

ATTACHMENT 2

DUKE POWER COMPANY  
OCONEE NUCLEAR STATION

Proposed Technical Specification Revision

Fire Protection

Pages

3.17-1  
3.17-2  
3.17-3  
3.17-4  
3.17-5  
3.17-6  
3.17-7  
3.17-8  
3.17-9  
4.19-1  
4.19-2

### 3.17 FIRE PROTECTION AND DETECTION SYSTEMS

#### Applicability

This specification applies to the operability of fire protection and detection systems when equipment protected by those systems is required to be operable.

#### Objective

To assure the operability of fire protection and detection systems which protect systems and equipment required for safe shutdown.

#### Specification

- 3.17.1 The minimum fire detection instrumentation for each fire detection zone shown in Table 3.17-1 shall be operable. The fire detection instruments located within the containment are not required to be operable during the performance of Type A Containment Leakage Rate Tests. When this specification is determined not to be met, appropriate action shall be taken consisting of one or more of the following:
1. Within 1 hour, a fire watch patrol shall be established to inspect an accessible zone with the inoperable instrumentation at least once per hour.
  2. The inoperable instrumentation shall be restored to operable status within 14 days or a report shall be submitted 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 instrumentation to operable status. Continued operation of the affected unit is permitted provided that this condition is met. Operation under this specification is not considered to be in a degraded mode and thus is not reportable under Technical Specification 6.6.2.1.b (2).
- 3.17.2 The Fire Suppression Water System shall be operable. This system shall consist of 2 High Pressure Service Water (HPSW) pumps with a design capacity of 6000 gpm each and automatic initiation logic, and the associated piping and valves supplying water to the sprinkler systems and fire hose stations. The HPSW pumps shall be aligned to the high pressure fire header. When this specification is determined not to be met, appropriate action shall be taken consisting of the following:
1. The inoperable equipment shall be restored to operable status within 7 days or a report shall be submitted to the Commission within the next 30 days outlining the plans and procedures to be used to provide for the loss of redundancy in this system. Continued operation of the affected unit is permitted provided that this condition is met. Operation under this specification is not considered to be in a degraded mode and thus is not reportable under Technical Specification 6.6.2.1.b (2).

2. With no Fire Suppression Water System operable, in lieu of the above, the following action shall be taken.
  - a. Within 24 hours a backup Fire Suppression Water System shall be established. If a backup Fire Suppression Water System cannot be established within 24 hours, place the reactor in Hot Standby within the next twelve (12) hours and in cold shutdown within the following forty-eight (48) hours.
  - b. Within 24 hours the Commission shall be notified by telephone, and in writing no later than the first working day following the event.
  - c. Within 14 days of the event, a report shall be submitted to the Commission outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system to operable status.

3.17.3 The sprinkler and spray systems in safety related areas listed in Table 3.17-1 shall be operable. If a system is determined to be inoperable, the following corrective action shall be taken.

1. A continuous fire watch with backup fire suppression equipment shall be established in the area within 1 hour.
2. The sprinkler or spray system shall be restored to operable status within 14 days or a report shall be submitted to the Commission within the next 30 days outlining the cause of inoperability and the plans for restoring the system to operable status. Continued operation of the affected unit is permitted provided that this condition is met. Operation under this specification is not considered to be a degraded mode and thus is not reportable under Technical Specification 6.6.2.1.b (2).

3.17.4 The automatic CO<sub>2</sub> system provided for the generators at the Keowee Hydro Station shall be operable. If the system is determined to be inoperable the following corrective action shall be taken:

1. A continuous fire watch with backup fire suppression equipment shall be established in the area within 1 hour.
2. The CO<sub>2</sub> system shall be restored to operable status within 14 days or a report shall be submitted to the Commission within the next 30 days outlining the cause of inoperability and the plans for restoring the system to operable status. Continued operation of the affected reactor unit is permitted provided that this condition is met. Operation under this specification is not considered to be in a degraded mode and thus is not reportable under Technical specification 6.6.2.1.b (2).

