

A T T A C H M E N T 1

Haddam Neck Plant

FIRE PROTECTION PROPOSED REVISIONS TO TECHNICAL SPECIFICATIONS

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3.22 FIRE PROTECTION SYSTEMS

Applicability

This specification applies to the operational status of the plant fire protection and detection systems.

Objective

To ensure the availability of the fire protection and detection systems.

Specification

A. Fire Suppression Water Systems

- A.1 The Fire Suppression Water System shall be operable during all modes of operation with:
- a) Two high pressure fire pumps, each with a capacity of 2500 gpm, with their discharge aligned to the fire suppression header.
 - b) Automatic initiation logic for each fire pump.
- A.2 From and after the date that one fire pump is determined to be inoperable, restore the pump to operable status within 7 days or prepare and submit a Licensee Event Report to the Commission pursuant to Specification 6.9.2.b within 30 days of the occurrence outlining the plans and procedures to be used to provide for the loss of redundancy in this system.
- A.3 From and after the time that the entire Fire Suppression Water System is determined to Inoperable with the plant in any operating mode:
- a) Within 24 hours establish a backup Fire Suppression Water System, and prepare and submit a Licensee Event Report pursuant to Specification 6.9.2.a - Prompt Notification With Written Followup, outlining the actions taken, the cause of the malfunction and the plans and schedule for restoring the system to operable status; or
 - b) The plant shall be placed in at least Hot Standby within 6 hours and in Cold Shutdown within the following 24 hours.

B. Carbon Dioxide Systems

B.1 The following CO₂ Systems shall be Operable with the minimum number of bottles of CO₂ indicated, connected and available for service and having at least 90% of full charge weight, whenever the protected equipment in the area is required to be Operable:

- a) Cable Vault (18)
- b) Primary Auxiliary Building Charcoal Filters (8)

B.2 From and after the time a CO₂ system listed in B.1 is determined to be inoperable, within one hour establish a continuous fire watch with backup fire suppression equipment for the unprotected equipment and/or area.

B.3 Restore the system to Operable status within 14 days or prepare and submit a Licensee Event Report to the Commission pursuant to Specification 6.9.2.b within 30 days of the occurrence outlining the cause of the inoperability and the plans for restoring the system to Operable status.

C. Halon 1301 System

C.1 The Halon 1301 System for the switchgear room shall be operable with at least (7) Halon bottles connected and available for service and each bottle shall be at least 92% of full charge weight.

C.2 From and after the time the Halon system listed in C.1 is determined to be inoperable within one hour establish a continuous fire watch with backup fire suppression equipment for the unprotected equipment and/or area.

C.3 Restore the system to operable status within 14 days or prepare and submit a Licensee Event Report to the Commission pursuant to Specification 6.9.2.b within 30 days of the occurrence outlining the cause of the inoperability and the plans for restoring the system to operable status.

D. Fire Water Stations

D.1 The Fire Water Stations listed in Table 3.22-1 shall be Operable.

D.2 From and after the time any of the Fire Water Stations listed in Table 3.22-1 are determined to be inoperable, within one hour route an additional equivalent capacity hose to the unprotected area from an operable fire water station or establish a fire patrol to inspect the unprotected area at intervals of at least once each hour.

E. Fire Detection Systems

E.1 The minimum number of smoke detectors for each fire detection zone shown in Table 3.22-2 shall be OPERABLE.

E.2 ACTION

Whenever the number of OPERABLE smoke detectors is less than the minimum number OPERABLE requirement of Table 3.22-2:

- a. Within 1 hour establish a fire watch patrol to inspect the zone(s) 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 the containment air temperature at least once per hour at the locations referenced by Specification 4.4, Containment Testing).
- b. Restore the inoperable instrument(s) to OPERABLE status within 14 days, or, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2b within the next 30 days outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the instrument(s) to OPERABLE status.

F. Penetration Fire Barriers

F.1 Penetration fire barriers (including cable penetration barriers, fire doors and fire dampers) that protect safety related areas shall be functional.

F.2 From and after the time that it is determined that a penetration fire barrier is not functional; (a) the areas shall be monitored by operable fire detectors and within one (1) hour a fire watch patrol shall be established to inspect the area of at least once per hour or (b) a continuous fire watch shall be established on at least one side of the affected penetration within one (1) hour.

