Docket Nos. 50-282
and 50-306

December 17, 1992

Mr. T. M. Parker, Manager
Nuclear Support Services
Northern States Power Company
414 Nicollet Mall
Minneapolis, Minnesota 55401

Dear Mr. Parker:

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2 - AMENDMENT NOS. 103 AND 96 TO FACILITY OPERATING LICENSE NOS. DPR-42 AND DPR-60 (TAC NOS. M83070 AND M83071)

The Commission has issued the enclosed Amendment No. 103 to Facility Operating License No. DPR-42 and Amendment No. 96 to the Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated March 20, 1992 as revised July 23 and November 6, 1992.

The amendments add and revise limiting conditions for operation and surveillance requirements to reflect the facility station blackout project modifications that will be complete upon startup of the Prairie Island units from the Fall 1992 outages.

We acknowledge that one of the electrical safeguards activities, replacement of the Unit 1 480V safeguards buses, will not be completed until a later outage and that you intend to submit a separate License Amendment Request later for changes related to that activity. We also acknowledge that setpoint values provided in TS Table 3.5-1 will be confirmed upon completion of the electrical distribution systems voltage analyses.

A copy of our related Safety Evaluation is also enclosed. The notice of issuance will be included in the Commission's biweekly Federal Register notice.

Sincerely,
Original signed by
Marsha Gamberoni, Acting Project Manager
Project Directorate III-1
Division of Reactor Projects - III/IV/V
Office of Nuclear Reactor Regulation

Enclosures:
1. Amendment No. 103 to DPR-42
2. Amendment No. 96 to DPR-60
3. Safety Evaluation

290039

cc w/enclosures:
See next page

OFFICE	LA:PD31	PM:PD31	HICB	EELB	OGC	D:PD31
NAME	MShuttleworth	MGamberoni jkd	SNewberry	CBerlinger		Marsh
DATE	11/25/92	11/25/92	12/1/92	11/25/92	12/3/92	12/9/92

OFFICIAL RECORD COPY - FILENAME: C:\WP\WPDOCS\PRAIRIEI\PI83070.AMD cc:

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DATED: December 17, 1992

AMENDMENT NO. 103 TO FACILITY OPERATING LICENSE NO. DPR-42-PRAIRIE ISLAND UNIT 1
AMENDMENT NO. 96 TO FACILITY OPERATING LICENSE NO. DPR-60-PRAIRIE ISLAND UNIT 2

Docket File
NRC & Local PDRs
PDIII-1 Reading
PI Plant File
J. Roe, 13/E/4
J. Zwolinski, 13/H/24
L. Marsh
M. Shuttleworth
W. Long
M. Gamberoni
S. Saba 7/E/4
A. Singh 8/D/1
E. Marinos 8/H/7
OGC-WF
D. Hagan, 3206 MNBB
G. Hill (8), P-137
Wanda Jones, MNBB-3701
C. Grimes, 11/F/23
ACRS (10)
GPA/PA
OC/LFMB
W. Shafer, R-III

cc: Plant Service list

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. 103
License No. DPR-42

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

   A. The application for amendment by Northern States Power Company (the licensee) dated March 20, 1992, as revised July 23 and November 6, 1992 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 Operating License No. DPR-42 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.103, 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

LB Marsh

Ledyard B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 17, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 103

FACILITY OPERATING LICENSE NO. DPR-42

DOCKET NO. 50-282

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE	INSERT
TS-v	TS-v
TS.3.3-7	TS.3.3-7
TS.3.3-8	TS.3.3-8
Table TS.3.5-1 Page 2 of 2	Table TS.3.5-1 Page 2 of 2
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TS.3.7-2	TS.3.7-2
TS.3.7-3	TS.3.7-3
TS.4.5-2	TS.4.5-2
TS.4.5-3	TS.4.5-3
TS.4.5-4	TS.4.5-4
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B.3.3-4	B.3.3-4
B.3.5-2	B.3.5-2
B.3.5-3	B.3.5-3
B.3.5-4	B.3.5-4
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B.4.6-1	B.4.6-1

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	H. Containment Shell Temperature	TS.4.4-5
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	B. Station Batteries	TS.4.6-3
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3.3.D. Cooling Water System

1. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F, unless the following conditions are satisfied (except as specified in 3.3.D.2 below).

   a. Four of the five cooling water pumps are OPERABLE, and if one diesel-driven cooling water pump is inoperable, then 121 cooling water pump shall be aligned as shown in the table below. All changes in the valve positions shall be under direct administrative control.

Inoperable Pump	Valve Alignment	Power Supply to Bus 27 (#121 Cooling Water Pump)
#12 Cooling Water Pump	MV-32037 or MV-32036 closed; and associated Bkr Locked Off	Bus 25
	MV-32034 and MV-32035 open; and both Bkrs Locked Off	
#22 Cooling Water Pump	MV-32034 or MV-32035 closed; and the associated Bkr Locked Off	Bus 26
	MV-32037 and MV-32036 open; and both Bkrs Locked Off	

   b. Two safeguards traveling screens are OPERABLE.

   c. Two cooling water headers are OPERABLE.

   d. A fuel oil supply of 19,000 gallons is available for the diesel-driven cooling water pumps in the interconnected Unit 1 diesel fuel oil storage tanks. Note that the 19,000 gallon requirement is included in the 70,000 gallon total diesel fuel oil requirement of Specification 3.7.A.5 for Unit 1.

3.3.D.2. During STARTUP OPERATION or POWER OPERATION, the following conditions of inoperability may exist provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a. Two of the five cooling water pumps may be inoperable for 7 days with the following stipulation.

If the inoperable pumps are any two of these: #12 Cooling Water Pump, #22 Cooling Water Pump, and #121 Cooling Water Pump, the following conditions shall apply:

(1) the engineered safety features associated with the OPERABLE safeguards cooling water pump are OPERABLE; and

(2) both paths from transmission grid to the unit 4 kV safeguards buses are OPERABLE (applicable to Unit 1 operation only); and

(3) this condition of inoperablility (i.e., two safeguards pumps inoperable simultaneously) may not exceed 7 days in any consecutive 30 day period.

b. One of the two required cooling water headers may be inoperable for 72 hours provided:

(1) the diesel-driven pump and the diesel generator associated with safety features on the OPERABLE header are OPERABLE.

(2) the horizontal motor-driven pump associated with the OPERABLE header and the vertical motor-driven pump are OPERABLE.

c. One of the Safeguards Traveling Screens may be inoperable for 90 days provided a sluice gate connecting the Emergency Bay and the Circ Water Bay is open (except during periods of testing not to exceed 24 hours).

d. Both Safeguards Traveling Screens may be inoperable for 7 days provided a sluice gate connecting the Emergency Bay and the Circ Water Bay is open.

e. The Emergency Cooling Water line from the Mississippi River may be inoperable for 7 days provided that a sluice gate connecting the Emergency Bay and the Circ Water Bay is open.

TABLE TS.3.5-1 (continued)

ENGINEERED SAFETY INITIATION INSTRUMENTATION LIMITING SET POINTS

FUNCTIONAL UNIT	CHANNEL	LIMITING SET POINTS
10. 4KV Safeguards Busses Voltage Restoration	a. Degraded Voltage	
	Voltage (% nominal)	≥94.8% and ≤96.2%
	Time Delay 1	8 ± 0.5 sec
	Time Delay 2	8 ± 0.5 to 60 ± 3 sec
	b. Undervoltage	
	Voltage (% nominal)	75 ± 2.5%
	Time Delay	4 ± 1.5 sec

TABLE TS.3.5-6

INSTRUMENT OPERATING CONDITIONS FOR AUXILIARY ELECTRICAL SYSTEM

FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 PERMISSIBLE BYPASS CONDITIONS	4 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1. Degraded Voltage 4KV Safeguards Busses	3/Bus	2/Bus	---	Place inoperable channel in the tripped condition within one hour or be in hot shutdown.***
2. Undervoltage 4KV Safeguards Busses	3/Bus	2/Bus	---	Place inoperable channel in the tripped condition within one hour or be in hot shutdown.***

*** If minimum conditions are not met within 24 hours, steps shall be taken to place the unit in cold shutdown conditions.

3.7 AUXILIARY ELECTRICAL SYSTEMS

Applicability

Applies to the availability of electrical power for the operation of plant auxiliaries.

Objectives

To define those conditions of electrical power availability necessary to assure safe reactor operation and continuing availability of engineered safeguards.

Specification

A. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless all of the following requirements are satisfied for the applicable unit (except as specified in 3.7.B below):

1. At least two separate paths from the transmission grid to the unit 4 kV safeguards distribution system each capable of providing adequate power to minimum safety related equipment, shall be OPERABLE.

2. The 4 kV safeguards buses 15 and 16 (Unit 2 buses: 25 and 26) shall be energized.

3. The 480 V safeguards buses 110 and 120 (Unit 2 buses: 211, 212, 221 and 222), and their safeguards motor control centers shall be energized.

4. Reactor protection instrument AC buses shall be energized: 111, 112, 113 and 114 (Unit 2 buses: 211, 212, 213 and 214).

5. The following unit specific conditions apply:

   (a) Unit 1: D1 and D2 diesel generators are OPERABLE, and a fuel supply of 51,000 gallons is available for the D1 and D2 diesel generators in the Unit 1 interconnected diesel fuel oil storage tanks. A total fuel supply of 70,000 gallons is available for the D1 and D2 diesel generators and the diesel-driven cooling water pumps in the Unit 1 interconnected diesel fuel oil storage tanks.

   (b) Unit 2: D5 and D6 diesel generators are OPERABLE and a fuel supply of 75,000 gallons is available for D5 and D6 diesel generators in the Unit 2 interconnected diesel fuel oil storage tanks.

6. Both batteries with their associated chargers and both d-c safeguard systems shall be OPERABLE.

7. No more than one of the Instrument AC Panels 111, 112, 113 and 114 (Unit 2 panels: 211, 212, 213 and 214) shall be powered from Panel 117 (Unit 2 panel: 217) or its associated instrument inverter bypass source.

3.7.B. During STARTUP OPERATION or POWER OPERATION, any of the following conditions of inoperability may exist for the times specified, provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, place the affected unit(s) in at least HOT SHUTDOWN within the next 6 hours and be in COLD SHUTDOWN within the following 30 hours.

1. One diesel generator may be inoperable for 7 days provided (a) the OPERABILITY of the other diesel generator is demonstrated* by performance of surveillance requirement 4.6.A.1.e within 24 hours**, (b) all engineered safety features equipment associated with the operable diesel generator is OPERABLE, (c) the two required paths from the grid to the unit 4 kV safeguards distribution system are OPERABLE and (d) the OPERABILITY of the two required paths from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

2. One of the two required paths from the grid to the unit 4 kV safeguards distribution system may be inoperable for 7 days provided (a) D1 and D2 (Unit 2: D5 and D6) diesel generators are already operating or are demonstrated to be OPERABLE by sequentially performing surveillance requirement 4.6.A.1.e on each diesel generator within 24 hours and (b) the OPERABLE path from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

3. One of the two required paths from the grid to the unit 4 kV safeguards distribution system and one diesel generator may be inoperable for 12 hours provided, (a) the OPERABILITY of the other diesel generator is demonstrated* by performance of Surveillance Requirement 4.6.A.1.e within 8 hours**, (b) all engineered safety features equipment associated with the OPERABLE diesel generator is OPERABLE, and (c) the OPERABLE path from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

4. Both of the two required paths from the grid to the unit 4 kV safeguards distribution system may be inoperable for 12 hours provided the D1 and D2 (Unit 2: D5 and D6) diesel generators are already operating or are demonstrated to be OPERABLE by sequentially performing Surveillance requirement 4.6.A.1.e on each diesel generator within 8 hours.