3.17.5 The fire hose stations listed in Table 3.17-1 shall be operable or the following action shall be taken:

1. If a fire hose station listed in Table 3.17.1 is inoperable, an additional equivalent capacity fire hose of length sufficient to reach the unprotected area shall be provided at an operable hose station within 1 hour.
2. If the inoperable fire hose station cannot be restored to operable status within 14 days, continued operation of the affected unit is permitted provided that within the next 30 days a report is submitted to the Commission outlining the cause of the inoperability, actions taken, and the plans for restoring the system to operable status. Operation under this specification is not considered to be a degraded mode and is not reportable under Tech. Spec. 6.6.2.1b(2).

3.17.6 All fire barrier penetrations (including cable penetration barriers, fire doors, fire dampers) protecting safety related areas shall be operable.

If a fire barrier protecting a safety-related area is determined to be inoperable, the operability status of the fire detection instrumentation for the affected safety related area(s) shall be determined within 1 hour, and the following action shall be taken:

1. If the fire detection instrumentation for the affected area(s) is operable, a fire watch patrol shall be established to inspect the area at least once per hour.
2. If the fire detection instrumentation is inoperable, a continuous fire watch shall be established within the next hour on at least one side of the affected penetration fire barrier. The non-functional fire barrier penetration(s) shall be restored to functional status within 7 days.
3. If the non-functional fire barrier penetration(s) cannot be restored to functional status within 7 days, continued operation of the affected unit is permitted provided that within the next 30 days, a report is submitted to the Commission outlining the cause of the inoperability and the plans for restoring the system to operable status. Operation under this specification is not considered to be a degraded mode and is not reportable under Technical Specification 6.6.2.1.b(2).

#### Bases

Operability of the fire detection instrumentation ensures that adequate warnings 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.

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, fire hose stations, and penetration fire barriers. 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 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. 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 operation of the nuclear plant.

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 a periodic inspections.

During periods of time when a barrier is not functional, a fire watch patrol will be required to inspect the affected area frequently as a precaution in addition to the fire detection instrumentation in the area. If fire detection instrumentation in the area is not operable, 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 3.17-1

A. Fire Detection InstrumentationREACTOR CONTAINMENT

<u>ELEV</u>	<u>UNIT</u>	<u>EQUIPMENT/LOCATION PROTECTED</u>	<u>DETECTORS PROVIDED/OPERABLE</u>
796, 850	1	Reactor Bldg Penetrations	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
845	1	Reactor Coolant Pumps	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
830	1	Reactor Bldg Cooling Units	(2 Strings ) / (1 String ) (6 Detectors) / (3 Detectors)
796	2	Reactor Bldg Penetrations	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
796	2	Reactor Coolant Pumps	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
796	2	Reactor Bldg Cooling Units	(2 Strings ) / (1 String ) (6 Detectors) / (3 Detectors)
796	3	Reactor Bldg Penetrations	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
796	3	Reactor Coolant Pumps	(2 Strings ) / (1 String ) (8 Detectors) / (4 Detectors)
796	3	Reactor Bldg Cooling Units	(2 Strings ) / (1 String ) (6 Detectors) / (3 Detectors)

BLOCKHOUSE

796	1-2	Switchgear Blt, B2T	2/1
796	1-2	CT-4 Transformer	2/1
796	3	Switchgear 3Blt, 3B2T	2/1

4160 VOLT SWITCHGEAR

796	1	4160V Switchgear (1TC, 1TD, 1TE)	2/1
796	2	4160V Switchgear (2TC, 2TD, 1TE)	2/1
796	3	4160V Switchgear (3TC, 3TD, 3TE)	2/1

EMERGENCY FEEDWATER PUMP TURBINE

771	1	EFWP Turbine	1/1
771	2	EFWP Turbine	1/1

TABLE 3.17-1 (cont'd)

