

ATTACHMENT 1

TABULATION OF PAGES
PROPOSED TECHNICAL SPECIFICATION CHANGE
SURRY POWER STATION, UNITS NO. 1 AND NO. 2

<u>DELETE</u>	<u>ADD</u>
3.21-1	3.21-1
3.21-2	3.21-2
3.21-3	3.21-3
3.21-4	3.21-4
3.21-5	3.21-5
3.21-6	3.21-6
3.21-7	3.21-7
3.21-8	3.21-8
-	3.21-9
4.18-1	4.18-1
4.18-2	4.18-2
4.18-3	4.18-3
4.18-4	4.18-4
4.18-5	4.18-5
-	4.18-6
-	4.18-7

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ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION CHANGE

3.21 FIRE DETECTION AND SUPPRESSION SYSTEM

Applicability

Applies to the operating status of the Fire Detection and Suppression Systems.

Objective

To define those conditions of the Fire Detection and Suppression Systems necessary to insure safe reactor operations.

These conditions relate to: Fire Detection Systems, Plant Fire Suppression Water System, Plant Spray and/or Sprinkler Systems, Plant CO₂ System, Plant Halon System, Plant Fire Hose Stations and Plant Fire Barrier Penetration Fire Seals.

Specifications:

A. Fire Detection Systems

1. As a minimum, the fire detection instrumentation for each fire detection zone shown in Table 3.21-1 shall be operable at all times.
2. With the number of operable fire detection instruments less than required by Table 3.21-1.
 - a. Within 1 hour, establish a fire watch patrol to inspect the zone with the inoperable instrument(s) at least once per hour, and
 - 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 6.6.4 within the next 10 days outlining the cause of the malfunction and the plans for restoring the instrument(s) to operable status.

3. The requirements of Specification 3.0.1 are not applicable.

B. Plant Fire Suppression Water Sytem

1. The Fire Suppression Water System shall be operable at all times with:
 - a. Two high pressure pumps each with a capability of 2,500 gpm with their discharge aligned to the fire suppression header.
 - b. Separate water supplied each containing a minimum of 250,000 gallons reserved capacity from 300,000 gallon capacity tanks.
 - c. A flow path capable of taking suction from both 300,000 gallon capacity tanks and transferring the water through distribution piping with OPERABLE sectionalizing control or isolation valves to the yard hydrant curb valves and the front valve ahead of the water flow alarm device on each sprinkler, hose standpipe or spray system riser.
 - d. Automatic initiation logic for each fire pump.
2.
 - a. With less than the above required equipment, restore the inoperable equipment to operable status within 7 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.6.4 within the next 10 days outlining the plans and procedures to be used to provide for the loss of redundancy in this system.
 - b. With no Fire Suppression Water System operable, within 24 hours;
 - (1) Establish a backup Fire Suppression Water System.
 - (2) Notify the Commission pursuant to Specification 6.6.4 outlining the actions taken and the plans and schedule for restoring the system to operable status.

3. If 2.b(1) above cannot be fulfilled, place the reactor in Hot Shutdown within the next 6 hours and in Cold Shutdown within the following thirty (30) hours.
4. The requirements of Specification 3.0.1 are not applicable.

C. Plant Spray and/or Sprinkler Systems

1. The spray and sprinkler systems securing the following areas shall be operable.
 - a. Cable tunnel
 - b. Cable vault
2.
 - a. With a sprinkler system inoperable, establish a continuous fire water with backup fire suppression equipment for the unprotected area(s), within 1 hour.
 - b. Restore the system to operable status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.6.4 within the next 10 days outlining the cause of inoperability and the plans for restoring the system to operable status.

D. Plant CO₂ System

1. The low pressure CO₂ systems shall be operable, with a minimum level of 75% and a minimum pressure of 275 psi in the associated storage tank, at all times when the equipment in the following areas are required to be operable:
 - a. Cable tray rooms
 - b. Cable tunnel
 - c. Cable vault

- d. Charcoal filter banks A and B
 - e. Emergency diesel generator rooms, 1, 2, and 3.
2. The high pressure CO₂ systems shall be operable, with a minimum level of 90% by weight, at all times when equipment in the following areas are required to be operable:
 - a. Fuel oil storage tank room for emergency service water pumps
 - b. Emergency diesel generator fuel oil transfer pump rooms.
 3.
 - a. With CO₂ system inoperable, establish a continuous fire water with back fire suppression equipment for the unprotected area(s), within 1 hour.
 - b. Restore the system to operable status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.6.4 within the next 10 days outlining the cause of inoperability and the plans for restoring the system to operable status.
 4. The requirements of Specification 3.0.1 are not applicable.

