UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

February 14, 1978

Posted Am-20 to DPR-60

Docket Nos. 50-282 306

Northern States Power Company
ATTN: Mr. L. O. Mayer, Manager
Nuclear Support Services
414 Nicollet Mall - 8th Floor
Minneapolis, Minnesota 55401

Gentlemen:

In response to your application dated January 31, 1977, as amended by filing dated December 22, 1977, the Commission has issued the enclosed Amendment Nos. 26 and 20 to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2, respectively. The amendments consist of changes in the Technical Specifications that relate to provisions for Fire Protection.

By letter dated December 2, 1977, we sent you proposed Technical Specifications on fire protection for the Prairie Island Nuclear Generating Station. We asked that you respond within 20 days as to whether there are any specific requirements to which you object. You responded by letter dated December 22, 1977, and objected to five portions of the Technical Specifications. These objections are briefly that:

1. Technical Specification 4.15.A.1 require that the detectors inside containment be functionally tested once each eighteen months rather than each six months,

2. Technical Specification 4.15.B.1.k require each valve in the flow path that is not electrically supervised locked, sealed, or otherwise secured to be verified to be in its correct position each month rather than each valve in the flow path,

3. Technical Specification 4.15.C require inspection of nozzles once each eighteen months rather than once each month,

4. Technical Specification 6.1.C.6 require a fire brigade of three members rather than the five members, and

5. Figure 6.1-1 not have the specific delineation of fire protection responsibility and Figure 6.1-2 not have specific delineation of operator and fire protection training responsibilities under the Training Supervisor.

In order to achieve expeditious implementation of the fire protection Technical Specification, Specification 6.1.C.6 is being issued at this time with the minimum number of onsite fire brigade members specified as 3 as you proposed. This number is less than the minimum number given in the generic staff position, Minimum Fire Brigade Shift Size, which was an attachment to the Safety Evaluation Report issued with our letter to you dated December 2, 1977. However, we are presently evaluating your justification for this smaller brigade size and when the evaluation is completed the minimum number will be increased if we do not agree with your position.

In a similar manner, we are evaluating your justification for items 1, 2, 3 and 5 above. When our evaluation is completed, these Technical Specifications will also be changed if we do not agree with your positions.

The fire protection surveillance specification has been changed to be Section 4.16 since Amendments Nos. 25 and 19 to the licenses issued on January 18, 1978, contain a Section 4.15.

Copies of the related Safety Evaluation were sent to you with our letter dated December 2, 1977. The Notice of Issuance is enclosed.

Sincerely,

for Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Enclosures:
1. Amendment Nos. 26 and 20 to DPR-42 and DPR-60
2. Notice

cc w/enclosures: See next page

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* w/cy of 1/31 & 12/22 NSP filings

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 26
License No. DPR-42

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Northern States Power Company (the licensee) dated January 31, 1977, as amended by filing dated December 22, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C(2) of Facility License No. DPR-42 is hereby amended to read as follows:

   (2) Technical Specifications

   The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 26 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 14, 1978

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

NORTHERN STATES POWER COMPANY

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NO. 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 20
License No. DPR-60

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Northern States Power Company (the licensee) dated January 31, 1977, as amended by filing dated December 22, 1977, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C(2) of Facility License No. DPR-60 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 20 , are hereby incorporated in the license. The licensee shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

for Don K. Davis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

Attachment:
Changes to the Technical
Specifications

Date of Issuance: February 14, 1978

ATTACHMENT TO LICENSE AMENDMENT NOS. 26 AND 20

FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60

DOCKET NOS. 50-282 AND 50-306

Replace the following pages of the Technical Specifications contained in Appendix A of the above-indicated licenses with the attached pages bearing the same numbers, except as otherwise indicated. The changed areas on the revised pages are reflected by a marginal line.

Remove	Insert
TS-i	TS-i
TS-ii	TS-ii
TS-iii	TS-iii
TS-1-6	TS-1-6
-	TS 3.14-1 (new)
-	TS 3.14-2 (new)
-	TS 3.14-3 (new)
-	TS 3.14-4 (new)
-	TS 3.14-5 (new)
-	TS 3.14-6 (new)
-	Table TS 3.14-1 (1 of 3) (new)
-	(2 of 3) (new)
-	(3 of 3) (new)
Table TS 4.1-2A	Table TS 4.1-2A
-	TS 4.15-1 (new)
-	TS 4.15-2 (new)
-	TS 4.15-3 (new)
-	TS 4.15-4 (new)
TS 6.1-1	TS 6.1-1
TS 6.1-2	TS 6.1-2
Table TS 6.1-1	Table TS 6.1-1
Figure TS 6.1-2	Figure TS 6.1-2
TS 6.2-3	TS 6.2-3
-	TS 6.3-1 (new)
TS 6.5-1	TS 6.5-1

TECHNICAL SPECIFICATIONS

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3. Refueling Shutdown

A reactor is in the refueling shutdown condition when a refueling operation is scheduled, the reactor is subcritical by at least 10% Δk/k and the reactor coolant average temperature is less than 140°F.

Q. Thermal Power

Thermal power of a unit is the total heat transferred from the reactor core to the coolant.

R. Physics Tests

Physics tests are those conducted to measure fundamental characteristics of the core and related instrumentation. Physics tests are conducted such that the core power is sufficiently reduced to allow for the perturbation due to the test and therefore avoid exceeding power distribution limits in Specification 3.10.B.

Low power physics tests are run at reactor powers less than 5% of rated power.

S. Interim Fuel Limits

Interim limits on core power distributions are those values used in the loss-of-coolant accident analysis to demonstrate compliance with (a) the AEC Interim Policy Statement published June 29, 1971, in the Federal Register and (b) the Regulatory staff's Technical Report on Densification of Light Water Reactor Fuels", published June 14, 1972. The fuel residence time for Unit 1, Cycle 1 shall be limited to 13,000 effective full power hours under design operating conditions.

T. Startup Operation

The process of heating up a reactor above 200°F, making it critical, and bringing it up to power operation.

U. Fire Suppression Water System

The fire suppression water system consists of: Water sources; pumps; and distribution piping with associated sectionalizing isolation valves. Such valves include yard hydrant valves, and the first valve ahead of the water flow alarm device on each sprinkler, hose standpipe, or spray system riser.