* The OPERABILITY of the other diesel generator need not be demonstrated if the diesel generator inoperability was due to preplanned preventative maintenance or testing.

** This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

3.7.B.5. D1 and D2 (Unit 2: D5 and D6) diesel generators may be inoperable for 2 hours provided the two required paths from the grid to the unit 4 kV safeguards distribution system are OPERABLE and the OPERABILITY of the two required paths from the grid are verified OPERABLE within 1 hour.

6. One 4 kV safeguards bus (and its associated 480 V bus (Unit 2: buses) including associated safeguards motor control centers) or one 480 V safeguards bus including associated safeguards motor control centers may be inoperable or not fully energized for 8 hours provided the redundant 4 kV safeguards bus and its associated 480 V safeguards bus (Unit 2: buses) are verified OPERABLE and the diesel generator and safeguards equipment associated with the redundant train are OPERABLE.

7. One battery charger may be inoperable for 8 hours provided, (a) its associated battery is OPERABLE, (b) its redundant counterpart is verified OPERABLE, and (c) the diesel generator and safeguards equipment associated with its counterpart are OPERABLE.

8. One battery may be inoperable for 8 hours provided that the other battery and both battery chargers remain OPERABLE.

9. In addition to the requirements of Specification TS.3.7.A.7 a second inverter supplying Instrument AC Panels 111, 112, 113, and 114 may (Unit 2 panels 211, 212, 213 and 214) be powered from an inverter bypass source for 8 hours.

3. Containment Fan Coolers

Each fan cooler unit shall be tested during each reactor refueling shutdown to verify proper operation of all essential features including low motor speed, cooling water valves, and normal ventilation system dampers. Individual unit performance will be monitored by observing the terminal temperatures of the fan coil unit and by verifying a cooling water flow rate of greater than or equal to 900 gpm to each fan coil unit.

4. Component Cooling Water System

a. System tests shall be performed during each reactor refueling shutdown. Operation of the system will be initiated by tripping the actuation instrumentation.

b. The test will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily.

5. Cooling Water System

a. System tests shall be performed at each refueling shutdown. Tests shall consist of an automatic start of each diesel engine, automatic start of the vertical motor-driven cooling water pump and automatic operation of valves required to mitigate accidents including those valves that isolate non-essential equipment from the system. Operation of the system will be initiated by a simulated accident signal to the actuation instrumentation. The tests will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily and if cooling water flow paths required for accident mitigation have been established.

b. At least once each 18 months, subject each diesel engine to a thorough inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

4.5.B. Component Tests

1. Pumps

a. The safety injection pumps, residual heat removal pumps and containment spray pumps shall be started and operated at intervals of one month. Acceptable levels of performance shall be that the pumps start and reach their required developed head on minimum recirculation flow and the control board indications and visual observations indicate that the pumps are operating properly for at least 15 minutes.

b. A test consisting of a manually-initiated start of each diesel engine, and assumption of load within one minute, shall be conducted monthly.

c. The vertical motor-driven cooling water pump shall be operated at quarterly intervals. An acceptable level of performance shall be that the pump starts and reaches its required developed head and the control board indictions and visual observations indicate that the pump is operating properly for at least 15 minutes.

2. Containment Fan Motors

The Containment Fan Coil Units shall be run on low motor speed for at least 15 minutes at intervals of one month. Motor current shall be measured and compared to the nominal current expected for the test conditions.

3. Valves

a. The refueling water storage tank outlet valves shall be tested in accordance with Section 4.2.

b. The accumulator check valves will be checked for OPERABILITY during each refueling shutdown.

c. The boric acid tank valves to the Safety Injection System shall be tested at intervals of one month.

d. The spray chemical additive tank valves shall be cycled by operator action at intervals of one month.

e. Actuation circuits for Cooling Water System valves that isolate non-essential equipment from the system shall be tested monthly.

f. All motor-operated valves in the SIS, RHR, Containment Spray, Cooling Water, and Component Cooling Water System that are designed for operation during the safety injection or recirculation phase of emergency core cooling, shall be tested for OPERABILITY at each refueling shutdown.

4.5.B.3.g. The correct position of the throttle valves below shall be verified as follows:

1. Within 4 hours following completion of each valve stroking operation.

2. Within 4 hours following maintenance on the valve when the Safety Injection System is required to be OPERABLE, and

3. Periodically at least once per 18 months to the extent not verified in accordance with 1 and 2 above within this time period.

Unit 1 Valves	Unit 2 Valves
SI-15-6	2SI-15-6
SI-15-7	2SI-15-7
SI-15-8	2SI-15-8
SI-15-9	2SI-15-9

h. Following completion of high head Safety Injection System or RHR system modifications that alter system flow characteristics a flow balance test shall be performed during shutdown to confirm the following injection flow rates are achieved:

1. High Head Safety Injection System:

(a) Flow through all four injection lines plus miniflow shall not exceed 835 gpm with one pump in operation.

(b) The minimum flow through loop A & B cold legs shall be 670 gpm with one pump in operation. The flow rates in each leg shall be within 20 gpm of each other with one pump in operation.

(c) Flow orifices and throttling valves will be used to limit and balance flow through the reactor vessel injection lines to a maximum of the total flow limit in Specification 4.5.B.3.h.1.(a) above, with one pump in operation. During this flow test the flow rates in each leg shall be within 50 gpm of each other.

2. RHR System:

The minimum flow through each RHR Reactor Vessel Injection line shall be at least 1800 gpm.

4.6 PERIODIC TESTING OF EMERGENCY POWER SYSTEM

Applicability

Applies to periodic testing and surveillance requirements of the emergency power system.

Objective

To verify that the emergency power sources and equipment are OPERABLE.

Specification

The following tests and surveillance shall be performed:

A. Diesel Generators

1. At least once each month, for each diesel generator:

   a. Verify the fuel level in the day tank.

   b. Verify the fuel level in the fuel storage tank.

   c. Verify that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water, and sediment.

   d. Verify the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

   e. Verify the diesel generator can start and gradually accelerate to synchronous speed with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz. Subsequently, manually synchronize the generator, gradually load to at least 1650 kW (Unit 2: 5100 kW to 5300 KW), and operate for at least 60 minutes. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up, loading and shutdown procedures where possible.

4.6.A.2. At least once each 6 months, for each diesel generator:

a. Verify the diesel generator starts and accelerates to at least synchronous speed in less than or equal to 10 seconds.

b. Verify the generator voltage and frequency to be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal.

c. Manually synchronize the generator, load to at least 1650 kW (Unit 2: 5100 kW to 5300 kW) in less than or equal to 60 seconds and operate for at least one hour.

d. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube and shutdown procedures where possible.

3. At least once each 18 months:

a. Subject each diesel generator to a thorough inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

b. For each unit, simulate a loss of offsite power in conjunction with a safety injection signal, and:

1. Verify de-energization of the emergency buses and load shedding from the emergency buses.

2. Verify the diesels start on the auto-start signal and energize the emergency buses in one minute. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube and shutdown procedures where possible.

3. Verify that the auto-connected loads do not exceed 3000 kw (Unit 2: 5100 kW).

4. Verify that the diesel generator system trips, except those for engine overspeed, ground fault, and generator differential current (Unit 2: except those for engine overspeed and generator differential current), are automatically bypassed.

c. For each unit, demonstrate full-load carrying capability for an interval of not less than 24 hours, of which 2 hours are at a load equal to 105 to 110 percent of the continuous rating of the emergency diesel generator, and 22 hours are at a load equal to 90 to 100 percent of its continuous rating. Verify the generator voltage and frequency to be 4160 ± 420 volts and 60 ± 1.2 Hz.

d. Verify the capability of each generator to reject a load of at least 650 kW (Unit 2: 860 kW) without tripping.

e. During this test, operation of the emergency lighting system shall be ascertained.

3.3 ENGINEERED SAFETY FEATURES

Bases continued

The containment cooling function is provided by two independent systems: containment fan cooler units and containment sprays. During normal operation, four containment fan cooler units are utilized to remove heat lost from equipment and piping within the containment. In the event of the Design Basis Accident, any one of the following combinations will provide sufficient cooling to reduce containment pressure: four containment fan cooler units, two containment spray pumps or two containment fan cooler units plus one containment spray pump (Reference 4). Two of the four containment fan cooler units are permitted to be inoperable during POWER OPERATION. This is an abnormal operating situation, in that plant operating procedures require that inoperable containment fan cooler units be repaired as soon as practical. However, because of the difficulty of access to make repairs, it is important on occasion to be able to operate temporarily with only two containment fan cooler units. Two containment fan cooler units can provide adequate cooling for normal operation when the containment fan cooler units are cooled by the chilled water system (Reference 3). Compensation for this mode of operation is provided by the high degree of redundancy of containment cooling systems during a Design Basis Accident.

One component cooling water pump together with one component cooling heat exchanger can accommodate the heat removal load on one unit, either following a loss-of-coolant accident or during normal plant shutdown. The four pumps of the two-unit facility can be cross connected as necessary to accommodate temporary outage of the pump. If, during the post-accident phase, the component cooling water supply were lost, core and containment cooling could be maintained until repairs were effected (Reference 5).

Cooling water can be supplied by either of the two horizontal motor-driven pumps, by a safeguards motor-driven pump or by either of two safeguards diesel-driven pumps. (Reference 6). Operation of a single cooling water pump provides sufficient cooling in one unit during the injection and recirculation phases of a postulated loss-of-coolant accident plus sufficient cooling to maintain the second unit in a hot standby condition.

TS.3.3.D.1.a assures that an automatic Safety Injection signal to the cooling water header isolation valves will not align both OPERABLE safeguards pumps to the same safeguards train.

TS.3.3.D.1.a also assures that 121 cooling water pump is aligned to provide cooling water to the same train as the train from which it is being powered (e.g., if 121 cooling water pump is aligned to Train B cooling water header, it needs to be powered from Bus 26 and, ultimately, Diesel Generator D6 in the event of a loss of offsite power). Otherwise, the single failure of a diesel generator could leave one train of engineered safety features without power and the other train without cooling water.

The minimum fuel supply of 19,000 gallons will supply one diesel-driven cooling water pump for 14 days. Note that the 19,000 gallon requirement is included in the 70,000 gallon total diesel fuel oil requirement of Specification 3.7.A.5 for Unit 1.