E. Plant Halon System

1. The Halon System shall be operable, with the storage tanks having at least 95% of full charge weight and 90% of full charge pressure, at all times when equipment in the following area is required to be operable:
 - a. Station records storage vault.
2.
 - a. With the Halon System inoperable establish a continuous fire watch with backup fire suppression equipment for the unprotected area, within 1 hour.

- b. Restore the system to operable status within 14 days or prepare and submit a Special Report to the Commission pursuant to Specification 6.6.4 within the next 90 days outlining the cause of inoperability and the plans for restoring the system to operable status.
3. The requirements of Specification 3.0.1 are not applicable.

F. Plant Fire Hose Stations

1. The following fire hose station shall be operable at all times when equipment in the area is required to be operable:

<u>LOCATION</u>	<u>SIZE</u>
a. Auxiliary building hose Stations 37 through 51 and 41A	1 1/2"
b. Fuel building hose Stations 52 and 53.	1 1/2"
c. Hose stations 12, 16, 20, 21A, 22, 23, 33, 34, 54, 55, 56, and 57 in Turbine Building to be used as backup to Control Room, Emergency Switchgear Room and Diesel Generator Room	1 1/2"

2. The following fire hose stations shall be operable during refueling or extended (greater than 48 hours) maintenance outages.

a. Unit 1 containment dry standpipes (Hose Stations 75 through 87)	1 1/2"
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- b. Unit 2 containment dry standpipes 1 1/2"
(Hose Stations 60 through 72)
- 3. With a hose station inoperable, route an additional equivalent capacity hose to the unprotected area from an operable hose station within 1 hour.
- 4. The requirements of Specification 3.0.1 are not applicable.

G. Plant Fire Barrier Penetration Fire Seals

- 1. All penetration fire barriers protecting safety related areas shall be functional at all times.
- 2. With a penetration fire barrier non-functional, a continuous fire watch shall be established on at least one side of the affected penetration within 1 hour.
- 3. The requirements of Specification 3.0.1 are not applicable.

BasesFire 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 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 returned to service.

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 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.

In the event that the fire suppression water systems are 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 Barrier Penetration Seals

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 continuous fire watch is required to be maintained in the vicinity of the affected seal until the seal is restored to functional status.

TABLE 3.21-1

FIRE DETECTION INSTRUMENTS

<u>INSTRUMENT LOCATION</u>	<u>MINIMUM INSTRUMENTS OPERABLE</u>	
	<u>Heat</u>	<u>Smoke</u>
1. Containment (Reactor Coolant Pumps Only)***	1 per RCP	-
*2. Cable Tray Room	3	4
*3. Cable Tunnel	2	3
4. Cable Vault Area		
*Lower Area	1	2
Upper Area	1	1
*5. Charcoal Filter Banks	1 per bank	-
*6. Emergency Diesel Generator Room	1 per room	-
*7. Fuel Oil Tank Room (river)	1**	1
*8. Fuel Oil Transfer Pump Houses	1 per house**	-

*Allows for one inoperable instrument

**Rate of rise actuation devices for high pressure CO₂ system

***One heat detector installed per pump. RCP pump bearing and motor temperature will be monitored once per hour if the RCP heat detector is inoperable.

4.18 FIRE DETECTION AND PROTECTION SYSTEM SURVEILLANCE

Applicability

Applies to periodic testing and surveillance of the Fire Protection System.

Objective

To verify that the fire protection system will respond promptly and properly when required.

SpecificationTest and FrequencyA. Fire Detection and Instrumentation

1. Each of the fire detection instruments listed in Table 3.21-1 shall be demonstrated operable at least once per 6 months by a channel functional test.
2. The circuitry associated with the detector alarms shall be demonstrated operable at least once per 6 months for all NEPA Code 72D Class A supervised circuits.
3. The non-supervised circuits between the local panels in Specification 4.18.A.2 and the control room shall be demonstrated operable at least once per 31 days.

B. Plant Fire Suppression Water Systems

1. The Fire Suppression Water system shall be demonstrated operable:

- a. At least once per 7 days by verifying the water supply volume.
- b. At least once per 31 days on a staggered test basis by starting each pump and operating it for at least 15 minutes on recirculating flow.
- c. At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path is in its correct position.
- d. At least once per 12 months by cycling each testable valve through one complete cycle.
- e. At least once per 6 months by performance of a system flush.
- f. At least once per 18 months:
 - (1) By performing a system functional test which includes simulated automatic actuation of the system throughout its operating sequence and verifying that each automatic valve in the flow path actuates to its correct position.
 - (2) By verifying that each pump develops a flow equal to or greater than 2500 gpm at a Total Dynamic Head of 231 ft.
 - (3) By verifying that each high pressure pump starts (sequentially) to maintain the fire suppression water system pressure equal to or greater than 90 psig.
- g. At least once per 3 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.