3.14 FIRE DETECTION AND PROTECTION SYSTEMS

Applicability

Applies to instrumentation and plant systems used for fire detection and protection of the nuclear safety-related structures, systems, and components of the plant.

Objective

To insure that the structures, systems, and components of the plant important to nuclear safety are protected from fire damage.

Specification

A. Fire Detection Instrumentation

1. The minimum number of fire detection instruments for each fire detection zone specified in Table TS.3.14-1 shall be operable.

2. If Specification 3.14.A.1 cannot be met:

   a. Within one hour, establish a fire watch patrol to inspect the zone with the inoperable instruments at least once per hour. Fire zones located inside primary containment are exempt from this requirement when containment integrity is required.

   b. Restore the inoperable instruments to operable status within 14 days or submit a 30-day written report outlining the cause of the malfunction and the plans for restoring the instruments to operable status.

B. Fire Suppression Water System

1. Except as specified in 3.14.B.2 or 3.14.B.3 below, the system shall be operable at all times with:

   a. At least two of the following pumps, including automatic initiation logic, operable and capable of delivering at least 2000 gpm at a discharge pressure of 108 psig.

      1. Diesel-driven fire pump
      2. Motor-driven fire pump
      3. Screen wash pump

   b. Piping and correctly positioned valves to supply fire suppression water to all safety related structures, systems and components.

2. If Specification 3.14.B.1 cannot be met, perform the surveillance required by Specification 4.16.B.2 and restore the inoperable equipment to operable status within seven days or provide a 30-day written report outlining the plans and procedures to be used to provide for the loss of redundancy in the Fire Suppression Water System.

3. From and after the date that the supply of fire suppression water to any safety-related structure, system, or component is made or found to be interrupted for any reason:

   a. Establish a backup Fire Suppression Water System within 24 hours.

   b. Provide prompt notification with a written followup report outlining the actions taken and the plans and schedule for restoring the system to operable status.

   c. If 3a cannot be fulfilled, place the reactor in hot standby within the next one hour and in cold shutdown within the following thirty (30) hours.

C. Spray and Sprinkler Systems

1. Whenever equipment protected by the following spray and sprinkler systems is required to be operable, the spray and sprinkler system shall be operable:

   a. Auxiliary Feed Pump Room WP-10

   b. Diesel Generator Areas PA-1

   c. Unit No. 1 Electrical Penetration Area PA-3

   d. Unit No. 1 Electrical Penetration Area PA-4

   e. Unit No. 2 Electrical Penetration Area PA-6

   f. Unit No. 2 Electrical Penetration Area PA-7

   g. Screenhouse PA-9

2. If Specification 3.14.C.1 cannot be met, a continuous fire watch with backup fire suppression equipment shall be established within one hour. Restore inoperable spray and sprinkler systems to operable status within 14 days or submit a 30-day written report outlining the cause of inoperability and the plans for restoring the system to operable status.

D. Carbon Dioxide System

1. Except as specified in 3.14.D.3 below, the CO_2 system protecting the relay and cable spreading room area shall be operable with a minimum level of 60% in the CO_2 storage tank.

2. During those periods when the relay and cable spreading room area is normally occupied, automatic initiation of the CO_2 system may be bypassed. During those periods when the area is normally unoccupied, the CO_2 system shall be capable of automatic initiation unless there are personnel actually in the area.

3. If specification 3.14.D.1 cannot be met, a continuous fire watch with backup fire suppression equipment shall be stationed in the relay and cable spreading room within one hour. Restore the system to operable status within 14 days or submit a 30-day written report outlining the cause of inoperability and the plans for restoring the system to operable status.

E. Fire Hose Stations

1. Whenever equipment protected by hose stations in the following areas is required to be operable, the hose station(s) protecting that area shall be operable:

   a. Diesel generator rooms

   b. Safety related switchgear rooms

   c. Safety related areas of screenhouse

   d. Auxiliary building

   e. Control room

   f. Relay & cable spreading room

   g. Battery rooms

2. If Specification 3.14.E.1 cannot be met, within one hour hoses supplied from operable hose stations shall be made available for routing to each area with an inoperable hose station.

F. Fire Barrier Penetration Fire Seals

1. All penetration fire barriers protecting areas having equipment required to be operable shall be functional.

2. If specification 3.14.F.1 cannot be met, a continuous fire watch shall be established on at least one side of the affected fire barrier within one hour.

Basis

Ionization, photoelectric, and thermal type fire detectors are located throughout safety related structures. These detectors sense the airborne products of combustion during the very early stages of a fire or the heat emitted by a fire. The detectors in each area initiate an alarm in the control room. The specifications require a minimum number of detectors to be operable in each area. If this number is not operable, except for fire detectors located in primary containment, a patrolling fire watch is established in the affected area.

If an area is found to have an inoperable detector, the alarm for the affected zone may be bypassed while the detector is being located and repaired. Primary containment detectors are unique since (1) they are inacessible during normal operation, and (2) no significant fire hazard exists during normal operation. Fire detectors located inside containment will be repaired during the first scheduled outage following discovery of an inoperable detector. Safety related fire detection instruments are listed in Table TS.3.14-1.

The fire suppression water system is supplied from the Mississippi River by two horizontal centrifugal pumps rated at 2000 gpm at 120 psig. One pump is motor driven and the other pump is diesel driven. A third pump also rated at 2000 gpm at 120 psig, normally assigned as a screen wash pump, also supplies the fire suppression water system. Header pressure is maintained between 108 and 113 psig by the jockey fire pump. If the water demand is such that the jockey pump cannot maintain the header pressure, the screen wash pump will start (if not running) and the screen wash to fire header by-pass valve will open at 105 psig. The by-pass line is orificed to restrict flow to 450 gpm. On further demand, the motor driven fire pump will automatically start at 100 psig. If further demand of water is called for and the header pressure drops to 95 psig, the diesel driven fire pump will start. Pumps are designed to pump 2000 gpm and maintain a minimum of 65 psig in the fire header, measured at the highest point in the system. The screen wash pump may be directly aligned to the fire header from the control room. Any one fire pump, or the screen wash pump, can be used to supply all fire fighting water requirements. Two pumps are required to be operable at all times. In the event that only one pump is operable, up to seven days are allowed to restore a second pump to operability or a report must be submitted to the Commission explaining the circumstances. If all pumps are inoperable, or if the fire suppression water system is incapable of supplying water to a safety related area, a backup fire suppression water system must be established within 24 hours to permit continued plant operation and the Commission must be informed.