3.3 ENGINEERED SAFETY FEATURES

Bases continued

The Safeguards Traveling Screens and Emergency Cooling Water Supply line are designed to provide a supply of screened cooling water in the event that an earthquake 1) destroys Dam No. 3 (dropping the water level in the normal canal to the screenhouse) and 2) causes the banks bordering the normal canal to the screenhouse to collapse eliminating the river as a source of cooling water. The Safeguards Traveling Screens and Emergency Cooling Water Supply line provide an alternate supply of water to the Safeguards Bay, which contains the two diesel driven and the one vertical motor driven cooling water pumps. Their normal supply is from the Circ Water Bay thru one of two sluice gates. Either one of the two sluice gates or one of the two Safeguards Traveling Screens will adequately supply any of the three cooling water pumps. The Safeguards Traveling Screens are not considered part of the "engineered safety features associated with the operable diesel-driven cooling water pump" for determination of operability of diesel-driven cooling water pumps.

The component cooling water system and the cooling water system provide water for cooling components used in normal operation, such as turbine generator components, and reactor auxiliary components in addition to supplying water for accident functions. These systems are designed to automatically provide two separate redundant paths in each system following an accident. Each redundant path is capable of cooling required components in the unit having the accident and in the operating unit.

There are several manual valves and manually-controlled motor-operated valves in the engineered safety feature systems that could, if one valve is improperly positioned, prevent the required injection of emergency coolant (Reference 7). These valves are used only when the reactor is subcritical and there is adequate time for actuation by the reactor operator. To ensure that the manual valve alignment is appro- priate for safety injection during power operation, these valves are tagged and the valve position will be changed only under direct administrative control. For the motor-operated valves, the motor control center supply breaker is physically locked in the open position to ensure that a single failure in the actuation circuit or power supply would not move the valve.

References

1. USAR, Section 3.3.2
2. USAR, Section 14.6.1
3. USAR, Section 6.3.2
4. USAR, Section 6.3
5. USAR, Section 10.4.2
6. USAR, Section 10.4.1
7. USAR, Figure 6.2-1
   USAR, Figure 6.2-2
   USAR, Figure 6.2-5
   USAR, Figure 10.2-11

3.5 INSTRUMENTATION SYSTEM

Bases continued

Steam Line Isolation (continued)

line flow in coincidence with low T_{avg} and safety injection or high steam flow (Hi-Hi) in coincidence with safety injection. Adequate protection is afforded for breaks inside or outside the containment even when it is assumed that the steam line check valves do not function properly.

Containment Ventilation Isolation

Valves in the containment purge and inservice purge systems automatically close on receipt of a Safety Injection signal or a high radiation signal. Gaseous and particulate monitors in the exhaust stream or a gaseous monitor in the exhaust stack provide the high radiation signal.

Ventilation System Isolation

In the event of a high energy line rupture outside of containment, redundant isolation dampers in certain ventilation ducts are closed (Reference 4).

Safeguards Bus Voltage

Relays are provided on buses 15, 16, 25, and 26 to detect undervoltage and degraded voltage (the voltage level at which safety related equipment may not operate properly). Relays are not provided on 4 kV safeguards bus 27 to detect undervoltage and degraded voltage since voltage is monitored on the 4 kV source safeguards bus (i.e., bus 25 or bus 26) to which it is connected. Upon receipt of an undervoltage signal the automatic voltage restoring scheme is actuated after a short time delay which prevents actuation during normal transients (such as motor starting) and which allows protective relaying operation during faults. When degraded voltage is sensed, two time delays are actuated. The first time delay is long enough to allow for normal transients. The first time delay annunciates that a sustained degraded voltage condition exists and enables logic which will ensure that voltage and timing are adequate for safety injection loads by automatically performing the following upon receipt of a safety injection signal:

1. Auto start the diesel generator;
2. Separate the bus from the grid;
3. Load the bus onto the diesel generator; and
4. Start the load sequencer (including safety injection loads).

3.5 INSTRUMENTATION SYSTEM

Bases continued

The second longer time delay is used to allow the degraded voltage condition to be corrected by external actions within a time period that will not cause damage to operating equipment. If voltage is not restored within that time period, the logic automatically performs the following:

1. Auto start the diesel generator;
2. Separate the bus from the grid;
3. Load the bus onto the diesel generator; and
4. Start the load sequencer.

Auxiliary Feedwater System Actuation

The following signals automatically start the pumps and open the steam admission control valve to the turbine driven pump of the affected unit:

1. Low-low water level in either steam generator
2. Trip of both main feedwater pumps
3. Safety Injection signal
4. Undervoltage on both 4.16 kV normal buses (turbine driven pump only)

Manual control from both the control room and the Hot Shutdown Panel are also available. The design provides assurance that water can be supplied to the steam generators for decay heat removal when the normal feedwater system is not available.

Limiting Instrument Setpoints

1. The high containment pressure limit is set at about 10% of the maximum internal pressure. Initiation of Safety Injection protects against loss of coolant (Reference 2) or steam line break accidents as discussed in the safety analysis.

2. The Hi-Hi containment pressure limit is set at about 50% of the maximum internal pressure for initiation of containment spray and at about 30% for initiation of steam line isolation. Initiation of Containment Spray and Steam Line Isolation protects against large loss of coolant (Reference 2) or steam line break accidents (Reference 3) as discussed in the safety analysis.

3. The pressurizer low pressure limit is set substantially below system operating pressure limits. However, it is sufficiently high to protect against a loss of coolant accident as shown in the safety analysis (Reference 2).

3.5 INSTRUMENTATION SYSTEM

Bases continued

Limiting Instrument Setpoints (continued)

4. The steam line low pressure signal is lead/lag compensated and its set-point is set well above the pressure expected in the event of a large steam line break accident as shown in the safety analysis (Reference 3).

5. The high steam line flow limit is set at approximately 20% of nominal full-load flow at the no-load pressure and the high-high steam line flow limit is set at approximately 120% of nominal full-load flow at the full load pressure in order to protect against large steam break accidents. The coincident low T_{avg} setting limit for steam line isolation initiation is set below its hot shutdown value. The safety analysis shows that these settings provide protection in the event of a large steam break (Reference 3).

6. Steam generator low-low water level and 4.16 kV Bus 11 and 12 (21 and 22 in Unit 2) low bus voltage provide initiation signals for the Auxiliary Feedwater System. Selection of these setpoints is discussed in the Bases of Section 2.3 of the Technical Specification.

7. High radiation signals providing input to the Containment Ventilation Isolation circuitry are set in accordance with the Radioactive Effluent Technical Specifications. The setpoints are established to prevent exceeding the limits of 10 CFR Part 20 at the SITE BOUNDARY.

8. The degraded voltage protection setpoint is ≥94.8% and ≤96.2% of nominal 4160 V bus voltage. Testing and analysis have shown that all safeguards loads will operate properly at or above the minimum degraded voltage setpoint. The maximum degraded voltage setpoint is chosen to prevent unnecessary actuation of the voltage restoring scheme at the minimum expected grid voltage. The first degraded voltage time delay of 8 ± 0.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients (i.e., motor starting and fault clearing). It is also longer than the time required to start the safety injection pump at minimum voltage. The second degraded voltage time delay is provided to allow the degraded voltage condition to be corrected within a time frame which will not cause damage to permanently connected Class 1E loads.

3.5 INSTRUMENTATION SYSTEM

Bases continued

Limiting Instrument Setpoints (continued)

The undervoltage setpoint is 75 ± 2.5% of nominal bus voltage. The minimum setpoint ensures equipment operates above the limiting value of 75% (of 4000 V) for one minute operation. The 75% maximum setpoint is chosen to prevent unnecessary actuation of the voltage restoring scheme during voltage dips which occur during motor starting. The undervoltage time delay of 4 ± 1.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients and short enough to operate prior to the degraded voltage logic, providing a rapid transfer to an alternate source.

Instrument Operating Conditions

During plant operations, the complete instrumentation systems will normally be in service. Reactor safety is provided by the Reactor Protection System, which automatically initiates appropriate action to prevent exceeding established limits. Safety is not compromised, however, by continuing operation with certain instrumentation channels out of service since provisions were made for this in the plant design. This specification outlines limiting conditions for operation necessary to preserve the effectiveness of the Reactor Control and Protection System when any one or more of the channels is out of service.

Almost all reactor protection channels are supplied with sufficient redundancy to provide the capability for CHANNEL CALIBRATION and test at power. Exceptions are backup channels such as reactor coolant pump breakers. The removal of one trip channel on process control equipment is accomplished by placing that channel bistable in a tripped mode; e.g., a two-out-of-three circuit becomes a one-out-of-two circuit. The source and intermediate range nuclear instrumentation system channels are not intentionally placed in a tripped mode since these are one-out of-two trips, and the trips are therefore bypassed during testing. Testing does not trip the system unless a trip condition exists in a concurrent channel.

References

1. USAR, Section 7.4.2
2. USAR, Section 14.6.1
3. USAR, Section 14.5.5
4. FSAR, Appendix I

3.7 AUXILIARY ELECTRICAL SYSTEM

Bases

The intent of this specification is to provide assurance that at least one external source and one standby source of electrical power is always available to accomplish safe shutdown and containment isolation and to operate required engineered safeguards equipment following an accident.

Plant auxiliary power can be supplied from four separate external power sources which have multiple off-site network connections: the reserve transformer from the 161 kV portion of the plant substation; the second reserve transformer from the 345 kV portion of the plant substation and the two cooling tower transformers, one of which is supplied from a tertiary winding on the substation auto transformer, and the other directly from the 345 kV switchyard. Any one of the four sources is sufficient, under analyzed conditions, to supply all the necessary accident and post-accident load requirements for one reactor, along with the shutdown of the second reactor.

Each source separately supplies the safeguards buses in such manner that items of equipment which are redundant to each other are supplied by separate sources and buses.

Each diesel generator, D1 or D2 (Unit 2: D5 or D6), is connected to its associated 4160 volt safeguards bus in Unit 1 (Unit 2) and each diesel generator has sufficient capacity to start sequentially and operate the safeguards equipment supplied by its associated bus. The set of safeguards equipment items supplied by each bus is, alone, sufficient to maintain adequate cooling of the fuel and to maintain containment pressure within the design value in the event of a loss-of-coolant accident.

If no offsite source is available to the associated bus, each diesel starts automatically upon receipt of an undervoltage signal on its associated bus. Both diesel generators start in the event of a safety injection signal for the reactor. The minimum fuel supply of 51,000 gallons will supply one Unit 1 diesel generator for 14 days. Note that the 51,000 gallon requirement is included in the 70,000 gallon total requirement for Unit 1. The total fuel supply of 70,000 gallons will supply one diesel-driven cooling water pump and one Unit 1 diesel generator (loaded per USAR Table 8.4-1) for greater than 14 days (Unit 2: A fuel supply of 61,300 gallons will supply one Unit 2 diesel generator for 7 days at rated load calculated per the conservative method of ANSI-N195-1976. A minimum fuel supply of 75,000 gallons was conservatively chosen to supply one Unit 2 diesel generator for 14 days calculated per the time-dependent method of ANSI-N195-1976.) Additional diesel fuel can normally be obtained within a few hours. This assures an adequate supply even in the event of the probable maximum flood.