G. Spray and/or Sprinkler Systems

G.1 The particular spray and/or sprinkler systems located in the following areas shall be operable at all times when a fire hazard exists within the area protected by the applicable spray and/or sprinkler system:

- a. Maintenance shop annex (old warehouse),
- b. High pressure turbine housing,
- c. Hydrogen seal oil unit,
- d. Turbine lube oil reservoir,
- e. Turbine building EL 21' - 6",
- f. Turbine building mezzanine,
- g. Turbine building beneath the turbine floor and under the high pressure turbine,
- h. Turbine building mezzanine under generator,
- i. Oil storage room,
- j. Turbine building crane well,
- k. Cable spreading area,
- l. Diesel Generator Room A,
- m. Diesel Generator Room B,
- n. Primary Auxiliary Building Sprinkler System,
- o. Service Building Sprinkler System,
- p. Chemistry Lab Sprinkler System,
- q. Machine Shop Sprinkler System,
- r. Intake Structure (Diesel Fuel Storage Room)
- s. Diesel Fire Pump Sprinkler System.

- G.2 From and after the time any of the spray and/or sprinkler systems listed in G.1 is determined to be inoperable, within one hour, establish a fire patrol to inspect the applicable unprotected area at intervals of at least once each hour.
- G.3 Restore the inoperable system to operable status within 14 days or prepare and submit a Licensee Event Report to the Commission pursuant to Specification 6.9.2.B within 30 days of the occurrence outlining the cause of the inoperability and plans for restoring the inoperable system to operable status.

Basis

A. Fire Detection and Suppression Systems

Fire Suppression Systems

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 systems, spray and/or sprinklers, CO₂ Systems, Halon 1301 Systems, fire hose stations and hydrants. The 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.

In the event that a portion of the Fire Suppression System becomes inoperable, alternate backup fire fighting equipment or a periodic fire watch patrol is required to be established in the associated area until the inoperable equipment can be restored to service.

In the event that 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. The requirement for a twenty-four hour report to the Commission provides for prompt evaluation of the acceptability of the corrective measures to provide adequate fire suppression capability for the continued protection of the nuclear plant.

Fire Detection Instrumentation

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 designated portion of the fire detection instrumentation is operable, the establishment of frequent fire patrols in the affected areas is required to provide detection capability until the inoperable instrumentation is returned to service.

Penetration Fire Barrier

The functional integrity of the penetration fire barriers 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 penetration fire barriers are a passive element in the facility fire protection program and are subject to periodic inspections.

During periods of time when the barriers are not functional, a continuous fire watch is required to be maintained in the vicinity of the affected barrier until the barrier is restored to functional status.

TABLE 3.22-1

FIRE WATER STATIONS

<u>Fire Water Station Designation and Location</u>	<u>Elevation</u>	<u>Protected Area</u>
FHC-4-Service Bldg. Corridor	21' 6"	Cable Spreading Area-Primary Auxiliary Building
FHC-6-Service Bldg. Corridor	21' 6"	Cable Spreading Area-Primary Auxiliary Building
FHC-3-Service Bldg. Corridor	21' 6"	Diesel Generator Rooms-Lunch & Meeting Room-Service Bldg.
FHC-5-I&C Corridor	59' 6"	I&C Corridor
FHH-5-South of Screen House	21' 6"	Screenwell House
FHH-8-East of D.G. Bldg.	21' 6"	Diesel Generator Rooms
FHR-1-Turbine Building, North	21' 6"	Air Compressors
FHR-2-Turbine Building, North	21' 6"	Oil Storage Room
FHR-3-Turbine Building, East	21' 6"	Under Generator
FHR-4-Turbine Building, East	21' 6"	Feed Pumps
FHR-5-Turbine Building, South	21' 6"	Under Generator
FHR-6-Turbine Building, South	21' 6"	Under Generator
FHR-7-Turbine Building, West	21' 6"	Lube Oil Reservoir
FHR-8-Turbine Building, West	21' 6"	H ₂ Seal Oil Unit
FHR-9-Turbine Building, East	37' 6"	Feedwater Control
FHR-10-Turbine Building, East	37' 6"	#1 Feed Heaters
FHR-11-Turbine Building, East	37' 6"	Switchgear Room
FRH-12-Turbine Building, West	37' 6"	H ₂ Vapor Extractors
FHR-13-Turbine Building, North	59' 6"	High Pressure Turbine
FHR-14-Turbine Building, East	59' 6"	Control Room
FHR-15-Turbine Building, East	59' 6"	Low Pressure Turbines
FHR-16-Turbine Building, South	59' 6"	Generator/Exciter