The cooling water system, also supplied by the Mississippi River, provides additional redundancy to the fire suppression water system. Crossover water supplies from the cooling water system to the fire protection system are provided for the safety related areas.

Basis (continued)

Water spray and sprinkler systems are provided for safety related areas where a significant fire hazard exists, except for the relay and cable spreading room. Due to the nature of the equipment in the relay and cable spreading area, a carbon dioxide system is provided. Whenever a spray or sprinkler system is inoperable, a continuous fire watch with backup fire suppression equipment is stationed in the area until operability is restored. Whenever the relay and cable spreading room carbon dioxide system becomes inoperable, up to 14 days are allowed to complete maintenance. If the system cannot be restored to operable status within this time period, a report outlining the situation is submitted to the Commission. Whenever the carbon dioxide system is inoperable, a continuous fire watch with backup fire suppression equipment is stationed in the room. Since the relay and cable spreading area is occupied during normal working hours, the automatic initiation feature of the CO_2 system is bypassed during this period and whenever entry is made during other times. The system is initiated manually in the event fire is detected when the room is occupied.

In addition to water spray and sprinkler systems, hose stations are located throughout the plant. These hose stations provided primary and backup protection for safety related systems and components. Normally all hose stations are operable when a reactor is above cold shutdown. If a hose station protecting safety related equipment becomes inoperable, an additional hose must be available for routing to the unprotected area. This hose must be supplied from an operable hose station.

Fire barrier penetration seals help confine fires to one fire area. When a seal is made or found inoperable for any reason, it must be continually attended until it is once again made functional.

TABLE TS.3.14-1

SAFETY RELATED FIRE DETECTION INSTRUMENTS

ZONE NO.	LOCATION	TYPE OF DETECTOR	MINIMUM NO. REQUIRED	TOTAL NO. INSTALLED
1	Battery Rooms	Ion	2	2
2	Air compressor & Auxiliary Feed Pump Area	Ion, Thermal	2 0	9 3
6	D-2 Diesel Generator Room	Ion, Flame	2 0	3 1
8	Auxiliary Building, Unit No. 1, Ground Floor	Ion, Smoke, Thermal	10 0 0	46 1 2
10	Reactor Building, Unit No. 1, Ground Floor	Ion, Smoke	2 0	18 1
11	Bus 15 & 16 Switch-gear Rooms	Ion	2	6
12	Relay & Cable Spreading Room	Ion	8	17
14	Computer Room	Ion	2	4
19	Auxiliary Building, Unit No. 1, Mezzanine	Ion	5	31
20	Reactor Building, Unit No. 1, Mezzanine	Ion	4	15
21	Reactor Building, Unit No. 1, Annulus Mezzanine	Ion, Flame	2 0	12 4
26	Bus 110 & 120 Switch-gear Rooms	Ion	2	2
28	Auxiliary Building, Unit No. 1, Operating Floor	Ion	2	14
29	Reactor Building, Unit No. 1, Operating Floor	Ion	2	14

TABLE TS.3.14-1 (CONTINUED)

SAFETY RELATED FIRE DETECTION INSTRUMENTS

ZONE NO.	LOCATION	TYPE OF DETECTOR	MINIMUM NO. REQUIRED	TOTAL NO. INSTALLED
30	Auxiliary Building, Unit No. 1, Fan Deck	Ion	7	28
31	Control Room Chiller Unit Room	Ion	2	6
32	Reactor Building, Unit No. 1, Fan Floor	Ion	2	4
33	Spent Fuel Handling Area	Ion	4	13
35	Battery Rooms	Ion	2	2
40	Auxiliary Building, Unit No. 2, Ground Floor	Ion	5	14
42	Reactor Building, Unit No. 2, Ground Floor	Ion, Smoke	2	17
43	Bus 25 & 26 Switch-gear Rooms	Ion	2	6
46	Auxiliary Building, Unit No. 2, Mezzanine	Ion	5	25
47	Reactor Building, Unit No. 2, Annulus, Mezzanine	Ion, Flame	2	22
50	Bus 210 & 220 Switch-gear Rooms	Ion	2	2
51	Auxiliary Building Unit No. 2, Operating Floor	Ion	1	10
52	Reactor Building, Unit No. 2, Operating Floor	Ion	3	14
53	Auxiliary Building, Unit No. 2, Fan Deck	Ion	3	23
54	Reactor Building, Unit No. 2, Fan Deck	Ion	2	4
56	Reactor Building, Unit No. 2, Mezzanine	Ion	4	15

TABLE TS.3.14-1 (CONTINUED)

SAFETY RELATED FIRE DETECTION INSTRUMENTS

ZONE NO.	LOCATION	TYPE OF DETECTOR	MINIMUM NO. REQUIRED	TOTAL NO. INSTALLED
57	Control Room	Ion	7	30
74	Screenhouse, Ground Floor	Ion	1	11
75	Screenhouse, Operating Floor	Ion	2	70
82	D-1 Diesel Generator Room	Ion, Flame	2	4

MINIMUM FREQUENCIES FOR EQUIPMENT TESTS

		Test	Frequency	FSAR Section Reference
1.	Control Rod Assemblies	Rod drop times of full length rods	All rods during each refueling shutdown or following each removal of the reactor vessel head; affected rods following maintainance on or modification to the control rod drive system which could affect performance of those specific rods	7
1a.	Reactor Trip Breakers	Open trip	Monthly	
2.	Control Rod Assemblies	Partial movement of all rods	Every 2 weeks	7
3.	Pressurizer Safety Valves	Set point	Each refueling shutdown	4
4.	Main Steam Safety Valves	Set point	Each refueling shutdown	10
5.	(Deleted)			
6.	(Deleted)			
7.	(Deleted)			
8.	(Deleted)			
9.	Primary System Leakage	Evaluate	Daily	4
10.	(Deleted)			
11.	Turbine stop valves, governor valves, and intercept valves. (Part of turbine overspeed protection.)	Functional	Monthly (Note 1)	10
12.	(Deleted)			

NOTES:

1. Performance of the turbine stop valve, governor valve, and intercept valve functional test may be omitted, on a one-time basis, during the month of February, 1976 on Unit 1.
* See Specification 4.1.D.

