

3.18 FIRE PROTECTION

3.18.1 FIRE PROTECTION INSTRUMENTATION

Applicability: At all times when equipment in that fire detection zone is required to be operable. Fire detection instruments located within the Reactor Building are not required to be operable during the performance of Type A Containment Leakage Rate Test.

Objective: To insure adequate fire detection capability.

Specification:

- 3.18.1.1 The minimum fire detection instrumentation for each fire detection zone shown in Table 3.18-1 shall be operable or action shall be taken as described in specification 3.18.1.2.
- 3.18.1.2 With the number of OPERABLE fire detection instruments less than required by Table 3.18-1.
- a. Within 1 hour, establish a fire watch patrol to inspect the zone with the inoperable instrument(s) at least once per hour unless the instrument(s) is located inside the containment, then inspect the containment at least once per 8 hours or monitor containment air temperature at least once per hour at the locations listed in Specification 3.17.3.
 - b. Restore the inoperable instrument(s) to OPERABLE status within 14 days or, prepare and submit a special report to the Commission within the next 30 days outlining the actions taken, the cause of the inoperability and the plans and schedules for restoring the instrument(s) to OPERABLE status.

Bases

OPERABILITY of the fire detection instrumentation ensures that adequate warning capability is available for the prompt detection of fires. This capability is required in order to detect and locate fires in their early stages. Prompt detection of fires will reduce the potential for damage to safety related equipment and is an integral element in the overall facility fire protection program.

In the event that a portion of the fire detection instrumentation is inoperable, the establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is restored to operability.

TABLE 3.18-1

FIRE DETECTION INSTRUMENTS

Instrument Location	Total Number of Detectors		Minimum Instruments Operable	
	Heat	Smoke	Heat	Smoke
1. Control Building Elev. 355'				
Control Room	0	17	NA	8
Computer Room	0	10	NA	5
HCV Panel	0	2	NA	1
CC & CR Panel	0	3	NA	2
PC & PCR Panel	0	3	NA	2
PL Panel	0	1	NA	1
2. Control Building Elev. 338'				
1D 4160 V SWGR	0	1	NA	1
1E 4160 V SWGR	0	1	NA	1
ESAS Cabinets (CB-3C)	0	3	NA	2
Relay Room	4	1	2	1
3. Control Building Elev. 322'				
1P 480 V SWGR	0	1	NA	1
1S 480 V SWGR	0	1	NA	1
Battery Room A	0	1	NA	1
Battery Room B	0	1	NA	1
Inverter Room A	0	1	NA	1
Inverter Room B	0	1	NA	1
Remote Shutdown Panel	0	1	NA	1
4. Diesel Generators				
Diesel A	1	0	1	NA
Diesel B	1	0	1	NA
5. Screen House				
General Area (HVAC)	2	0	1	NA
Zone 1	0	6	NA	3
Zone 2	0	6	NA	3
6. Fuel Handling Bldg. Elev. 281'				
General Cable Area (Zone 8)	0	9	NA	5
Lubricant & Storage Area (Zone 9)	0	3	NA	2