TABLE 3.22-1 (Cont'd)

<u>Fire Water Station Designation and Location</u>	<u>Elevation</u>	<u>Protected Area</u>
FHR-17-Turbine Building, South	59' 6"	Generator/Exciter
FHR-18-Turbine Building, West	59' 6"	Low Pressure Turbines
FHR-19-Turbine Building, West	59' 6"	High Pressure Turbine
FHR-21-Maint. Shop Annex, North	21' 6"	Elect. Cables
FHR-22-Maint. Shop Annex, South	21' 6"	Elect. Cables
FHR-23-Maint. Shop, East	21' 6"	Elect. Cables
FHR-24-Spent Fuel Building, East	21' 6"	Fuel Storage Building
FHC-10-Switchgear Room	41' 6"	Switchgear Room
FHC-7-Auxiliary Building	21' 6"	Primary Auxiliary Bldg.
FHC- 8-Auxiliary Building	35' 6"	Primary Auxiliary Bldg.
FHC- 9-Screenwell Bldg.	21' 6"	Screenwell Bldg.

TABLE 3.22-2

SMOKE DETECTORS

<u>Location</u>	<u>Minimum Number Detectors Operable/Detectors Available</u>
1. Containment	19/23 *
2. Cable Spreading Area	21/28 *
3. 1A Diesel Generator Room	4/5
4. 1B Diesel Generator Room	4/5
5. Switchgear Room	26/32 *
6. Containment Cable Vault	3/4
7. Waste Disposal Bldg.	2/3
8. Primary Auxiliary Bldg. Zone 1	1/1
" " " " 2	3/4
" " " " 3	1/1
" " " " 4	1/1
" " " " 5	2/3
" " " " 6	2/3
" " " " 7	1/2
" " " " 8	1/1
9. Control Room	8/10
10. Screen Well Bldg. Zone 1	2/3
" " " " 2	1/1
11. Spent Fuel Bldg.	5/6

*No two adjacent detectors shall be inoperable at the same time.

4.15 FIRE PROTECTION SYSTEMS

A. Fire Suppression Water System

- A.1 The Fire Suppression Water System shall be demonstrated operable:
- a) At least once per 31 days \pm 25% on a staggered test basis by starting each pump and operating it for 15 minutes with flow.
 - b) At least once per 31 days \pm 25%, verify that each valve (manual, power operated or automatic) in the flow path is in its correct position.
 - c) At least once per 12 months \pm 25%:
 1. By cycling each testable valve through one complete cycle.
 - d) At least once per 18 months \pm 25%:
 1. By performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence.
 2. By verifying that each pump will develop a flow of at least 2500 gpm at a system head of 100 psig.
 3. Cycle each valve in the flow path that is not testable during plant operation through at least once complete cycle of full travel.
 - e) At least once per three years by performing flow tests of the system in accordance with Chapter 5, Section 11 of Fire Protection Handbook, 14th Edition published by National Fire Protection Association.

B. Carbon Dioxide Systems

- B.1 The CO₂ Systems listed in Section 3.22.B.1 shall be demonstrated Operable:
- a) At least once per six months \pm 25% by weighing each cylinder.

- b) At least once per 18 months \pm 25% by:
 - 1. Verifying that all system components operate properly when manual devices are manually operated and automatic devices are actuated by a simulated signal, and
 - 2. Verifying that there is no blockage in headers and nozzles by conducting a flow test.

C. Halon 1301 System

C.1 The Halon 1301 System listed in Section 3.22.C.1 shall be demonstrated operable:

- a) At least once per six months \pm 25% the weight and pressure of refillable containers shall be checked. If a container shows a net weight of less than 92 percent or shows a pressure less than 324 psig, it shall be refilled or replaced.
- b) At least once per 18 months \pm 25% by:
 - 1. Verifying that all system components operate properly when manual devices are manually operated and automatic devices are actuated by a simulated signal, and
 - 2. Assuring that there is no blockage in discharge piping and nozzles by conducting a visual inspection.

D. Fire Hose Stations and Hydrants

D.1 Each Fire Hose Station and Hydrant listed in Table 3.22-1 shall be verified to be operable:

- a) At least once per month \pm 25% by visual inspection of the hose stations and hydrants to assure all equipment is available.
- b) At least once per 18 months \pm 25% by removing the hose for inspection and reracking, and replacing all gaskets in the couplings that are degraded.
- c) At least once every year by opening valve and flushing hydrant to verify valve operability and no blockage.
- d) At least once per 3 years \pm 25%, partially open hose station valves to verify valve operability and no blockage.
- e) At least once per 3 years \pm 25%, conduct a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at that hose station.