4.16 FIRE DETECTION AND PROTECTION SYSTEMS

Applicability

Applies in the periodic testing of instrumentation and plant systems used for fire detection and protection of the nuclear safety related structures, systems, and components.

Objective

To verify the operability of instrumentation and plant systems used for fire detection and protection of nuclear safety related structures, systems and components.

Specification

A. Fire Detection Instrumentation

1. The minimum number of fire detectors required in each zone specified in Table TS.3.14-1 shall be functionally tested once every six months with the exception of fire detectors located inside primary containment. The minimum number of fire detectors required inside primary containment shall be functionally tested once every 18 months.

2. The alarm circuit for the detectors required in each zone specified in Table TS.3.14-1 shall be tested every six months.

B. Fire Suppression Water System

1. The system shall be verified operable as follows:

   a. Operability of the diesel-driven fire pump starting battery shall be demonstrated by:

      1. Once each week verify electrolyte level and voltage is within specifications.

      2. Once every three months verify the specific gravity of each cell is within specifications.

      3. Once every 18 months inspect the batteries, battery racks, and electrical connections for damage or abnormal deterioration.

b. The motor-driven fire pump shall be started every month and run for at least 15 minutes on recirculation flow.

c. The diesel-driven fire pump shall be started every month from ambient conditions and run for at least 20 minutes on recirculation flow.

d. The level in the diesel-driven fire pump fuel storage tank shall be checked every month and verified to contain at least 500 gallons of fuel.

e. Every three months verify that a sample of fuel from the diesel-driven fire pump fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-68 when checked for viscosity, water and sediment.

f. Every 18 months subject the diesel-driven fire pump engine to an inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

g. A simulated automatic actuation of each fire pump and the screen wash pump, including verification of pump capability, shall be conducted every 18 months.

h. The header system shall be flushed every 12 months.

i. System flow tests shall be performed every three years.

j. Valves in flow paths supplying fire suppression water to safety related structures, systems, and components shall be cycled every 12 months.

k. Each valve (manual, power operated, or automatic) in the flow path that is not electrically supervised, locked, sealed, or otherwise secured in position, shall be verified to be in its correct position every month.

2. When it is determined that one of the two pumps required by specification 3.14.B.1.a is inoperable, the remaining operable pump shall be started daily and run for at least 15 minutes on recirculation flow until specification 3.14.B.1.a can be met.

C. Spray and Sprinkler Systems

Each spray and sprinkler system specified in 3.14.C.1 shall be demonstrated operable by performing a nozzle inspection and system functional test, which includes simulated automatic actuation of the system, every 18 months.

D. Carbon Dioxide System

The relay and cable spreading room carbon dioxide system shall be demonstrated operable by the following actions:

1. Verify CO_2 storage tank level and pressure every week.

2. Verify that the system is operable by performing a system functional test which includes simulated automatic actuation of the system every 18 months and a puff test every three years.

E. Fire Hose Stations

The fire hose stations specified in 3.14.E.1 shall be demonstrated operable as follows:

1. Each month a visual inspection shall be conducted to assure all equipment is available.

2. Every 18 months the hose shall be removed for inspection and re-racking and all gaskets in the couplings shall be inspected and replaced if necessary.

3. Every three years, partially open each hose station valve to verify valve operability and no blockage.

4. Fire hose shall have hydrostatic test every three years (effective January 1981).

F. Fire Barrier Penetration Fire Seals

1. A visual inspection of fire barrier penetration fire seals shall be conducted every 18 months.

2. Following repair of a fire barrier penetration fire seal, a visual inspection of the seal shall be conducted.

Basis

The minimum number of fire detectors required to be operable in each fire zone are functionally tested following the manufcturer's recommendations each six months, except for those located inside the primary containment which are tested each 18 months. These tests are performed by the plant staff. Other fire detectors will be tested at an interval which experience has shown to be necessary to assure reliable operation. Every two months an alarm circuit check is performed. This check can be performed in conjunction with detector functional tests. All circuitry is also provided with automatic supervision for opens and ground faults.

Fire pumps are tested each month to verify operability. Test starting of the screen wash pump is not required since it is normally in service. Each fire pump is manually started and operated for at least 15 minutes with pump flow directed through the recirculation test line. Every 18 months the operability of the automatic actuation logic for the fire pumps and the screen wash pump is verified and the performance of each pump is verified to meet system requirements. The specified flush and valve lineup check provide assurance that the piping system is capable of supplying fire suppression water to all safety related areas.

Fire suppression water system flow tests will be done at least every three years to verify hydraulic performance. The testing will be performed using Section 11, Chapter 5 of the Fire Protection Handbook, 14th Edition, as a procedural guide. The test is generally performed in conjunction with a visit from insurance company inspectors.

When one of the two required pumps is inoperable, the operable pump is started daily to verify operability until two pumps are once again available.

Surveillance specified for each spray and sprinkler system is intended to assure that the systems will function as designed when they are needed. Functional tests are conducted at 18 month intervals on those systems provided with test facilities.

The testing specified for the relay and cable spreading room CO_2 system provides assurance that the CO_2 inventory is adequate to extinguish a fire in this area and that the system is capable of automatic actuation.

Hose stations in safety related areas are inspected monthly to verify that all required equipment is in place. All hose station gaskets in hose couplings and the hose are inspected every year. Operability of hose station isolation valves is verified every three years by partially opening each valve to verify flow. All of these tests provide a high degree of assurance that each hose station will perform satisfactorily after periods of standby service.

Plant fire barrier walls are provided with seals for pipes and cables. Where such seals are installed, the must be maintained intact to perform their function. Visual inspection of each installed seal is required every 18 months and after seal repair. A visual inspection following repair of a seal in the secondary containment boundary is sufficient to assure that seal leakage will be within acceptable limits.