FIRE DETECTION INSTRUMENTS

Instrument Location	Total Number of Detectors		Minimum Instruments Operable	
	Heat	Smoke	Heat	Smoke
7. Auxiliary Building Elev. 261'				
Decay Heat Removal Pump A (Zone 6)	0	3	NA	2
Decay Heat Removal Pump B (Zone 7)	0	4	NA	2
8. Auxiliary Building Elev. 281'				
Pipe Penetration Area (Zone 1)	0	5	NA	3
Makeup & Purification Pumps (Zone 2)	0	3	NA	2
Valve Gallery (Zone 3)	0	1	NA	1
Cable Gallery (Zone 4)	0	4	NA	2
9. Auxiliary Building Elev. 305'				
Decay Heat & Nucl. Service Pumps and MCC 1A, 1B (Zone 5)	0	7	NA	4
Ventilation Room	1	1	1	1
10. Intermediate Building Elev. 295'				
EF-P-24B Rooms (Zone 1)	0	6	NA	3
Cable Area (Zone 2)	0	2	NA	1
EF-P-1 Room (Zone 3)	0	2	NA	1
Valve Gallery (Zone 4)	0	2	NA	1
11. Intermediate Building Elev. 305'				
Tank Room (Zone 5)	0	1	NA	1
12. Reactor Building Elev. 281;				
Exhaust Ducts (Zone 1)	0	3	NA	2
Decay Heat Valve 1 (Zone 2)	0	1	NA	1
Decay Heat Valve 2 (Zone 2)	0	1	NA	1
Cable Tray at Let Down Cooler (Zone 3)	0	1	NA	1
13. Reactor Building Elev. 305'				
Exhaust Ducts (Zone 4)	0	5	NA	3
Purge Exhaust (Zone 5)	0	1	NA	1
Cable Tray at Personnel Hatch (Zone 6)	0	2	NA	1
14. Reactor Building Elev. 346'				
D-Ring 1d (Zone 7)	0	6	NA	4
D-Ring 1e (Zone 8)	0	6	NA	4
15. Reactor Building Elev. 382'				
Cable Tray (Zone 9)	0	2	NA	1
16. Reactor Building Elev. 382'				
Elevator Room (Zone 10)	0	1	NA	1

3.18.3

DELUGE/SPRINKLER SYSTEMS

Applicability: At all times when equipment in the area is required to be operable.

Objective: To assure adequate fire suppression capability.

Specification:

3.18.3.1 The Deluge and/or Sprinkler Systems located in the following areas shall be operable or action shall be taken as described in specification 3.18.3.2.

- a. Diesel Generator and Radiator Rooms
- b. Diesel Generator Combustion Air Intakes
- c. Diesel Generator Cooling Air Intake
- d. Control Building Filter (AH-F3A, AH-F3B) Rooms
- e. Air Intake Tunnel (3 zones)
- f. Charcoal Filter (AH-F10, AH-F11)
- g. Intake Screen Pump House
- h. Diesel driven fire pump areas
- i. Control Building at elevation 306'
- j. Control Building ESAS Relay Room at elevation 338'6" (Manual system)
- k. Fuel Handling Building at elevation 281'0"
- l. Auxiliary Building containment penetration area at elevation 281'0" (Manual system)

3.18.3.2 With any of the above deluge and/or sprinkler systems in any room or zone inoperable:

- a. Establish a once-per-hour fire patrol with backup fire suppression equipment for the unprotected area(s), within one hour except that no fire watch is required in the air intake tunnel.
- b. Restore the system to OPERABLE status within 14 days or, prepare and submit a Special Report to the Commission within the next 30 days outlining the actions taken, the cause of inoperability and the plans and schedule for restoring the system to OPERABLE status.

3.18.4 CO₂ SYSTEM

Applicability: At all times when the equipment in the area is required to be operable.

Objective: To insure adequate fire suppression capability.

Specification:

3.18.4.1 The CO₂ system for the Cable Spreading Room shall be operable with a minimum level corresponding to 8500 lbm at a minimum pressure of 285 psig in the storage tank.

3.18.4.2 With the CO₂ system for the Cable Spreading Room inoperable:

- a. Establish a continuous fire watch with backup fire suspension equipment for the unprotected area within one hour.
- b. Restore the system to OPERABLE status within 14 days or prepare and submit a Special Report to the Commission within the next 30 days outlining the action taken the cause of inoperability and the plans and schedule for restoring the system to OPERABLE status.

3.18.5

HALON SYSTEMS

Applicability:

The Air Intake Tunnel Halon System shall be functional at all times except when the Control Building ventilation is on recirculation. The Computer Room Halon System shall be functional at all times except when the halon-protected computer equipment in the Control Room is not energized.

Objective:

To assure adequate fire suppression capability.