E. Fire Detection Systems

- E.1 Each of the required fire detection instruments which are accessible during plant operation shall be demonstrated OPERABLE at least once per 6 months by performance of a CHANNEL FUNCTIONAL TEST. Fire detectors 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.
- E.2 Supervision of the supervised circuits associated with the detector alarms of each of the above required fire detection instruments shall be demonstrated OPERABLE at least once per 6 months.

F. Penetration Fire Barriers

- F.1 Penetration Fire Barriers (including cable penetration barriers, fire doors and fire dampers) that protect safety related areas shall be verified to be functional.
- a) At least once per 18 month \pm 25% by visual inspection, and
 - b) Prior to declaring a penetration fire barrier(s) functional following repairs or maintenance by performing a visual inspection of the affected penetration fire barrier(s).

G. Spray and/or Sprinkler Systems

- G.1 The spray and/or sprinkler systems shall be demonstrated to be operable:
- a) At least once per 12 months \pm 25%:
 1. By cycling each testable valve through one complete cycle.
 - b) At least once per 18 months \pm 25%:
 1. By performing a system functional test which includes simulated automatic actuation of the system and verifying that the automatic valves in the flow path actuate to their correct position.
 2. By visual inspection of spray headers to verify their integrity,
 3. By visual inspection of each nozzle to verify no blockage.

c) At least once per 3 years + 25%:

1. By performing an air flow test through each spray/sprinkler header and verifying that each open head spray nozzle is unobstructed.

Basis

Fire Suppression Water System

Periodic testing of the fire pumps is conducted to check for equipment failures and deterioration.

Periodic testing of testable valves and simulated automatic actuation of the system assures that the fire system is maintained in a state of readiness and is capable of meeting its designed performance level.

Carbon Dioxide & Halon 1301 System

High Pressure Carbon Dioxide Systems are provided for the Cable Vault and the Primary Auxiliary Building Charcoal Filters. Semi-annual weighing of the CO₂ and Halon bottles provides adequate assurance that sufficient CO₂ and Halon will be available in the event of a fire.

Requiring a puff test for CO₂ at least once per 18 months assures that the actuation system is operable and that all piping alarms and nozzles are functioning properly.

Fire Hose Station and Hydrants

Periodic testing, inspection and maintenance of hose stations and hydrants is important to assure that the fire water stations will function when they are needed.

Fire Detection System

Semi-annual fire detector testing assures that the system will function as intended in the event of a fire.

Penetration Fire Barriers

Periodic Inspection of the penetration fire barriers will assure that fire barriers will function when they are needed.

Spray and/or Sprinkler Systems

Periodic cycling of testable valves, functional tests and inspections assures that the spray and/or sprinkler systems are maintained in a state of readiness and capable of meeting their designed performance level.

6.0 ADMINISTRATIVE CONTROLS

6.1 RESPONSIBILITY

6.1.1 The Station Superintendent shall be responsible for overall facility operation and shall delegate in writing the succession to this responsibility during his absence.

6.2 ORGANIZATION

OFFSITE

6.2.1 The offsite organization for facility management and technical support shall be as shown on Figure 6.2.1.

FACILITY STAFF

6.2.2 The Facility organization shall be as shown on Figure 6.2-2 and:

- a. Each on duty shift shall be composed of at least the minimum shift crew composition shown in Table 6.2-1.
- b. At least one licensed Operator shall be in the control room when fuel is in the reactor.
- c. At least two licensed Operators shall be present in the control room during reactor start-up, scheduled reactor shutdown and during recovery from reactor trips.
- d. An individual qualified in radiation protection procedures shall be on site when fuel is in the reactor.
- e. ALL CORE ALTERATIONS shall be directly supervised by either a licensed Senior Reactor Operator or Senior Reactor Operator limited to fuel handling who has no other concurrent responsibilities during this operation.
- f. A fire brigade of five (5) members shall be maintained on site at all times. This excludes two (2) members of the minimum shift complement necessary for safe shutdown of the plant and any personnel required for other essential functions during a fire emergency.

The brigade crew composition may be one less than the minimum requirement for a period of time not to exceed 2 hours in order to accommodate unexpected absences.