6.0 ADMINISTRATIVE CONTROLS

6.1 ORGANIZATION

A. The Plant Manager has the overall full-time onsite responsibility for safe operation of the facility. During periods when the Plant Manager is unavailable, he may delegate this responsibility to other qualified supervisory personnel.

B. The Northern States Power corporate organizational structure relating to the operation of this plant is shown in Figure TS.6.1-1.

C. The functional organization for operation of the plant shall be as shown in Figure TS.6.1-2 and:

1. Each on duty shall be composed of at least the minimum shift crew composition shown in Table TS.6.1-1.

2. For each reactor that contains fuel: a licensed operator in the control room.

3. At least two licensed operators shall be present in the control room during a reactor startup, a scheduled reactor shutdown, and during recovery from a reactor trip. These operators are in addition to those required for the other reactor.

4. An individual qualified in radiation protection procedures shall be on site when fuel is in a reactor.

5. All refueling operations shall be directly supervised by a licensed Senior Reactor Operator or Senior Reactor Operator Limited to Fuel Handling who has no other concurrent responsibilities during this operation.

6. A fire brigade of at least three members shall be maintained on site at all times. The fire brigade shall not include the six members of the shift organization required for safe shutdown of the reactors or more than one member of the site force.

D. Minimum qualifications, training, replacement training and retraining of plant personnel shall be in accordance with that stated in the Standard for Selection and Training of Personnel for Nuclear Power Plants, ANSI N18.1-1971. The minimum frequency of the retraining program shall be every two years. The training program shall be under the direction of a designated member of the plant staff.

E. A training program for the fire brigade shall be maintained under the direction of a designated member of the plant staff. This program shall meet the requirements of Section 27 of the NFPA Code - 1976 with the exception of training scheduling. Fire brigade training shall be scheduled as set forth in the plant training program.

TABLE TS.6.1-1

MINUMUM SHIFT CREW COMPOSITION (Note 1 and 3)

CATEGORY	BOTH UNITS IN COLD SHUTDOWN OR REFUELING SHUTDOWN	ONE UNIT IN COLD SHUTDOWN OR REFUELING SHUTDOWN AND ONE UNIT ABOVE COLD SHUTDOWN	BOTH UNITS ABOVE COLD SHUTDOWN
No. Licensed Senior Operators (LSO)	2 (Note 2)	2 (Note 2)	2
Total No. Licensed Operators (LSO & LO)	4	4	5
Total No. Licensed & Unlicensed Personnel	6	7	8

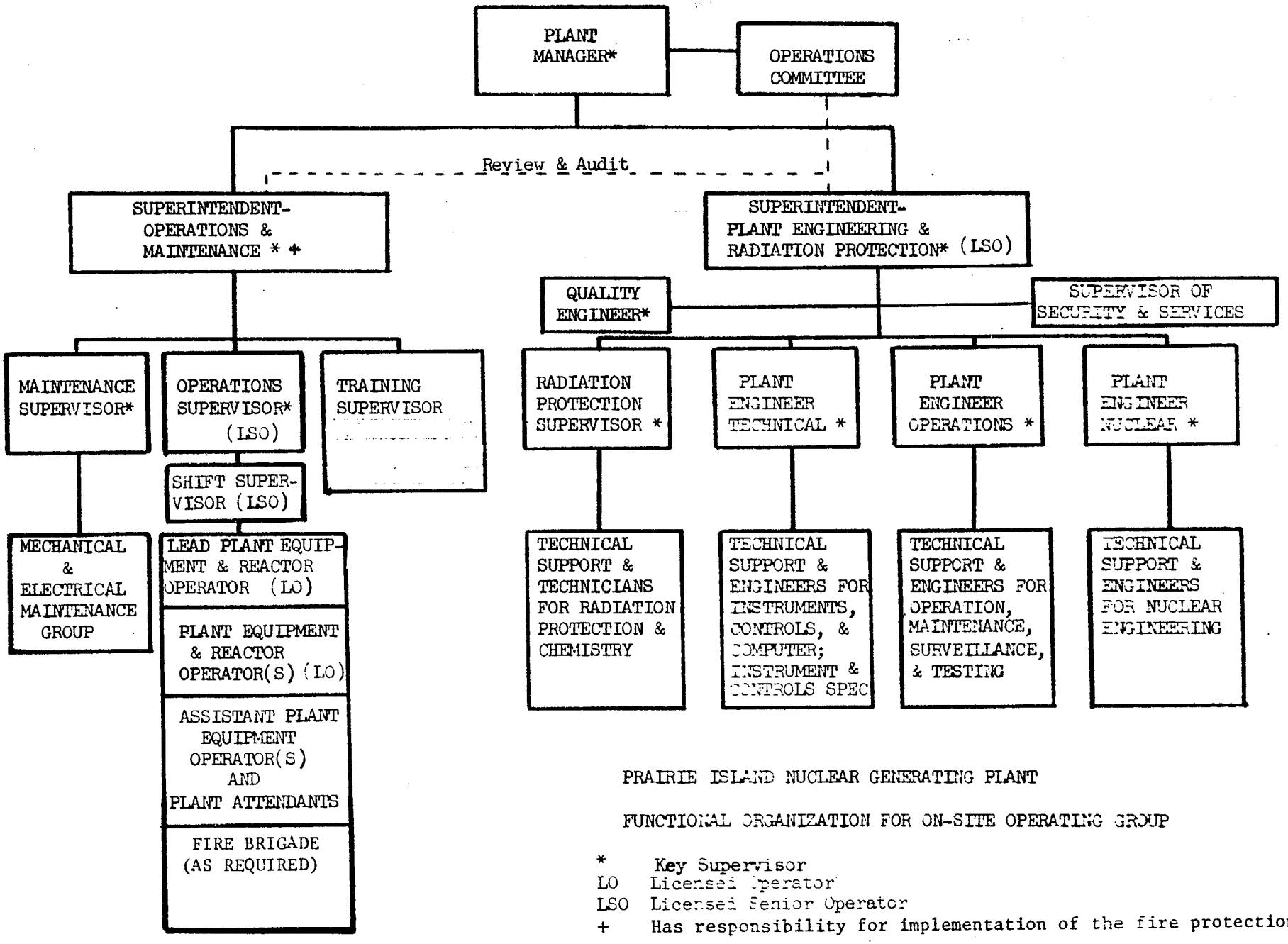
NOTES:

1. Shift crew composition may be one less than the minimum requirements for a period of time not to exceed two hours in order to accomodate an unexpected absence of one duty shift crew member provided immediate action is taken to restore the shift crew composition to within the minimum requirements specified.