Specification:

3.18.5.1a.

The Halon System shall be operable having at least 90% of full charge pressure and 95% full charge weight or action shall be taken as described in specification 3.18.1.2.

3.18.5.1b.

The Air Intake Tunnel Halon System may be removed from service for periods up to 48 hours when the air tunnel must be occupied for testing or maintenance.

3.18.5.2

If the Halon system in any zone is inoperable:

- a. Restore the system to OPERABLE status within 14 days or, prepare and submit a Special Report to the Commission within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

3.18.6 FIRE HOSE STATIONS

Applicability: At all times when the equipment in the area is required to be operable.

Objective: To insure adequate fire suppression capability.

Specification:

3.18.6.1 The fire hose stations listed in Table 3.18-2 shall be operable or an additional hose must be routed to the unprotected area from an operable hose station within two (2) hours.

BASES:

The OPERABILITY of the fire suppression systems ensures that adequate fire suppression capability is available to confine and extinguish fires occurring in any portion of the facility where safety related equipment is located. The fire suppression system consists of the water system, spray and/or sprinklers, CO₂, Halon and fire hose stations. The collective capability of the fire suppression systems is adequate to minimize potential damage to safety related equipment and is a major element in the facility fire protection program.

Technical Specification 3.18.4.1 has been changed to reflect a minimum pressure of 285 psig in the CO₂ storage tank. Actual plant CO₂ discharge tests have verified that there is an ample system design margin at this setpoint (i.e. 100%).

In the event that portions of the fire suppression systems are inoperable, alternate backup fire fighting equipment is required to be made available in the affected areas until the inoperable equipment is restored to service.

In the event the fire suppression water system becomes inoperable, immediate corrective measures must be taken since this system provides the major fire suppression capability of the plant.

Table 3.18-2

HOSE STATIONS

Intermediate Building

1. Fire hose near northeast piping chamber stairway at elev. 309' (2 stations).

Auxiliary Building

1. Fire hose near stairway at northeast end of building near valve room at elev. 285'.
2. Fire hose near waste evaporator condensate tank and auxiliary steam condensate return unit elev. 285'.
3. Fire hose near stairway at northeast end of auxiliary building and engineered safeguards control center, elev. 309'.
4. Fire hose near radioactive waste control center, elev. 309'.
5. Fire hose in heat exchanger vault, elev. 286'.

Turbine Building

1. Fire hose along west side of building near 12th stage extraction feedwater heaters, elev. 326'.
2. Fire hose along west side of building near 10th stage extraction feedwater heaters, elev. 359'.

Fuel Handling Building

1. Fire hose along west wall north end, elev. 326'.
2. Fire hose along west wall south end, elev. 326'.
3. Fire hose along west wall north end, elev. 342'.
4. Fire hose along west wall south end, elev. 342'.
5. Fire hose along east wall north end, elev. 359'.
6. Fire hose along east wall south end, elev. 359'.
7. Fire hose middle west wall, elev. 384'.

Reactor Building (Note 1)

1. Fire hose near personnel access hatch, elev. 312'.
2. Fire hose near southeast stairway, elev. 285'.
3. Fire hose near southeast stairway, elev. 350'.
4. Fire hose at top east D-Ring, elev. 369'.
5. Fire hose at door to D-Ring, elev. 285'.
6. Fire hose near west stairway, elev. 285'.
7. Fire hose near equipment access hatch, elev. 312'.
8. Fire hose near west stairway, elev. 350'.
9. Fire hose at top west D-Ring, elev. 369'.

Note 1: Only required to be operable during plant shutdown conditions that do not require establishing containment integrity per T.S. 3.6.

3.18.7

FIRE BARRIER PENETRATIONS

Applicability:

All fire barrier penetration seals (including cable and pipe penetration barriers, fire doors and fire dampers) in fire zone boundaries protecting safety related areas shall be functional at all times when equipment on either side of the barrier is required to be operable.