<u>ELEV</u>	<u>UNIT</u>	<u>EQUIPMENT/LOCATION PROTECTED</u>	<u>DETECTORS PROVIDED/OPERABLE</u>
771	3	EFWP Turbine	1/1
<u>CABLE ROOM</u>			
809	1	Cable Room	6/4
809	2	Cable Room	6/4
809	3	Cable Room	7/4
<u>PUMP ROOMS</u>			
758	1	Between LPI Pumps 1A&1C	1/1
758	1-2	Between LPI Pumps 1B&2B	1/1
758	2	Between LPI Pumps 2A&2C	1/1
758	3	LPI 3A Pump	1/1
758	3	Between LPI Pumps 3B&3C	1/1
758	1	Between HPI Pumps 1A&1B	1/1
758	1-2	Between HPI Pumps 1C&2C	1/1
758	2	Between HPI Pumps 2A&2B	1/1
758	3	HPI Pump 3C	1/1
758	3	Between HPI Pump 3A&3B	1/1
<u>PENETRATION ROOMS</u>			
822	1	East Penetration Room	3/2
809	1	Above MCC's (1XH, 1XI, 1XJ)	3/2
822	2	East Penetration Room	3/2
809	2	Above MCC's (2XH, 2XI, 2XJ)	3/2
822	3	East Penetration Room	5/3
822	1	West Penetration Room	3/2
822	1	West Penetration Room	3/2
822	3	West Penetration Room	3/2
<u>CONTROL ROOMS</u>			
822	1-2	Control Room Area (Includes Computer Room, I&E Shop, Baily Cabinet)	9/6

TABLE 3.17-1 (cont'd)

<u>ELEV</u>	<u>UNIT</u>	<u>EQUIPMENT/LOCATION PROTECTED</u>	<u>DETECTORS PROVIDED/OPERABLE</u>
822	3	Control Room Area (Includes Computer Room, Electrical Shop, Bailey Cabinet)	7/4
<u>CABLE SHAFT</u>			
822	1	Unit 1 Cable Shaft	1/1
822	2	Unit 2 Cable Shaft	1/1
822	3	Unit 3 Cable Shaft	1/1
833	3	Cable Shaft 5th Floor	1/1
<u>BATTERY ROOM</u>			
809	3	Control Battery Room	2/1
<u>KEOWEE HYDRG STATION</u>			
700		Control Room	4/2
688		Battery Room	4/2
700		Mechanical Equipment Gallery	3/2
700		Main Lube Oil Storage Room	1/1
701		Generator #1	6/4
701		Generator #2	6/4
710		Operating Floor	6/4

B. Sprinkler And Spray Systems

SPRINKLER SYSTEMS

Turbine Driven  
Emergency FDW Pump . Units 1, 2, and 3

Transformers  
CT-1  
CT-2  
CT-3  
CT-4  
CT-5



TABLE 3.17-1 (cont'd)

SPRINKLER SYSTEMS

Cable Room	Units 1, 2, and 3
Equipment Room	Units 1, 2, and 3
Cable Shaft (3rd Level)	Units 1, 2, and 3
Cable Shaft (4th & 5th Level)	Units 1, 2, and 3

EMULSIFIRE/SPRAY SYSTEMSKeowee Hydro Station

Main Lube Oil Storage Room

Main Transformer

C. Fire Hose Stations

<u>Location No.</u>	<u>Valve No.</u>	<u>Area or Component Protected</u>
3-D-28	1HPSW-194	1&2 Blockhouse, 1&2 3rd Floor Switchgear
AX-34	1HPSW-437	#1 Cable Spread Room
AX-35	1HPSW-436	#1 Cable Spread Room
AX-33	2HPSW-436	#2 Cable Spread Room
AX-32	2HPSW-437	#2 Cable Spread Room
AX-30	3HPSW-436	#3 Cable Spread Room
AX-31	3HPSW-437	#3 Cable Spread Room
5-M-31	2HPSW-304	1&2 Control Room, 1&2 Emergency Shutdown Panels
TOH-3	3HPSW-338	2 Control Room, #3 Emergency Shutdown Panel
1-J-28	2HPSW-242	#1 First Floor Motor Control Centers, HPSW Pumps, 1&2 LPSW Pumps
1-J-43	3HPSW-345	#3 1st Floor Motor Control Centers
1-B-19	1HPSW-163	#1 EFWP
1-D-39	2HPSW-246	#2 EFWP
1-D-53	3HPSW-336	#3 EFWP
AX-23	1HPSW-438	#1 Equipment Room
AX-24	1HPSW-439	#1 Equipment Room
AX-25	2HPSW-438	#2 Equipment Room
AX-26	2HPSW-439	#2 Equipment Room
AX-27	3HPSW-438	#3 Equipment Room
AX-28	3HPSW-439	#3 Equipment Room
AX-13	1HPSW-448	1&2 HPI Pumps, 1&2 LPI Pumps
AX-14	1HPSW-449	3 HPI Pumps, 3 LPI Pumps
1-J-47	3HPSW-349	3 LPSW Pumps
AX-36	1HPSW-445	#1 West Penetration Room
AX-45	1HPSW-444	#1 East Penetration Room
AX-42	2HPSW-444	#2 East Penetration Room
AX-43	2HPSW-445	#2 West Penetration Room
AX-29	3HPSW-444	#3 East Penetration Room
AX-44	3HPSW-445	#3 West Penetration Room