3.7 AUXILIARY ELECTRICAL SYSTEM

Bases continued

Following the inoperability of a Diesel Generator, the redundant diesel generator is tested to prove that the cause of the inoperability does not affect both diesel generators. However, if the diesel generator is inoperable due to preplanned preventative maintenance, operability of the redundant diesel generator does not need to be proven.

The plant 125 volt d-c power is normally supplied by two batteries for each plant, each of which will have a battery charger in service to maintain full charge and to assure adequate power for starting the diesel generators and supplying other emergency loads.

The arrangement of the auxiliary power sources and equipment and this specification assure that no single fault condition will deactivate more than one redundant set of safeguard equipment items in one reactor and will therefore not result in failure of the plant protection system to respond adequately to a loss-of-coolant accident.

Reference

USAR, Section 8
USAR, Figure 8.2-2

4.6 PERIODIC TESTING OF EMERGENCY POWER SYSTEMS

Bases

The monthly tests specified for the diesel generators will demonstrate their continued capability to start and to carry load. The fuel supplies and starting circuits and controls are continuously monitored, and abnormal conditions in these systems would be alarm-indicated without need for test startup.

The less frequent overall system test will demonstrate that the emergency power system and the control systems for the engineered safeguards equipment will function automatically in the event of loss of all other sources of a-c power, and that the diesel generators will start automatically in the event of a loss-of-coolant accident. This test will demonstrate proper tripping of motor feeder breakers, main supply and tie breakers on the affected bus, and sequential starting of essential equipment, as well as the OPERABILITY of the diesel generators. The load rejection test will demonstrate the capability to reject the single largest emergency load without tripping.

The specified test frequencies provide reasonable assurance that any mechanical or electrical deficiency will be detected and corrected before it can result in failure of one emergency power supply to respond when called upon to function. It's possible failure to respond is, of course, anticipated by providing two diesel generators per unit, each supplying, through an independent bus, a complete and adequate set of engineered safeguards equipment. Further, both diesel generators are provided as backup to multiple sources of external power, and this multiplicity of sources should be considered with regard to adequacy of test frequency.

Each diesel generator can start and be ready to accept full load within 10 seconds, and will sequentially start and supply the power requirements for one complete set of safeguards equipment in approximately one minute (Reference 1).

An internal fault in the generator could damage the generator severely. Moreover, this change complies with BTP EICSB 17. Auto-connected loads should not exceed the overload rating of the diesel generator for the 2000 hour maintenance interval, as prescribed in Regulatory Guide 1.9.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide indication of a cell becoming unserviceable long before it fails.

If a battery cell has deteriorated, or if a connection is loose, the voltage under load will drop excessively, indicating need for replacement or maintenance.

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. 96
License No. DPR-60

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

   A. The application for amendment by Northern States Power Company (the licensee) dated March 20, 1992, as revised July 23 and November 6, 1992, 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 Operating License No. DPR-60 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No.96, 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

L B Marsh

Ledyard B. Marsh, Director
Project Directorate III-1
Division of Reactor Projects III/IV/V
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Technical
Specifications

Date of Issuance: December 17, 1992

ATTACHMENT TO LICENSE AMENDMENT NO. 96

FACILITY OPERATING LICENSE NO. DPR-60

DOCKET NO. 50-306

Revise Appendix A Technical Specifications by removing the pages identified below and inserting the attached pages. The revised pages are identified by amendment number and contain vertical lines indicating the area of change.

REMOVE	INSERT
TS-v	TS-v
TS.3.3-7	TS.3.3-7
TS.3.3-8	TS.3.3-8
Table TS.3.5-1 Page 2 of 2	Table TS.3.5-1 Page 2 of 2
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TS.3.7-2	TS.3.7-2
TS.3.7-3	TS.3.7-3
TS.4.5-2	TS.4.5-2
TS.4.5-3	TS.4.5-3
TS.4.5-4	TS.4.5-4
TS.4.6-1	TS.4.6-1
TS.4.6-2	TS.4.6-2
B.3.3-3	B.3.3-3
B.3.3-4	B.3.3-4
B.3.5-2	B.3.5-2
B.3.5-3	B.3.5-3
B.3.5-4	B.3.5-4
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B.3.7-2	B.3.7-2
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3.3.D. <u>Cooling Water System</u>

1. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F, unless the following conditions are satisfied (except as specified in 3.3.D.2 below).

   a. Four of the five cooling water pumps are OPERABLE, and if one diesel-driven cooling water pump is inoperable, then 121 cooling water pump shall be aligned as shown in the table below. All changes in the valve positions shall be under direct administrative control.

Inoperable Pump	Valve Alignment	Power Supply to Bus 27 (#121 Cooling Water Pump)
#12 Cooling Water Pump	MV-32037 or MV-32036 closed; and associated Bkr Locked Off	Bus 25
	MV-32034 and MV-32035 open; and both Bkrs Locked Off	
#22 Cooling Water Pump	MV-32034 or MV-32035 closed; and the associated Bkr Locked Off	Bus 26
	MV-32037 and MV-32036 open; and both Bkrs Locked Off	

   b. Two safeguards traveling screens are OPERABLE.

   c. Two cooling water headers are OPERABLE.

   d. A fuel oil supply of 19,000 gallons is available for the diesel-driven cooling water pumps in the interconnected Unit 1 diesel fuel oil storage tanks. Note that the 19,000 gallon requirement is included in the 70,000 gallon total diesel fuel oil requirement of Specification 3.7.A.5 for Unit 1.

3.3.D.2. During STARTUP OPERATION or POWER OPERATION, the following conditions of inoperability may exist provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, be in at least HOT SHUTDOWN within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

a. Two of the five cooling water pumps may be inoperable for 7 days with the following stipulation.

If the inoperable pumps are any two of these: #12 Cooling Water Pump, #22 Cooling Water Pump, and #121 Cooling Water Pump, the following conditions shall apply:

(1) the engineered safety features associated with the OPERABLE safeguards cooling water pump are OPERABLE; and

(2) both paths from transmission grid to the unit 4 kV safeguards buses are OPERABLE (applicable to Unit 1 operation only); and

(3) this condition of inoperablility (i.e., two safeguards pumps inoperable simultaneously) may not exceed 7 days in any consecutive 30 day period.

b. One of the two required cooling water headers may be inoperable for 72 hours provided:

(1) the diesel-driven pump and the diesel generator associated with safety features on the OPERABLE header are OPERABLE.

(2) the horizontal motor-driven pump associated with the OPERABLE header and the vertical motor-driven pump are OPERABLE.

c. One of the Safeguards Traveling Screens may be inoperable for 90 days provided a sluice gate connecting the Emergency Bay and the Circ Water Bay is open (except during periods of testing not to exceed 24 hours).

d. Both Safeguards Traveling Screens may be inoperable for 7 days provided a sluice gate connecting the Emergency Bay and the Circ Water Bay is open.

e. The Emergency Cooling Water line from the Mississippi River may be inoperable for 7 days provided that a sluice gate connecting the Emergency Bay and the Circ Water Bay is open.

TABLE TS.3.5-1 (continued)

ENGINEERED SAFETY INITIATION INSTRUMENTATION LIMITING SET POINTS

FUNCTIONAL UNIT	CHANNEL	LIMITING SET POINTS
10. 4KV Safeguards Busses Voltage Restoration	a. Degraded Voltage	
	Voltage (% nominal)	≥94.8% and ≤96.2%
	Time Delay 1	8 ± 0.5 sec
	Time Delay 2	8 ± 0.5 to 60 ± 3 sec
	b. Undervoltage	
	Voltage (% nominal)	75 ± 2.5%
	Time Delay	4 ± 1.5 sec

TABLE TS.3.5-6

INSTRUMENT OPERATING CONDITIONS FOR AUXILIARY ELECTRICAL SYSTEM

FUNCTIONAL UNIT	1 MINIMUM OPERABLE CHANNELS	2 MINIMUM DEGREE OF REDUNDANCY	3 PERMISSIBLE BYPASS CONDITIONS	4 OPERATOR ACTION IF CONDITIONS OF COLUMN 1 OR 2 CANNOT BE MET
1. Degraded Voltage 4KV Safeguards Busses	3/Bus	2/Bus	---	Place inoperable channel in the tripped condition within one hour or be in hot shutdown.***
2. Undervoltage 4KV Safeguards Busses	3/Bus	2/Bus	---	Place inoperable channel in the tripped condition within one hour or be in hot shutdown.***

*** If minimum conditions are not met within 24 hours, steps shall be taken to place the unit in cold shutdown conditions.

Prairie Island Unit 1 - Amendment No. ~~40~~, ~~50~~, 103
Prairie Island Unit 2 - Amendment No. 43, ~~44~~, 96

3.7 AUXILIARY ELECTRICAL SYSTEMS

Applicability

Applies to the availability of electrical power for the operation of plant auxiliaries.

Objectives

To define those conditions of electrical power availability necessary to assure safe reactor operation and continuing availability of engineered safeguards.

Specification

A. A reactor shall not be made or maintained critical nor shall reactor coolant system average temperature exceed 200°F unless all of the following requirements are satisfied for the applicable unit (except as specified in 3.7.B below):

1. At least two separate paths from the transmission grid to the unit 4 kV safeguards distribution system each capable of providing adequate power to minimum safety related equipment, shall be OPERABLE.

2. The 4 kV safeguards buses 15 and 16 (Unit 2 buses: 25 and 26) shall be energized.

3. The 480 V safeguards buses 110 and 120 (Unit 2 buses: 211, 212, 221 and 222), and their safeguards motor control centers shall be energized.

4. Reactor protection instrument AC buses shall be energized: 111, 112, 113 and 114 (Unit 2 buses: 211, 212, 213 and 214).

5. The following unit specific conditions apply:

   (a) Unit 1: D1 and D2 diesel generators are OPERABLE, and a fuel supply of 51,000 gallons is available for the D1 and D2 diesel generators in the Unit 1 interconnected diesel fuel oil storage tanks. A total fuel supply of 70,000 gallons is available for the D1 and D2 diesel generators and the diesel-driven cooling water pumps in the Unit 1 interconnected diesel fuel oil storage tanks.

   (b) Unit 2: D5 and D6 diesel generators are OPERABLE and a fuel supply of 75,000 gallons is available for D5 and D6 diesel generators in the Unit 2 interconnected diesel fuel oil storage tanks.

6. Both batteries with their associated chargers and both d-c safeguard systems shall be OPERABLE.

7. No more than one of the Instrument AC Panels 111, 112, 113 and 114 (Unit 2 panels: 211, 212, 213 and 214) shall be powered from Panel 117 (Unit 2 panel: 217) or its associated instrument inverter bypass source.

3.7.B. During STARTUP OPERATION or POWER OPERATION, any of the following conditions of inoperability may exist for the times specified, provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, place the affected unit(s) in at least HOT SHUTDOWN within the next 6 hours and be in COLD SHUTDOWN within the following 30 hours.