Objective:

To assure the effectiveness of barriers.

Specification:

3.18.7.1

All fire barrier penetration seals protecting safety related areas shall be functional or action shall be taken as described in 3.18.7.2.

3.18.7.2a.

With one or more of the above required fire barrier penetration seals non-functional, establish a fire patrol to inspect at least one side of the affected penetration once per hour during refueling shutdown, cold shutdown, heatup/cooldown, and hot shutdown. At all other times a continuous fire watch shall be posted on one side of the affected penetration within one hour.

3.18.7.2b.

Restore the penetration seal to an OPERABLE status within 14 days or, prepare and submit a Special Report to the Commission within the next 30 days outlining the action to be taken, the cause of the inoperability and the plans and schedule for restoring the system to an OPERABLE status.

Bases:

The functional integrity of the fire barrier penetration seals ensures that fires will be confined or adequately retarded from spreading to adjacent portions of the facility. This design feature minimizes the possibility of a single fire rapidly involving several areas of the facility prior to detection and extinguishment. The fire barrier penetration seals are a passive element in the facility fire protection program and are subject to periodic inspections.

During periods of time when the seals are not functional, a roving or continuous fire watch is required to be maintained in the vicinity of the affected seal until the seal is restored to functional status as described in specification 3.18.7.2.

4.18

FIRE PROTECTION SYSTEMS

4.18.1

FIRE PROTECTION INSTRUMENTS

Applicability:

Instruments listed in Table 3.18-1

Objective:

To insure operability of fire detection instruments.

Specification:

4.18.1.1

Each of the fire detection instruments listed in Table 3.18-1 which are accessible during plant operation shall be demonstrated operable at least once per 6 months by performance of a Channel Functional Test. Instruments listed on Table 3.18-1 which are not accessible during plant operation shall be demonstrated operable by the performance of a Channel Functional Test during each cold shutdown exceeding 24 hours unless performed in the previous 6 months.

4.18.1.2

The non-supervised circuits between the instrument and the control room and between local panels and the control room shall be demonstrated operable at least once per month for the instruments listed in Table 3.18-1.

4.18.1.3

The NFPA Standard 72 D supervised circuits associated with the detector alarms for Table 3.18-1 instruments shall be demonstrated operable at least once per 6 months.

4.18.5

HALON SYSTEMS

Applicability:

Halon System described in Specification 3.18.5.

Objective:

To insure system operability.

Specification:

4.18.5.1

The Halon System shall be verified operable:

- a. At least once per 6 months by verifying each Halon storage tank weight and pressure.
- b. At least once per 18 months by:
 1. Verifying that the system, including associated ventilation dampers, actuates automatically to a simulated test signal.
 2. Functional test of the ultraviolet detectors, test of the pressure wave detectors, and replacement of the explosives actuators for the Air Intake Tunnel Halon System.

4.18.7

FIRE BARRIER PENETRATIONS

Applicability:

All fire barrier penetration seals (including cable and pipe penetration barriers, fire doors and fire dampers) in fire zone boundaries protecting safety related areas shall be functional at all times when equipment either side of the barrier is required to be operable.

Objective:

To assure that the effectiveness of fire barriers protecting safety-related areas is maintained.

Specification:

4.18.7.1

Fire barrier penetration seals and fire dampers shall be verified to be functional by a visual inspection:

- a. At least once each refueling interval; and
- b. Prior to declaring a fire barrier penetration seal or fire damper functional following repairs, maintenance, or initial installation.

4.18.7.2

Fire doors shall be verified to be functional by a visual inspection:

- a. At least weekly for doors that are locked closed to verify that they are locked closed and free of obstructions.
- b. At least daily for doors held open by automatic release mechanisms to verify that the doorway is free of obstructions.
- c. At least daily for doors neither locked nor supervised to verify that they are in a closed position.
- d. Prior to declaring a fire door functional following repairs, maintenance, or initial installation.