C. Plant Spray and/or Sprinkler Systems

1. The spray and sprinkler systems shall be demonstrated operable:
 - a. At least once per 31 days by verifying that each valve in the flow path is in its correct position.
 - b. At least once per 12 months by cycling each testable valve in the flow path through at least one complete cycle of full travel.
 - c. At least once per 18 months by performing the following:
 1. By a visual inspection of the dry pipe spray and sprinkler headers to verify their integrity.
 2. By a visual inspection of each nozzle's spray pattern is not obstructed.
 - d. At least once per 3 years by performing an air flow test through each open head spray/sprinkler and verifying each open head spray/sprinkler nozzle is unobstructed.

D. Plant Low Pressure CO₂ Systems

1. The CO₂ system shall be demonstrated operable:
 - a. At least once per 7 days by verifying each CO₂ storage tank level and pressure.
 - b. At least once per 18 months by verifying the system valves and associated ventilation dampers and fire doors actuate automatically and manually to a simulated actuation signal. A brief flow test shall be made to verify flow from each nozzle. ("Puff Test").

E. Plant High Pressure CO₂ Systems

The CO₂ Systems shall be demonstrated operable:

1. At least once per 6 months by verifying CO₂ cylinder weight.

2. At least once per 18 months by:
 - a. Verifying the system, including associated ventilation dampers and fire doors, actuates manually and automatically, upon receipt of a simulated test signal, and
 - b. Performance of a flow test through headers and nozzles to assure no blockage.

F. Plant Halon Systems

1. The Halon system shall be demonstrated operable:
 - a. At least once per 6 months by verifying each Halon storage tank weight and pressure.
 - b. At least once per 18 month by:
 - (1) Verifying the system actuates automatically to a simulated test signal.
 - (2) Performance of a flow test through headers and nozzles to assure no blockage.
 - (3) Verifying the operability of the manual initiating system.

G. Plant Fire Hose Station

1. Each fire hose station shall be verified operable:
 - a. At least once per 31 days by visual inspection of the station to assure all equipment is available.
 - b. At least once per 18 months by removing the hose for inspection and re-racking and replacing all gaskets in the couplings that are degraded.

- c. At least once per 3 years, partially open each hose station valve to verify valve operability and no blockage, and conduct a hose hydrostatic test at pressure at least 50 psig greater than the maximum pressure available at that hose station.
2. Each containment hose station shall be verified operable:
 - a. By a visual inspection during each outage of duration greater than 7 days.
 - b. At least once per refueling cycle by removing the hose for inspection and reracking and replacing all gaskets in the couplings that are degraded.
 - c. At least once every other refueling by partially opening each hose station valve to verify valve operability and no blockage, and conducting a hose hydrostatic test at a pressure at least 50 psig greater than the maximum pressure available at that hose station.

H. Plant Fire Barriers Penetration Fire Seals

1. Penetration fire barriers shall be verified to be functional by a visual inspection:
 - a. At least once per 18 months, and
 - b. Prior to declaring a fire penetration seal or fire damper functional following repairs or maintenance.
2. Penetration fire barriers that perform a pressure sealing function shall be verified to be functional by performance of a local leakage test prior to declaring a penetration fire barrier functional following repairs or maintenance.

I. Back-up Fire Pump Diesel Engine

The fire pump diesel engine shall be demonstrated operable:

1. At least once per 31 days by verifying:
 - a. The fuel storage tank contains at least 220 gallons of fuel, and
 - b. The diesel starts from ambient conditions and operates for at least 20 minutes.

2. By use of diesel fuel within the limits specified in Table 1 of ASTM D975-74 for standard #2 fuel oil.

3. At least once per 18 months, during shutdown by:
 - a. Subjecting the diesel to an inspection in accordance with procedures prepared in conjunction with its manufacturer's recommendations for the class of service, and
 - b. Verifying the diesel starts from ambient conditions on the auto-start signal and operates for ≥ 20 minutes while loaded with the fire pump.

4. The fire pump diesel starting 24-volt battery bank and charger shall be demonstrated operable:
 - a. At least once per 7 days by verifying that:
 1. The electrolyte level of each battery is above the plates, and
 2. The overall battery voltage is ≥ 24 volts.
 - b. At least once per 92 days by verifying that the specific gravity is appropriate for continued service of the battery.
 - c. At least once per 18 months by verifying that:
 1. The batteries, cell plates and battery racks show no visual indication of physical damage or abnormal deterioration, and

2. The battery-to-battery and terminal connections are clean, tight, free of corrosion and coated with anti-corrosion material.