1. One diesel generator may be inoperable for 7 days provided (a) the OPERABILITY of the other diesel generator is demonstrated* by performance of surveillance requirement 4.6.A.1.e within 24 hours**, (b) all engineered safety features equipment associated with the operable diesel generator is OPERABLE, (c) the two required paths from the grid to the unit 4 kV safeguards distribution system are OPERABLE and (d) the OPERABILITY of the two required paths from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

2. One of the two required paths from the grid to the unit 4 kV safeguards distribution system may be inoperable for 7 days provided (a) D1 and D2 (Unit 2: D5 and D6) diesel generators are already operating or are demonstrated to be OPERABLE by sequentially performing surveillance requirement 4.6.A.1.e on each diesel generator within 24 hours and (b) the OPERABLE path from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

3. One of the two required paths from the grid to the unit 4 kV safeguards distribution system and one diesel generator may be inoperable for 12 hours provided, (a) the OPERABILITY of the other diesel generator is demonstrated* by performance of Surveillance Requirement 4.6.A.1.e within 8 hours**, (b) all engineered safety features equipment associated with the OPERABLE diesel generator is OPERABLE, and (c) the OPERABLE path from the grid shall be verified OPERABLE within 1 hour and at least once per 8 hours thereafter.

4. Both of the two required paths from the grid to the unit 4 kV safeguards distribution system may be inoperable for 12 hours provided the D1 and D2 (Unit 2: D5 and D6) diesel generators are already operating or are demonstrated to be OPERABLE by sequentially performing Surveillance requirement 4.6.A.1.e on each diesel generator within 8 hours.

* The OPERABILITY of the other diesel generator need not be demonstrated if the diesel generator inoperability was due to preplanned preventative maintenance or testing.

** This test is required to be completed regardless of when the inoperable diesel generator is restored to OPERABILITY.

3.7.B.5. D1 and D2 (Unit 2: D5 and D6) diesel generators may be inoperable for 2 hours provided the two required paths from the grid to the unit 4 kV safeguards distribution system are OPERABLE and the OPERABILITY of the two required paths from the grid are verified OPERABLE within 1 hour.

6. One 4 kV safeguards bus (and its associated 480 V bus (Unit 2: buses) including associated safeguards motor control centers) or one 480 V safeguards bus including associated safeguards motor control centers may be inoperable or not fully energized for 8 hours provided the redundant 4 kV safeguards bus and its associated 480 V safeguards bus (Unit 2: buses) are verified OPERABLE and the diesel generator and safeguards equipment associated with the redundant train are OPERABLE.

7. One battery charger may be inoperable for 8 hours provided, (a) its associated battery is OPERABLE, (b) its redundant counterpart is verified OPERABLE, and (c) the diesel generator and safeguards equipment associated with its counterpart are OPERABLE.

8. One battery may be inoperable for 8 hours provided that the other battery and both battery chargers remain OPERABLE.

9. In addition to the requirements of Specification TS.3.7.A.7 a second inverter supplying Instrument AC Panels 111, 112, 113, and 114 may (Unit 2 panels 211, 212, 213 and 214) be powered from an inverter bypass source for 8 hours.

3. Containment Fan Coolers

Each fan cooler unit shall be tested during each reactor refueling shutdown to verify proper operation of all essential features including low motor speed, cooling water valves, and normal ventilation system dampers. Individual unit performance will be monitored by observing the terminal temperatures of the fan coil unit and by verifying a cooling water flow rate of greater than or equal to 900 gpm to each fan coil unit.

4. Component Cooling Water System

a. System tests shall be performed during each reactor refueling shutdown. Operation of the system will be initiated by tripping the actuation instrumentation.

b. The test will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily.

5. Cooling Water System

a. System tests shall be performed at each refueling shutdown. Tests shall consist of an automatic start of each diesel engine, automatic start of the vertical motor-driven cooling water pump and automatic operation of valves required to mitigate accidents including those valves that isolate non-essential equipment from the system. Operation of the system will be initiated by a simulated accident signal to the actuation instrumentation. The tests will be considered satisfactory if control board indication and visual observations indicate that all components have operated satisfactorily and if cooling water flow paths required for accident mitigation have been established.

b. At least once each 18 months, subject each diesel engine to a thorough inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

4.5.B. Component Tests

1. Pumps

a. The safety injection pumps, residual heat removal pumps and containment spray pumps shall be started and operated at intervals of one month. Acceptable levels of performance shall be that the pumps start and reach their required developed head on minimum recirculation flow and the control board indications and visual observations indicate that the pumps are operating properly for at least 15 minutes.

b. A test consisting of a manually-initiated start of each diesel engine, and assumption of load within one minute, shall be conducted monthly.

c. The vertical motor-driven cooling water pump shall be operated at quarterly intervals. An acceptable level of performance shall be that the pump starts and reaches its required developed head and the control board indictions and visual observations indicate that the pump is operating properly for at least 15 minutes.

2. Containment Fan Motors

The Containment Fan Coil Units shall be run on low motor speed for at least 15 minutes at intervals of one month. Motor current shall be measured and compared to the nominal current expected for the test conditions.

3. Valves

a. The refueling water storage tank outlet valves shall be tested in accordance with Section 4.2.

b. The accumulator check valves will be checked for OPERABILITY during each refueling shutdown.

c. The boric acid tank valves to the Safety Injection System shall be tested at intervals of one month.

d. The spray chemical additive tank valves shall be cycled by operator action at intervals of one month.

e. Actuation circuits for Cooling Water System valves that isolate non-essential equipment from the system shall be tested monthly.

f. All motor-operated valves in the SIS, RHR, Containment Spray, Cooling Water, and Component Cooling Water System that are designed for operation during the safety injection or recirculation phase of emergency core cooling, shall be tested for OPERABILITY at each refueling shutdown.

4.5.B.3.g. The correct position of the throttle valves below shall be verified as follows:

1. Within 4 hours following completion of each valve stroking operation.

2. Within 4 hours following maintenance on the valve when the Safety Injection System is required to be OPERABLE, and

3. Periodically at least once per 18 months to the extent not verified in accordance with 1 and 2 above within this time period.

Unit 1 Valves	Unit 2 Valves
SI-15-6	2SI-15-6
SI-15-7	2SI-15-7
SI-15-8	2SI-15-8
SI-15-9	2SI-15-9

h. Following completion of high head Safety Injection System or RHR system modifications that alter system flow characteristics a flow balance test shall be performed during shutdown to confirm the following injection flow rates are achieved:

1. High Head Safety Injection System:

(a) Flow through all four injection lines plus miniflow shall not exceed 835 gpm with one pump in operation.

(b) The minimum flow through loop A & B cold legs shall be 670 gpm with one pump in operation. The flow rates in each leg shall be within 20 gpm of each other with one pump in operation.

(c) Flow orifices and throttling valves will be used to limit and balance flow through the reactor vessel injection lines to a maximum of the total flow limit in Specification 4.5.B.3.h.1.(a) above, with one pump in operation. During this flow test the flow rates in each leg shall be within 50 gpm of each other.

2. RHR System:

The minimum flow through each RHR Reactor Vessel Injection line shall be at least 1800 gpm.

4.6 PERIODIC TESTING OF EMERGENCY POWER SYSTEM

Applicability

Applies to periodic testing and surveillance requirements of the emergency power system.

Objective

To verify that the emergency power sources and equipment are OPERABLE.

Specification

The following tests and surveillance shall be performed:

A. Diesel Generators

1. At least once each month, for each diesel generator:

   a. Verify the fuel level in the day tank.

   b. Verify the fuel level in the fuel storage tank.

   c. Verify that a sample of diesel fuel from the fuel storage tank is within the acceptable limits specified in Table 1 of ASTM D975-77 when checked for viscosity, water, and sediment.

   d. Verify the fuel transfer pump can be started and transfers fuel from the storage system to the day tank.

   e. Verify the diesel generator can start and gradually accelerate to synchronous speed with generator voltage and frequency at 4160 ± 420 volts and 60 ± 1.2 Hz. Subsequently, manually synchronize the generator, gradually load to at least 1650 kW (Unit 2: 5100 kW to 5300 KW), and operate for at least 60 minutes. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube, warm-up, loading and shutdown procedures where possible.

4.6.A.2. At least once each 6 months, for each diesel generator:

a. Verify the diesel generator starts and accelerates to at least synchronous speed in less than or equal to 10 seconds.

b. Verify the generator voltage and frequency to be 4160 ± 420 volts and 60 ± 1.2 Hz within 10 seconds after the start signal.

c. Manually synchronize the generator, load to at least 1650 kW (Unit 2: 5100 kW to 5300 kW) in less than or equal to 60 seconds and operate for at least one hour.

d. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube and shutdown procedures where possible.

3. At least once each 18 months:

a. Subject each diesel generator to a thorough inspection in accordance with procedures prepared in conjunction with the manufacturer's recommendations for this class of standby service.

b. For each unit, simulate a loss of offsite power in conjunction with a safety injection signal, and:

1. Verify de-energization of the emergency buses and load shedding from the emergency buses.

2. Verify the diesels start on the auto-start signal and energize the emergency buses in one minute. This test should be conducted in accordance with the manufacturer's recommendations regarding engine prelube and shutdown procedures where possible.

3. Verify that the auto-connected loads do not exceed 3000 kw (Unit 2: 5100 kW).

4. Verify that the diesel generator system trips, except those for engine overspeed, ground fault, and generator differential current (Unit 2: except those for engine overspeed and generator differential current), are automatically bypassed.

c. For each unit, demonstrate full-load carrying capability for an interval of not less than 24 hours, of which 2 hours are at a load equal to 105 to 110 percent of the continuous rating of the emergency diesel generator, and 22 hours are at a load equal to 90 to 100 percent of its continuous rating. Verify the generator voltage and frequency to be 4160 ± 420 volts and 60 ± 1.2 Hz.

d. Verify the capability of each generator to reject a load of at least 650 kW (Unit 2: 860 kW) without tripping.

e. During this test, operation of the emergency lighting system shall be ascertained.

3.3 ENGINEERED SAFETY FEATURES

Bases continued

The containment cooling function is provided by two independent systems: containment fan cooler units and containment sprays. During normal operation, four containment fan cooler units are utilized to remove heat lost from equipment and piping within the containment. In the event of the Design Basis Accident, any one of the following combinations will provide sufficient cooling to reduce containment pressure: four containment fan cooler units, two containment spray pumps or two containment fan cooler units plus one containment spray pump (Reference 4). Two of the four containment fan cooler units are permitted to be inoperable during POWER OPERATION. This is an abnormal operating situation, in that plant operating procedures require that inoperable containment fan cooler units be repaired as soon as practical. However, because of the difficulty of access to make repairs, it is important on occasion to be able to operate temporarily with only two containment fan cooler units. Two containment fan cooler units can provide adequate cooling for normal operation when the containment fan cooler units are cooled by the chilled water system (Reference 3). Compensation for this mode of operation is provided by the high degree of redundancy of containment cooling systems during a Design Basis Accident.

One component cooling water pump together with one component cooling heat exchanger can accommodate the heat removal load on one unit, either following a loss-of-coolant accident or during normal plant shutdown. The four pumps of the two-unit facility can be cross connected as necessary to accommodate temporary outage of the pump. If, during the post-accident phase, the component cooling water supply were lost, core and containment cooling could be maintained until repairs were effected (Reference 5).