TABLE 3.17-1 (cont'd)

C. Fire Hose Stations

<u>Location No.</u>	<u>Valve No.</u>	<u>Area or Component Protected</u>
3-J-28	2HPSW-241	1&2 3rd Floor Switchgear
3-M-43	3HPSW-339	3 3rd Floor Switchgear, 600V Load Center
AX-22	1HPSW-440	1 Battery Room
AX-20	2HPSW-440	2 Battery Room
AX-18	3HPSW-440	3 Battery Room

Keowee Hydro Station

Operating Deck (NW)	NA	Operating Floor
Operating Deck (NE)	NA	Operating Floor
Operating Deck (SW)	NA	Operating Floor
Operating Deck (SE)	NA	Operating Floor
Control Room	NA	Control Room
Mechanical Equip- ment Gallery	NA	Mechanical Equipment Gallery

## 4.19 FIRE PROTECTION AND DETECTION SYSTEM

### Applicability

This specification applies to fire protection and detection systems which protect systems and equipment required for safe shutdown.

### Objective

To verify the operability of fire protection and detection systems.

### Specification

#### 4.19.1 Fire Detection Systems

- a. Each of the fire detection instruments listed in Table 3.17-1 shall be tested for operability at least once per 6 months by performance of a Channel Functional Test, except as noted in part b.
- b. The testing interval for detectors specified in Table 3.17.1 which are inaccessible during power operation may be extended until such time as the detectors become accessible for a minimum of 36 hours. The testing interval shall not extend past a refueling outage.

#### 4.19.2 The Fire Suppression Water System shall be documented operable as follows:

- a. Monthly
  1. A functional test of the high pressure service water pump and associated automatic valve shall be performed.
  2. Proper alignment of valves shall be verified.
  3. A visual inspection of the fire hose stations listed in Table 3.17-1 shall be performed.
- b. Annually
  1. Each high pressure service water pump shall be tested to verify flow of 3000 gpm.
  2. The sprinkler systems listed in Table 3.17-1 which protected safety-related systems shall be functionally tested, except in the cable spreading rooms, equipment rooms, and cable shafts.
  3. The sprinkler system spray headers and nozzles, listed in Table 3.17.1, which protect safety-related systems, shall be inspected.

4. The fire hose stations shall receive a maintenance inspection to include removal and reracking of the hoses and inspection of coupling gaskets.

c. Refueling

1. A visual inspection of each nozzle's spray area will be conducted to verify the spray pattern is not obstructed.

d. At least once per 3 years:

1. A system flow test shall be performed on the fire suppression water system in accordance with Chapter 5, Section II of the Fire Protection Handbook, 14th Edition, NFPA.
2. The fire hose station valve listed in Table 3.17-1 shall be partial-stroke tested.
3. Each fire hose shall be subjected to a hydrostatic test at a pressure at least 50 psig greater than the maximum pressure at the station.

4.19.3 The high pressure CO<sub>2</sub> System for the generators at the Keowee Hydro Station shall be demonstrated operable as follows:

a. Monthly

1. Each valve in the flow path will be verified to be in its correct position.

b. Semiannually

1. The CO<sub>2</sub> storage tank weight shall be verified to be at least 90% of the full charge weight.

c. Refueling

1. The system shall be verified to actuate manually and automatically, upon receipt of a simulated action signal.
2. A flow test will be performed through headers and nozzles to assure no blockage.

4.19.4 Penetration fire barriers which protect safety-related equipment shall be verified functional by visual inspection at a refueling frequency and prior to declaring a penetration fire barrier functional following repairs or maintenance.