2. Does not include the licensed Senior Reactor Operator, or Senior Reactor Operator Limited to Fuel Handling, supervising refueling operations.

3. Each LSO and LO shall be licensed on each unit.

TABLE TS.6.1-1



PRAIRIE ISLAND NUCLEAR GENERATING PLANT

FUNCTIONAL ORGANIZATION FOR ON-SITE OPERATING GROUP

* Key Supervisor
LO Licensed Operator
LSO Licensed Senior Operator
\+ Has responsibility for implementation of the fire protection program

FIGURE TS.6.1-2

f. Investigation of all events which are required by regulation or technical specifications (Appendix A) to be reported to NRC in writing within 24 hours.

g. Revisions to the Facility Emergency Plan, Facility Security Plan, and the Fire Protection Program.

h. Operations Committee minutes to determine if matters considered by that Committee involve unreviewed or unresolved safety questions.

i. Other nuclear safety matters referred to the SAC by the Operations Committee, plant management or company management.

j. All recognized indications of an unanticipated deficiency in some aspect of design or operation of safety-related structures systems, or components.

k. Reports of special inspections and audits conducted in accordance with specification 6.3.

6. Audit - The operation of the nuclear power plant shall be audited formally under the cognizance of the SAC to assure safe facility operation.

a. Audits of selected aspects of plant operation, as delineated in Paragraph 4.4 of ANSI N18.7-1972, shall be performed with a frequency commensurate with their nuclear safety significance and in a manner to assure that an audit of all nuclear safety-related activities is completed within a period of two years. The audits shall be performed in accordance with appropriate written instructions and procedures.

b. Periodic review of the audit program should be performed by the SAC at least twice a year to assure its adequacy.

c. Written reports of the audits shall be reviewed by the Vice President - Power Production & System Operation, by the SAC at a scheduled meeting, and by members of management having responsibility in the areas audited.

7. Authority

The SAC shall be advisory to the Vice President - Power Production & System Operation.

8. Records

Minutes shall be prepared and retained for all scheduled meetings of the Safety Audit Committee. The minutes shall be distributed to the Vice President - Power Production & System Operation, the General Superintendent of Nuclear Power Plant Operation, each member of the SAC and others designated by the Chairman or Vice Chairman within one month of the meeting. There shall be a formal approval of the minutes.

6.3 SPECIAL INSPECTIONS AND AUDITS

A. An independent fire protection and loss prevention inspection and audit shall be performed annually utilizing either qualified off-site Northern States Power Company personnel or an outside fire protection consultant.

B. An inspection and audit by an outside qualified fire protection consultant shall be performed at intervals no greater than three years.

6.5 PLANT OPERATING PROCEDURES

Detailed written procedures, including the applicable checkoff lists and instructions, covering areas listed below shall be prepared and followed. These procedures and changes thereto, except as specified in TS 6.5 D., shall be reviewed by the Operations Committee and approved by a member of plant management designated by the Plant Manager.

A. Plant Operations

1. Integrated and system procedures for normal startup, operation and shutdown of the reactor and all systems and components involving nuclear safety of the facility.

2. Fuel handling operations

3. Actions to be taken to correct specific and foreseen potential or actual malfunction of systems or components including responses to alarms, primary system leaks and abnormal reactivity changes and including follow-up actions required after plant protective system actions have initiated.

4. Surveillance and testing requirements that could have an effect on nuclear safety.

5. Implementing procedures of the security plan.

6. Implementing procedures of the emergency plan, including procedures for coping with emergency conditions involving potential or actual releases of radioactivity.

7. Implementing procedures of emergency plans for coping with earthquakes and floods. The flood emergency plan shall require plant shutdown for water levels at the site higher than 692 feet above MSL.

8. Implementing procedures of the fire protection program.

Drills on the procedures specified in A.3. above, shall be conducted as a part of the retraining program. Drills on the procedures specified in A.6. above, shall be conducted at least semiannually, including a check of communications with offsite support groups.

B. Radiological

Radiation control procedures shall be maintained and made available to all plant personnel. These procedures shall show permissible radiation exposure and shall be consistent with the requirements of 10CFR20. This radiation protection program shall be organized to meet the requirements of 10CFR20.

UNITED STATES NUCLEAR REGULATORY COMMISSION

DOCKET NOS. 50-282 AND 50-306

NORTHERN STATES POWER COMPANY

NOTICE OF ISSUANCE OF AMENDMENTS TO FACILITY OPERATING LICENSES

The U. S. Nuclear Regulatory Commission (the Commission) has issued Amendment Nos. 26 and 20 to Facility Operating License Nos. DPR-42 and DPR-60, issued to the Northern States Power Company (the licensee), which revised Technical Specifications for operation of Unit Nos. 1 and 2 of the Prairie Island Nuclear Generating Plant (the facilities) located in Goodhue County, Minnesota. The amendments are effective as of their date of issuance.

The amendments incorporate fire protection Technical Specifications on the existing fire protection equipment and add administrative controls related to fire protection at the facilities. This action is being taken pending completion of the Commission's overall fire protection review of the facilities.

The application for the amendments complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations. The Commission has made appropriate findings as required by the Act and the Commission's rules and regulations in 10 CFR Chapter I, which are set forth in the license amendments. Prior public notice of these amendments was not required since the amendments do not involve a significant hazards consideration.

The Commission has determined that the issuance of these amendments will not result in any significant environmental impact and that pursuant to 10 CFR §51.5(d)(4) an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with issuance of the amendments.