Cooling water can be supplied by either of the two horizontal motor-driven pumps, by a safeguards motor-driven pump or by either of two safeguards diesel-driven pumps. (Reference 6). Operation of a single cooling water pump provides sufficient cooling in one unit during the injection and recirculation phases of a postulated loss-of-coolant accident plus sufficient cooling to maintain the second unit in a hot standby condition.

TS.3.3.D.1.a assures that an automatic Safety Injection signal to the cooling water header isolation valves will not align both OPERABLE safeguards pumps to the same safeguards train.

TS.3.3.D.1.a also assures that 121 cooling water pump is aligned to provide cooling water to the same train as the train from which it is being powered (e.g., if 121 cooling water pump is aligned to Train B cooling water header, it needs to be powered from Bus 26 and, ultimately, Diesel Generator D6 in the event of a loss of offsite power). Otherwise, the single failure of a diesel generator could leave one train of engineered safety features without power and the other train without cooling water.

The minimum fuel supply of 19,000 gallons will supply one diesel-driven cooling water pump for 14 days. Note that the 19,000 gallon requirement is included in the 70,000 gallon total diesel fuel oil requirement of Specification 3.7.A.5 for Unit 1.

3.3 ENGINEERED SAFETY FEATURES

Bases continued

The Safeguards Traveling Screens and Emergency Cooling Water Supply line are designed to provide a supply of screened cooling water in the event that an earthquake 1) destroys Dam No. 3 (dropping the water level in the normal canal to the screenhouse) and 2) causes the banks bordering the normal canal to the screenhouse to collapse eliminating the river as a source of cooling water. The Safeguards Traveling Screens and Emergency Cooling Water Supply line provide an alternate supply of water to the Safeguards Bay, which contains the two diesel driven and the one vertical motor driven cooling water pumps. Their normal supply is from the Circ Water Bay thru one of two sluice gates. Either one of the two sluice gates or one of the two Safeguards Traveling Screens will adequately supply any of the three cooling water pumps. The Safeguards Traveling Screens are not considered part of the "engineered safety features associated with the operable diesel-driven cooling water pump" for determination of operability of diesel-driven cooling water pumps.

The component cooling water system and the cooling water system provide water for cooling components used in normal operation, such as turbine generator components, and reactor auxiliary components in addition to supplying water for accident functions. These systems are designed to automatically provide two separate redundant paths in each system following an accident. Each redundant path is capable of cooling required components in the unit having the accident and in the operating unit.

There are several manual valves and manually-controlled motor-operated valves in the engineered safety feature systems that could, if one valve is improperly positioned, prevent the required injection of emergency coolant (Reference 7). These valves are used only when the reactor is subcritical and there is adequate time for actuation by the reactor operator. To ensure that the manual valve alignment is appro- priate for safety injection during power operation, these valves are tagged and the valve position will be changed only under direct administrative control. For the motor-operated valves, the motor control center supply breaker is physically locked in the open position to ensure that a single failure in the actuation circuit or power supply would not move the valve.

References

1. USAR, Section 3.3.2
2. USAR, Section 14.6.1
3. USAR, Section 6.3.2
4. USAR, Section 6.3
5. USAR, Section 10.4.2
6. USAR, Section 10.4.1
7. USAR, Figure 6.2-1
   USAR, Figure 6.2-2
   USAR, Figure 6.2-5
   USAR, Figure 10.2-11

3.5 INSTRUMENTATION SYSTEM

Bases continued

Steam Line Isolation (continued)

line flow in coincidence with low T_{avg} and safety injection or high steam flow (Hi-Hi) in coincidence with safety injection. Adequate protection is afforded for breaks inside or outside the containment even when it is assumed that the steam line check valves do not function properly.

Containment Ventilation Isolation

Valves in the containment purge and inservice purge systems automatically close on receipt of a Safety Injection signal or a high radiation signal. Gaseous and particulate monitors in the exhaust stream or a gaseous monitor in the exhaust stack provide the high radiation signal.

Ventilation System Isolation

In the event of a high energy line rupture outside of containment, redundant isolation dampers in certain ventilation ducts are closed (Reference 4).

Safeguards Bus Voltage

Relays are provided on buses 15, 16, 25, and 26 to detect undervoltage and degraded voltage (the voltage level at which safety related equipment may not operate properly). Relays are not provided on 4 kV safeguards bus 27 to detect undervoltage and degraded voltage since voltage is monitored on the 4 kV source safeguards bus (i.e., bus 25 or bus 26) to which it is connected. Upon receipt of an undervoltage signal the automatic voltage restoring scheme is actuated after a short time delay which prevents actuation during normal transients (such as motor starting) and which allows protective relaying operation during faults. When degraded voltage is sensed, two time delays are actuated. The first time delay is long enough to allow for normal transients. The first time delay annunciates that a sustained degraded voltage condition exists and enables logic which will ensure that voltage and timing are adequate for safety injection loads by automatically performing the following upon receipt of a safety injection signal:

1. Auto start the diesel generator;
2. Separate the bus from the grid;
3. Load the bus onto the diesel generator; and
4. Start the load sequencer (including safety injection loads).

3.5 INSTRUMENTATION SYSTEM

Bases continued

The second longer time delay is used to allow the degraded voltage condition to be corrected by external actions within a time period that will not cause damage to operating equipment. If voltage is not restored within that time period, the logic automatically performs the following:

1. Auto start the diesel generator;
2. Separate the bus from the grid;
3. Load the bus onto the diesel generator; and
4. Start the load sequencer.

Auxiliary Feedwater System Actuation

The following signals automatically start the pumps and open the steam admission control valve to the turbine driven pump of the affected unit:

1. Low-low water level in either steam generator
2. Trip of both main feedwater pumps
3. Safety Injection signal
4. Undervoltage on both 4.16 kV normal buses (turbine driven pump only)

Manual control from both the control room and the Hot Shutdown Panel are also available. The design provides assurance that water can be supplied to the steam generators for decay heat removal when the normal feedwater system is not available.

Limiting Instrument Setpoints

1. The high containment pressure limit is set at about 10% of the maximum internal pressure. Initiation of Safety Injection protects against loss of coolant (Reference 2) or steam line break accidents as discussed in the safety analysis.

2. The Hi-Hi containment pressure limit is set at about 50% of the maximum internal pressure for initiation of containment spray and at about 30% for initiation of steam line isolation. Initiation of Containment Spray and Steam Line Isolation protects against large loss of coolant (Reference 2) or steam line break accidents (Reference 3) as discussed in the safety analysis.

3. The pressurizer low pressure limit is set substantially below system operating pressure limits. However, it is sufficiently high to protect against a loss of coolant accident as shown in the safety analysis (Reference 2).

3.5 INSTRUMENTATION SYSTEM

Bases continued

Limiting Instrument Setpoints (continued)

4. The steam line low pressure signal is lead/lag compensated and its set-point is set well above the pressure expected in the event of a large steam line break accident as shown in the safety analysis (Reference 3).

5. The high steam line flow limit is set at approximately 20% of nominal full-load flow at the no-load pressure and the high-high steam line flow limit is set at approximately 120% of nominal full-load flow at the full load pressure in order to protect against large steam break accidents. The coincident low T_{avg} setting limit for steam line isolation initiation is set below its hot shutdown value. The safety analysis shows that these settings provide protection in the event of a large steam break (Reference 3).

6. Steam generator low-low water level and 4.16 kV Bus 11 and 12 (21 and 22 in Unit 2) low bus voltage provide initiation signals for the Auxiliary Feedwater System. Selection of these setpoints is discussed in the Bases of Section 2.3 of the Technical Specification.

7. High radiation signals providing input to the Containment Ventilation Isolation circuitry are set in accordance with the Radioactive Effluent Technical Specifications. The setpoints are established to prevent exceeding the limits of 10 CFR Part 20 at the SITE BOUNDARY.

8. The degraded voltage protection setpoint is ≥94.8% and ≤96.2% of nominal 4160 V bus voltage. Testing and analysis have shown that all safeguards loads will operate properly at or above the minimum degraded voltage setpoint. The maximum degraded voltage setpoint is chosen to prevent unnecessary actuation of the voltage restoring scheme at the minimum expected grid voltage. The first degraded voltage time delay of 8 ± 0.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients (i.e., motor starting and fault clearing). It is also longer than the time required to start the safety injection pump at minimum voltage. The second degraded voltage time delay is provided to allow the degraded voltage condition to be corrected within a time frame which will not cause damage to permanently connected Class 1E loads.

3.5 INSTRUMENTATION SYSTEM

Bases continued

Limiting Instrument Setpoints (continued)

The undervoltage setpoint is 75 ± 2.5% of nominal bus voltage. The minimum setpoint ensures equipment operates above the limiting value of 75% (of 4000 V) for one minute operation. The 75% maximum setpoint is chosen to prevent unnecessary actuation of the voltage restoring scheme during voltage dips which occur during motor starting. The undervoltage time delay of 4 ± 1.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients and short enough to operate prior to the degraded voltage logic, providing a rapid transfer to an alternate source.

Instrument Operating Conditions

During plant operations, the complete instrumentation systems will normally be in service. Reactor safety is provided by the Reactor Protection System, which automatically initiates appropriate action to prevent exceeding established limits. Safety is not compromised, however, by continuing operation with certain instrumentation channels out of service since provisions were made for this in the plant design. This specification outlines limiting conditions for operation necessary to preserve the effectiveness of the Reactor Control and Protection System when any one or more of the channels is out of service.

Almost all reactor protection channels are supplied with sufficient redundancy to provide the capability for CHANNEL CALIBRATION and test at power. Exceptions are backup channels such as reactor coolant pump breakers. The removal of one trip channel on process control equipment is accomplished by placing that channel bistable in a tripped mode; e.g., a two-out-of-three circuit becomes a one-out-of-two circuit. The source and intermediate range nuclear instrumentation system channels are not intentionally placed in a tripped mode since these are one-out of-two trips, and the trips are therefore bypassed during testing. Testing does not trip the system unless a trip condition exists in a concurrent channel.

References

1. USAR, Section 7.4.2
2. USAR, Section 14.6.1
3. USAR, Section 14.5.5
4. FSAR, Appendix I

3.7 AUXILIARY ELECTRICAL SYSTEM

Bases

The intent of this specification is to provide assurance that at least one external source and one standby source of electrical power is always available to accomplish safe shutdown and containment isolation and to operate required engineered safeguards equipment following an accident.

Plant auxiliary power can be supplied from four separate external power sources which have multiple off-site network connections: the reserve transformer from the 161 kV portion of the plant substation; the second reserve transformer from the 345 kV portion of the plant substation and the two cooling tower transformers, one of which is supplied from a tertiary winding on the substation auto transformer, and the other directly from the 345 kV switchyard. Any one of the four sources is sufficient, under analyzed conditions, to supply all the necessary accident and post-accident load requirements for one reactor, along with the shutdown of the second reactor.

Each source separately supplies the safeguards buses in such manner that items of equipment which are redundant to each other are supplied by separate sources and buses.

