling towers are remotely located from HVAC air intakes such that smoke and products of combustion do not affect any safety-related plant areas.

STD COL 9.5-3 Stairwells in miscellaneous buildings located in the yard serving as escape routes or access routes for firefighting are enclosed in masonry or concrete towers with a minimum fire resistance rating of 2 hours and self-closing Class B fire doors. The two-hour fire-resistance rating for the masonry or concrete material is based on testing conducted in accordance with ASTM E119 (Reference 201) and NFPA 251 (Reference 202).

9A.4 REFERENCES

201. American Society of Mechanical Engineers, “Standard Test Methods for Fire Tests of Building Construction and Materials,” ASTM E119-08a.

202. National Fire Protection Association, "Standard Methods of Tests of Fire Endurance of Building Construction and Materials," NFPA 251, 2006.

203. NFPA-804, 2001, "Standard for Fire Protection for Advanced Light Water Reactor Electric Generating Plants.”