For further details with respect to this action, see (1) the application for amendments dated January 31, 1977, as amended by filing dated December 22, 1977, (2) Amendment Nos. 26 and 20 to License Nos. DPR-42 and DPR-60, respectively, and (3) the Commission's related Safety Evaluation dated December 2, 1977. All of these items are available for public inspection at the Commission's Public Document Room, 1717 H Street, N. W., Washington, D. C., and at The Environmental Conservation Library of the Minneapolis Public Library, 300 Nicollet Mall, Minneapolis, Minnesota 55401. A single copy of items (2) and (3) may be obtained upon request addressed to the U. S. Nuclear Regulatory Commission, Washington, D. C., ATTN: Director, Division of Operating Reactors.

Dated at Bethesda, Maryland, this 14th day of February, 1978.

FOR THE NUCLEAR REGULATORY COMMISSION

Marshall Grotenhuis, Acting Chief
Operating Reactors Branch #2
Division of Operating Reactors

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

Transmitted with Proposed T/S dated 12/2/77

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

SUPPORTING AMENDMENTS TO FACILITY LICENSE NOS. DPR-42 AND DPR-60

NORTHERN STATES POWER COMPANY

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNIT NOS. 1 AND 2

DOCKET NOS. 50-282 AND 50-306

INTRODUCTION

Following a fire at the Browns Ferry Nuclear Station in March 1975, we initiated an evaluation of the need for improving the fire protection programs at all licensed nuclear power plants. As part of this continuing evaluation, in February 1976 we published a report entitled "Recommendations Related to Browns Ferry Fire", NUREG-0050. This report recommended that improvements in the areas of fire prevention and fire control be made in most existing facilities and that consideration be given to design features that would increase the ability of nuclear facilities to withstand fires without the loss of important functions. To implement the report's recommendations, the NRC initiated a program for reevaluation of the fire protection programs at all licensed nuclear power stations and for a comprehensive review of all new license applications.

We have issued new guidelines for fire protection programs in nuclear power plants. These guidelines reflect the recommendations in NUREG-0050. These guidelines are contained in the following documents:

"Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants," NUREG-75/087, Section 9.5.1, "Fire Protection," May 1976, which includes "Guidelines for Fire Protection for Nuclear Power Plants," (BTP APCSB 9.5-1), May 1, 1976.

"Guidelines for Fire Protection for Nuclear Power Plants" (Appendix A to BTP APCSB 9.5-1), August 23, 1976.

"Supplementary Guidance on Information Needed for Fire Protection Program Evaluation," September 30, 1976.

"Nuclear Plant Fire Protection Functional Responsibilities, Administrative Controls and Quality Assurance," June 14, 1977.

The Northern States Power Company (licensee) has submitted a description of the fire protection program for the Prairie Island Nuclear Generating Plant by letters dated March 11, 1977 and July 5, 1977. This program is under detailed review by the NRC. In the interim, until we complete our detailed review, we have concluded that it is appropriate to amend the facility licenses by incorporating into the Technical Specifications operability and surveillance requirements for the existing fire protection equipment and systems. In addition, the amendment would include administrative requirements for the implementation of the fire protection program.

By letter dated September 30, 1976, we requested the licensee to submit Technical Specifications for the presently-installed fire protection equipment at this facility. The licensee responded by letter of November 22, 1976. By letter of December 6, 1976, we issued sample Technical Specifications and reiterated that these specifications were for existing systems only.

Subsequently, the licensee proposed Technical Specifications by letter dated January 31, 1977. Based on our review and consideration of that response and the responses of other licensees, we modified certain action statements and surveillance frequencies in the sample Technical Specifications in order to provide more appropriate and consistent specifications. We have reviewed the licensee's response and have made modifications where necessary to assure conformance to the fullest extent practicable with our requirements as set forth in the sample Technical Specifications.

DISCUSSION AND EVALUATION

The guidelines for Technical Specifications that we developed and sent to all licensees are based on assuring that the fire protection equipment currently installed for the protection of safety related areas of the plant is operable. This assurance is obtained by requiring periodic surveillance of the equipment and by requiring certain

corrective actions to be taken if the limiting conditions for operation cannot be met. These guidelines also include administrative features for the overall fire protection program such as interim fire brigade requirements, training, procedures, management review and periodic independent fire protection and loss prevention program inspections.

The equipment and components existing at these facilities and included in the scope of these Technical Specification requirements are fire detectors, the fire suppression systems, the hose stations, and penetration fire barriers for piping and cabling penetrations. Operability of the fire detection instrumentation provides warning capability for the prompt detection of fires, to reduce the potential for damage to safety related equipment by allowing rapid response of fire suppression systems. In the event that the minimum coverage of fire detectors cannot be met, hourly fire patrols are required in the affected area until the inoperable instrumentation is restored to operability. The operability of the fire suppression systems provides capability to confine and extinguish fires. 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 returned to service. In the event that the fire suppression water system becomes inoperable, a backup fire protection water system is required within 24 hours and a report to the NRC is required within 24 hours to provide for prompt evaluation of the acceptability of the corrective measures for adequate fire suppression capability. The functional integrity of the penetration fire barriers provides protection to confine or retard fires from spreading to adjacent portions of the facilities. During periods of time when a fire barrier is not functional, a continuous fire watch is required to be maintained in the vicinity of the affected barrier to provide fire prevention methods and prompt detection and suppression in the event of a fire.

We have reviewed the licensee's proposed interim Technical Specifications against our requirements as implemented in the sample Technical Specifications. We have made some modifications to the Specifications that were proposed by the licensee in order to make them conform to our requirements. One of the proposed specifications that we changed involves the minimum size of the on-site fire brigade. In our previous sample Technical Specifications we did not identify the number of members on a fire brigade that we would find acceptable. We have now concluded that minimum number for a typical commercial nuclear power plant to be five (5). The basis for this conclusion is presented in an attachment to this SER entitled "Staff Position Minimum Fire Brigade Shift Size."

In the report of the Special Review Group on the Browns Ferry Fire (NUREG-0050) dated February 1976, consideration of the safety of operation of all operating nuclear power plants pending the completion of our detailed fire protection evaluation was presented. The following quotations from the report summarize the basis for our conclusion that the operation of the plants, until we complete our review, does not present an undue risk to the health and safety of the public.