Each diesel generator, D1 or D2 (Unit 2: D5 or D6), is connected to its associated 4160 volt safeguards bus in Unit 1 (Unit 2) and each diesel generator has sufficient capacity to start sequentially and operate the safeguards equipment supplied by its associated bus. The set of safeguards equipment items supplied by each bus is, alone, sufficient to maintain adequate cooling of the fuel and to maintain containment pressure within the design value in the event of a loss-of-coolant accident.

If no offsite source is available to the associated bus, each diesel starts automatically upon receipt of an undervoltage signal on its associated bus. Both diesel generators start in the event of a safety injection signal for the reactor. The minimum fuel supply of 51,000 gallons will supply one Unit 1 diesel generator for 14 days. Note that the 51,000 gallon requirement is included in the 70,000 gallon total requirement for Unit 1. The total fuel supply of 70,000 gallons will supply one diesel-driven cooling water pump and one Unit 1 diesel generator (loaded per USAR Table 8.4-1) for greater than 14 days (Unit 2: A fuel supply of 61,300 gallons will supply one Unit 2 diesel generator for 7 days at rated load calculated per the conservative method of ANSI-N195-1976. A minimum fuel supply of 75,000 gallons was conservatively chosen to supply one Unit 2 diesel generator for 14 days calculated per the time-dependent method of ANSI-N195-1976.) Additional diesel fuel can normally be obtained within a few hours. This assures an adequate supply even in the event of the probable maximum flood.

3.7 AUXILIARY ELECTRICAL SYSTEM

Bases continued

Following the inoperability of a Diesel Generator, the redundant diesel generator is tested to prove that the cause of the inoperability does not affect both diesel generators. However, if the diesel generator is inoperable due to preplanned preventative maintenance, operability of the redundant diesel generator does not need to be proven.

The plant 125 volt d-c power is normally supplied by two batteries for each plant, each of which will have a battery charger in service to maintain full charge and to assure adequate power for starting the diesel generators and supplying other emergency loads.

The arrangement of the auxiliary power sources and equipment and this specification assure that no single fault condition will deactivate more than one redundant set of safeguard equipment items in one reactor and will therefore not result in failure of the plant protection system to respond adequately to a loss-of-coolant accident.

Reference

USAR, Section 8
USAR, Figure 8.2-2

4.6 PERIODIC TESTING OF EMERGENCY POWER SYSTEMS

Bases

The monthly tests specified for the diesel generators will demonstrate their continued capability to start and to carry load. The fuel supplies and starting circuits and controls are continuously monitored, and abnormal conditions in these systems would be alarm-indicated without need for test startup.

The less frequent overall system test will demonstrate that the emergency power system and the control systems for the engineered safeguards equipment will function automatically in the event of loss of all other sources of a-c power, and that the diesel generators will start automatically in the event of a loss-of-coolant accident. This test will demonstrate proper tripping of motor feeder breakers, main supply and tie breakers on the affected bus, and sequential starting of essential equipment, as well as the OPERABILITY of the diesel generators. The load rejection test will demonstrate the capability to reject the single largest emergency load without tripping.

The specified test frequencies provide reasonable assurance that any mechanical or electrical deficiency will be detected and corrected before it can result in failure of one emergency power supply to respond when called upon to function. It's possible failure to respond is, of course, anticipated by providing two diesel generators per unit, each supplying, through an independent bus, a complete and adequate set of engineered safeguards equipment. Further, both diesel generators are provided as backup to multiple sources of external power, and this multiplicity of sources should be considered with regard to adequacy of test frequency.

Each diesel generator can start and be ready to accept full load within 10 seconds, and will sequentially start and supply the power requirements for one complete set of safeguards equipment in approximately one minute (Reference 1).

An internal fault in the generator could damage the generator severely. Moreover, this change complies with BTP EICSB 17. Auto-connected loads should not exceed the overload rating of the diesel generator for the 2000 hour maintenance interval, as prescribed in Regulatory Guide 1.9.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide indication of a cell becoming unserviceable long before it fails.

If a battery cell has deteriorated, or if a connection is loose, the voltage under load will drop excessively, indicating need for replacement or maintenance.

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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 103 AND 96 TO

FACILITY OPERATING 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

1.0 INTRODUCTION

By letter dated March 20, 1992, as revised July 23 and November 6, 1992, Northern States Power Company (NSP or the licensee) requested amendments to the Technical Specifications (TS) appended to Facility Operating License Nos. DPR-42 and DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2. The application requests changes to reflect plant modifications being performed as part of the licensee's Station Blackout/Electrical Safeguards Upgrade (SBO/ESU) Project presently in progress. The July 23 and November 6, 1992 letters contained clarifying information to the amendment application. This information did not change the scope of the amendment request or the proposed determination of no significant hazards consideration.

The SBO/ESU Project modifications consist of four major activities described below plus the necessary plant interfaces. The plant changes are described in greater detail in the SBO/ESU Project "Design Report" submitted to NRC on November 27, 1990 and updated on December 23, 1991.

The Design Report is the subject of separate staff reviews and is discussed in separate safety evaluations. This evaluation is intended to address only the associated TS changes.

D5/D6 Diesel Generator Addition

Prairie Island Nuclear Generating Plant, Units 1 and 2, are presently served by redundant auxiliary electrical systems employing two emergency diesel generators (EDGs) (D1 and D2) which are shared between the two units. The licensee is installing two new EDGs (D5 and D6) and associated equipment. (Note: Diesels D3 and D4 are non-safety-related power sources for which the licensee takes no credit in the facility analyses and licensing basis.) The D1 and D2 EDGs will be dedicated to Unit 1 and certain common equipment while the two new EDGs will be dedicated to Unit 2 and certain common equipment.

The two new diesel generators will each be provided with new cooling water (radiator cooled), lube oil, fuel storage and transfer, ventilation, and starting air systems. The new generators and associated auxiliary systems are located in a new D5/D6 Building. The Unit 2 diesel fuel oil storage tanks will be installed in underground vaults adjacent to the new building.

D5/D6 Diesel Generator Building Addition

A new Seismic Category I D5/D6 Diesel Generator Building has been constructed to house the two new diesel generators and auxiliary systems, including the Unit 2 safeguards buses. The building is located adjacent to the west end of the Auxiliary Building and the south side of the Turbine Building.

Electrical Safeguards Upgrade

The upgraded safeguards auxiliary power system includes new 4kV and 480V buses for each Unit 2 safeguards train. One new 4kV bus per train (two total) and two new 480V buses per train (four total) will be located in the new D5/D6 Building. The undervoltage protection scheme for the new 4kV buses will be designed to meet Branch Technical Position PSB-1 of the Standard Review Plan. Two new qualified solid state programmable logic controller-based load sequencer systems will be installed for each unit.

The Unit 1 4kV buses will be extended for additional capacity. The existing Unit 1 480V buses will be replaced by two new 480V buses per safeguards train (four total). Replacement of the Unit 1 480V safeguards buses is scheduled for a later Unit 1 outage and will be the subject of a separate License Amendment Request. The undervoltage protection scheme for the extended 4kV buses will meet Branch Technical Position PSB-1.

The 4kV safeguards buses in both units will be provided with two immediate access independent offsite sources (i.e., a preferred and an alternate offsite source) to each 4kV safeguards bus. Manual bus ties will be provided between the 4kV buses of the same train for the two units (e.g., between Unit 1 Train A and Unit 2 Train A) to provide an alternate AC power source during a station blackout event.

Upgrade of #121 Cooling Water Pump

The Prairie Island Cooling Water System provides cooling water from the Mississippi River to auxiliary feedwater pumps, diesel generators, air compressors, component cooling water heat exchangers, containment fan-coil units, and Auxiliary Building fan-coil units. The system has a ring-header served by five supply pumps. Of the five pumps, two (#11 and #21) are normal-use horizontal, motor-driven pumps, two (#12 and #22) are safeguards grade vertical diesel-driven pumps, and one (#121) is a vertical, motor-driven standby pump. Each pump has a capacity of 17,500 gpm which exceeds the 15,200 gpm accident load (i.e., one unit in hot shutdown and one in long-term post-accident cooling). Isolation valves provide means to split the system so as to provide redundant supplies to safeguards trains.

The #121 pump will be upgraded to safeguards classification. Power connection capability will be provided from both trains of Unit 2 4kV buses through a new 4kV "swing" bus 27 which will be capable of manual alignment to either one or the other train. The cables to #121 cooling water pump will be routed separately from either of the existing separation trains. The pump will receive an automatic start signal upon initiation of safety injection logic in either train of either unit. If both diesel-driven safeguards cooling water pumps come up to speed, #121 cooling water pump will trip; otherwise it will continue to run.

2.0 DISCUSSION AND EVALUATION

2.1 Emergency Diesel Generator Fuel Oil Storage

Discussion:

Proposed changes to TS Section 3.7.A.5 and to Basis 3.7 reflect the new Unit 2 minimum diesel fuel oil supply. The proposed change specifies a minimum fuel oil volume of 75,000 gallons to be maintained for EDGs D5 and D6 in the Unit 2 interconnected diesel fuel oil storage tanks. The current total requirement of 70,000 gallons for D1 and D2 diesel generators and the diesel-driven cooling water pumps remains unchanged. Fifty-one thousand gallons of the 70,000 gallon total requirement for Unit 1 is available for D1 and D2 diesel generators. The 51,000 gallon requirement is sufficient to meet the 14-day requirement of diesel fuel oil for the D1 and D2 diesel generators as stated above. A fuel supply of 19,000 gallons remains allocated for the diesel-driven cooling water pumps in the interconnected Unit 1 diesel fuel oil storage tanks.

Evaluation:

The minimum diesel fuel supply of 75,000 gallons in TS Section 3.7.A.5 for Unit 2 is based on using the time-dependent method of American National Standards Institute (ANSI) N195-1976 to calculate the minimum diesel fuel supply necessary to supply one Unit 2 EDG set for 14 days to assure a fuel supply in the event of a probable maximum flood. The conservative method of ANSI N195-1976 was used to calculate the minimum diesel fuel supply necessary to supply one Unit 2 EDG set for 7 days at rated load of 5400kW, which is significantly above the maximum predicted load for a Unit 2 EDG. The calculated minimum volume for 7-day operation of one Unit 2 EDG set using the conservative method of calculation was less than the minimum volume necessary for 14-day operation calculated using the time dependent method. A conservative volume is proposed in TS Section 3.7.A.5 as the required minimum fuel supply for Unit 2 EDG. This minimum volume envelopes the 7-day and the 14-day requirements.

The proposed fuel oil storage requirements are consistent with the staff criteria of Regulatory Guide 1.137 and is, therefore, acceptable.

2.2 Emergency Diesel Generator Allowable Outage Time

Discussion:

The licensee has chosen not to request changes to TS Section 3.7.B.1 regarding the allowed out-of-service time for EDG. The currently specified allowable outage time (AOT) is seven days, which differs from the current staff criterion of three days cited in Standard Technical Specification (STS).

Evaluation:

The licensee's application states that the new configuration will provide several features which are significant enhancements to the existing configuration:

(a) The arrangement of the offsite AC sources to the safeguards buses will be improved to reduce the risk of losing offsite AC power to the safeguards buses.