> "A probability assessment of public safety or risk in quantitative terms is given in the Reactor Safety Study (WASH-1400). As the result of the calculation based on the Browns Ferry fire, the study concludes that the potential for a significant release of radioactivity from such a fire is about 20% of that calculated from all other causes analyzed. This indicates that predicted potential accident risks from all causes were not greatly affected by consideration of the Browns Ferry fire. This is one of the reasons that urgent action in regard to reducing risks due to potential fires is not required. The study (WASH-1400) also points out that 'rather straight-forward measures, such as may already exist at other nuclear plants, can significantly reduce the likelihood of a potential core melt accident that might result from a large fire'. The Review Group agrees.
>
> "Fires occur rather frequently; however, fires involving equipment unavailability comparable to the Browns Ferry fire are quite infrequent (see Section 3.3 [of NUREG-0050]). The Review Group believes that steps already taken since March 1975 (see Section 3.3.2) have reduced this frequency significantly."
>
> "Based on its review of the events transpiring before, during and after the Browns Ferry fire, the Review Group concludes that the probability of disruptive fires of the magnitude of the Browns Ferry event is small, and that there is no need to restrict operation of nuclear power plants for public safety. However, it is clear that much can and should be done to reduce even further the likelihood of disabling fires and to improve assurance of rapid extinguishment of fires that occur. Consideration should be given also to features that would increase further the ability of nuclear facilities to withstand large fires without loss of important functions should such fires occur."

Subsequent to the Browns Ferry fire and prior to the Special Review Group's investigation, the Office of Inspection and Enforcement took steps with regard to fire protection. Special bulletins were sent to all licensees of operating power reactors on March 24, 1975, and April 3, 1975, directing the imposition of certain controls over fire ignition sources, a review of procedures for controlling maintenance and modifications that might affect fire safety, a review of emergency procedures for alternate shutdown and cooling methods, and a review of flammability of materials used in floor and wall penetration seals. Special inspections covering the installation of fire stops in electrical cables and in penetration seals were completed at all operating power reactors in April and May 1975. Inspection findings which reflected non-compliance with NRC requirements resulted in requiring corrective action by licensees. Follow-up inspections have confirmed that licensees are taking the required corrective actions and that administrative control procedures are in place.

Since these inspection activities and the subsequent Special Review Group recommendations in the 1975 to 1976 time period, there has been no new information to alter the conclusions of the Special Review Group, and the ongoing fire protection program flowing from those conclusions is still adequate.

Therefore, we have found these specifications acceptable on an interim basis until such time that our overall review is complete, required equipment is installed and operable, and final specifications have been developed and issued.

ENVIRONMENTAL CONSIDERATION

We have determined that these planned amendments do not authorize a change in effluent types or total amounts nor an increase in power level and will not result in any significant environmental impact. Having made this determination, we have further concluded that the amendments involve an action which is insignificant from the standpoint of environmental impact and pursuant to 10 CFR §51.5(d)(4) that an environmental impact statement or negative declaration and environmental impact appraisal need not be prepared in connection with the issuance of the planned amendments.

CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) because the amendments do not involve a significant increase in the probability or consequences of accidents previously considered and do not involve a significant hazards consideration, (2) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and (3) such activities will be conducted in compliance with the Commission's regulations and the issuance of these planned amendments will not be inimical to the common defense and security or to the health and safety of the public.

Attachment: Staff Position - Minimum Fire Brigade Shift Size

Date: December 2, 1977

Staff Position

Minimum Fire Brigade Shift Size

INTRODUCTION

Nuclear power plants depend on the response of an onsite fire brigade for defense against the effects of fire on plant safe shutdown capabilities. In some areas, actions by the fire brigade are the only means of fire suppression. In other areas, that are protected by correctly designed automatic detection and suppression systems, manual fire fighting efforts are used to extinguish: (1) fires too small to actuate the automatic system; (2) well developed fires if the automatic system fails to function; and (3) fires that are not completely controlled by the automatic system. Thus, an adequate fire brigade is essential to fulfill the defense in depth requirements which protect safe shutdown systems from the effects of fires and their related combustion by-products.

DISCUSSION

There are a number of factors that should be considered in establishing the minimum fire brigade shift size. They include:

1) plant geometry and size;
2) quantity and quality of detection and suppression systems;
3) fire fighting strategies for postulated fires;
4) fire brigade training;
5) fire brigade equipment; and
6) fire brigade supplements by plant personnel and local fire department(s).

In all plants, the majority of postulated fires are in enclosed windowless structures. In such areas, the working environment of the brigade created by the heat and smoke buildup within the enclosure, will require the use of self-contained breathing apparatus, smoke ventilation equipment, and a personnel replacement capability.

Certain functions must be performed for all fires, i.e., command brigade actions, inform plant management, fire suppression, ventilation control, provide extra equipment, and account for possible injuries. Until a site specific review can be completed, an interim minimum fire brigade size of five persons has been established. This brigade size should provide a minimum working number of personnel to deal with those postulated fires in a typical presently operating commercial nuclear power station.

If the brigade is composed of a smaller number of personnel, the fire attack may be stopped whenever new equipment is needed or a person is injured or fatigued. We note that in the career fire service, the minimum engine company manning considered to be effective for an initial attack on a fire is also five, including one officer and four team members.

It is assumed for the purposes of this position that brigade training and equipment is adequate and that a backup capability of trained individuals exist whether through plant personnel call back or from the local fire department.

POSITION

1. The minimum fire brigade shift size should be justified by an analysis of the plant specific factors stated above for the plant, after modifications are complete.

2. In the interim, the minimum fire brigade shift size shall be five persons. These persons shall be fully qualified to perform their assigned responsibility, and shall include:

   One Supervisor - This individual must have fire tactics training. He will assume all command responsibilities for fighting the fire. During plant emergencies, the brigade supervisor should not have other responsibilities that would detract from his full attention being devoted to the fire. This supervisor should not be actively engaged in the fighting of the fire. His total function should be to survey the fire area, command the brigade, and keep the upper levels of plant management informed.

   Two Hose Men - A 1.5 inch fire hose being handled within a windowless enclosure would require two trained individuals. The two team members are required to physically handle the active hose line and to protect each other while in the adverse environment of the fire.

   Two Additional Team Members - One of these individuals would be required to supply filled air cylinders to the fire fighting members of the brigade and the second to establish smoke ventilation and aid in filling the air cylinder. These two individuals would also act as the first backup to the engaged team.