(b) The onsite AC power system will be enhanced considerably in that a loss-of-offsite-power event coupled with the loss of a diesel generator will be mitigated by the availability of another diesel generator which can be cross-tied to the affected 4160 volt safeguards bus.

(c) The D5 and D6 diesel generators will provide a diverse means of providing power to the 4160 volt safeguards buses, in addition to simply adding redundancy. With respect to the existing D1 and D2 diesels, D5 and D6 were made by a different manufacturer, have different cooling systems, different size ratings, and will be housed in a separate building located on the opposite side of the plant. These factors reduce many of the common failure mechanisms that could otherwise affect all the diesel generators. Most significantly, the D5 and D6 diesel engines will be cooled using radiators instead of being reliant on a separate support system.

(d) The reliability of the existing D1 and D2 diesel generators, which require a separate cooling water system, will also be enhanced. Currently, two diesel-driven cooling water pumps are available following a loss-of-offsite-power event. After completion of the SBO/ESU Project modifications, an additional motor-driven cooling water pump will be available, powered from the Unit 2 safeguards buses.

The staff acknowledges the enhancements listed in (a) through (d) above will increase the reliability of the onsite power supply. The seven-day AOT of the current licensing basis, therefore, continues to be acceptable.

2.3 Diesel Fuel Oil Quality Limits

Discussion:

Technical Specification Section 4.6.A.1.c would be revised to reference American Society of Testing Materials (ASTM) D975-77, "Standard Specification for Diesel Fuel Oils," (1977) rather than the 1968 version, for specification of acceptable diesel fuel oil limits.

Evaluation:

The use of the 1977 revision is acceptable based on consistency with Position B.2.a of Regulatory Guide 1.137.

2.4 Diesel Generator D5 and D6 Monthly Surveillance Tests

Discussion:

(1) Technical Specification Section 4.6.A.1.e would be revised to add monthly surveillance tests for the new D5 and D6 diesel generators and correct spelling errors. This specification and also TS Section 4.6.A.2.a would be revised to remove the specific EDG speed and use the wording of "synchronous speed" for these surveillances.

(2) Technical Specification Section 4.6.A.2.c would be revised to add semi-annual surveillance tests for the new Unit 2 EDG D5 and D6.

(3) Technical Specification Section 4.6.A.3.b.2 would be revised to correct a spelling error.

(4) Technical Specification Section 4.6.A.3.b.3 would be revised to add 18-month surveillances to verify that auto-connected loads do not exceed the tested capacity of the new Unit 2 EDG.

(5) Technical Specification 4.6.A.3.b.4 would be revised to add that the ground fault trip for Unit 2 is automatically bypassed when a safety injection signal exists.

(6) Technical Specification Section 4.6.A.3.c would be revised to add 18-month surveillance tests for the new Unit 2 EDG.

(7) Technical Specification Section 4.6.A.3.d would be revised to add 18-month surveillances to verify the capability of each of the new Unit 2 EDG to reject the single largest emergency load without tripping.

(8) Basis 4.6 would be revised to specifically state that the load rejection test will demonstrate the capability of each EDG to reject the single largest emergency load without tripping. It would also be revised to reflect the new EDG configuration of two EDG per unit.

Evaluation:

Proposed changes to TS Sections 4.6.A.1.e, 4.6.A.2.c and 4.6.A.3.c (Items 1, 2, and 6 above) will invoke new requirements for monthly, semi-annual, and 18-month surveillance testing for Unit 2 EDG to assure that the EDG have the capability to start, accelerate to synchronous speed, and accept load. They involve loading each Unit 2 EDG to between a minimum of 5100kW and a maximum of 5300kW. The minimum 5100kW test load has been chosen to assure that either Unit 2 EDG has the capacity and the capability to assume the maximum auto-connected load for Unit 2. The maximum 5300kW test load has been chosen to provide a load test range for operational test flexibility during the surveillance test. The minimum 5100kW test load in TS Sections 4.6.A.1.e, 4.6.A.2.c and 4.6.A.3.c also corresponds to the load proposed for the TS surveillance Section 4.6.A.3.b.3. It is noted that, although 5100kW is not the continuous rating of the Unit 2 EDG, it is significantly above the maximum auto-connected load. The current maximum auto-connected load is more than 1000 kW under the 5100kW minimum test load for the Unit 2 EDG. Therefore, the proposed TS Section 4.6.A.3.b.3 requirement to verify that the auto-connected loads do not exceed 5100kW for each Unit 2 EDG is conservative.

Specification 4.6.A.3.c is revised to add 18-month full load carrying capacity tests of each EDG for an interval of not less than 24 hours of which 2 hours are at a load equal to 105 - 110 percent of the continuous rating of an EDG and 22 hours are at a load equal to 90 - 100 percent of the continuous rating. During this test, the voltage and frequency are to be verified to be 4160 $\pm$ 420 volts and 60 $\pm$ 1.2 Hertz. This revision is acceptable.

The load rejection test specified in the proposed TS Section 4.6.A.3.d will demonstrate the capability of each Unit 2 EDG to reject the single largest emergency load (i.e., the vertical motor-driven safeguards cooling water pump) without tripping. A test load of at least 860kW will demonstrate this capability.

The licensee's proposed TS operability and surveillance requirements for the new D5 and D6 diesel generators have been evaluated for conformance with the staff criteria of the Standard Technical Specifications (STS). They have been found to conform to this guidance with the exception noted above relating to testing at less than the rated continuous load. This exception is acceptable to the staff based on the large margin between the emergency load requirement and the test load.

2.5 Bus Ties

Discussion:

The licensee has not included TS for the alternate AC power bus ties for the proposed amendment.

Evaluation:

In an letter from Dominic C. DiIanni, Project Manager, Nuclear Reactor Regulation to T. M. Parker, NSP dated September 18, 1990 (the staff's Safety Evaluation addressing conformance with the Blackout Rule) the NRC staff stated:

> The Technical Specifications (TSs) for SBO should be consistent with the Interim Commission Policy Statement. The staff has taken the position that TSs are required for SBO equipment. However the question of how specification for the SBO equipment will be applied, is currently being considered generically under the TS improvement program and remains an open item at this time.
>
> In the interim you are expected to prepare and maintain adequate procedures to reflect the appropriate testing and surveillance requirements to ensure the operability of the SBO equipment.

Based on the staff guidance given to the licensee, the omission of TS for SBO bus ties is acceptable.

2.6 Safeguards Power Distribution System

2.6.1 Bus Arrangements

Discussion:

Section 1.0 above summarizes the design changes. The proposed amendment would revise TS Sections 3.7.A.1 and 3.7.B.1, 3.7.B.2, 3.7.B.3, 3.7.B.4, and 3.7.B.5 to clarify that two separate paths from the transmission grid are provided to the unit safeguards distribution systems. Technical Specification Sections 3.7.A.3 and 3.7.B.6 would be revised to reflect the new configuration for the Unit 2 480V safeguards bus arrangement. Additional TS changes will be requested in the future to coincide with completion of 480V bus replacement for Unit 1.

Evaluation:

This is an administrative change and does not affect the operation of Prairie Island Nuclear Generating Plant and as such it will not affect the probability or consequences of an accident previously evaluated and is acceptable.

2.6.2 Instrumentation Set Points and Operating Conditions for Auxiliary Electrical System

Discussion:

Technical Specification Tables TS.3.5-1 and TS.3.5-6 would be revised to reflect engineered safety features instrumentation limiting set points and instrument operating conditions for modified 4kV safeguards electrical buses. New set points are proposed to reflect replacement of degraded voltage and undervoltage relays. New voltage analyses reveal that degraded voltage set points must be increased from the existing settings until the new voltage regulators are placed in service. Technical Specification Table 3.5-6 would be revised to reflect the instrument operating conditions for the degraded voltage and undervoltage relays on each 4kV safeguards bus.

Basis 3.5 would be revised to describe upgrades to undervoltage and degraded voltage protection for the 4kV safeguards buses and to provide the basis for set points and time delays selected.

The degraded voltage scheme provides two separate time delays. Per Branch Technical Position PSB-1, these time delays are selected as follows:

(1) The first time delay was selected to establish the existence of a sustained degraded voltage condition, i.e., a duration greater than the longest expected voltage dip resulting from Class 1E motor starting. This time delay prevents actuation during normal transients (such as motor starting) and allows protective relaying operation during faults and enables logic which will ensure that voltage and timing are adequate for safety injection loads by automatically performing the following upon receipt of a safety injection signal:

   (1) Auto start the diesel generator;

   (2) Separate the bus from the grid;

   (3) Load the bus onto the diesel generator; and

   (4) Start the load sequencer (including safety injection loads).

(2) The second time delay was established in a range limited so that permanently connected Class 1E loads would not be damaged and is used to allow the degraded voltage condition to be corrected by external actions within a time period that will not cause damage to operating equipment. If voltage is not restored within that time period, the logic automatically performs the following:

   (1) Auto start the diesel generator;

   (2) Separate the bus from the grid;

   (3) Load the bus onto the diesel generator; and

   (4) Start the load sequencer.

In determining the revised 4kV safeguards bus undervoltage and degraded voltage protection set points for TS Table 3.5-1, criteria and equipment voltage requirement assumptions used in the calculation of the new set points were essentially the same as those used to calculate the existing set points.

The degraded voltage protection set point has been changed to the range greater than or equal to 94.8% and less than or equal to 96.2%. Testing and analysis have shown that all safeguards loads will operate properly at or above the minimum degraded voltage set point. The maximum degraded voltage set point is chosen to prevent unnecessary actuation of the voltage restoring scheme at the minimum expected grid voltage. The first degraded voltage time delay of 8 ± 0.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients (i.e., motor starting and fault clearing). It is also longer than the time delay required to start the safety injection pump at minimum voltage. The second degraded voltage time delay is provided to allow the degraded voltage condition to be corrected within a time frame which will not cause damage to permanently connected equipment.

The undervoltage set point is 75 ± 2.5% of nominal bus voltage. The minimum set point ensures equipment operates above the limiting value of 75% (of 4000V) for one minute operation. The 75% set point is chosen to prevent unnecessary actuation of the voltage restoring scheme during voltage dips which occur during motor starting. The undervoltage time delay of 4 ± 1.5 seconds has been shown by testing and analysis to be long enough to allow for normal transients and short enough to operate prior to the degraded voltage logic, providing a rapid transfer to an alternate source.

The existing margin of safety has been maintained by the proposed set points and time delays for 4kV safeguards bus undervoltage and degraded voltage protection.

Set point values provided in the proposed TS Table 3.5-1 will be confirmed upon completion of the electrical distribution systems voltage analyses.

Evaluation:

Proposed changes to TS Tables 3.5-1 and 3.5-6 reflect upgrades of the undervoltage protection which conform to NRC Branch Technical Position PSB-1 and are acceptable based on that conformance. A separate TS change will be requested to revise TS Table 3.5-1 to coincide with completion of 480V safeguards bus replacement for Unit 1.

2.7 Cooling Water System

2.7.1 Cooling Water Component Operability

Discussion:

The proposed changes to TS Section 3.3.D and Basis 3.3 would reflect the availability of the upgraded vertical motor-driven #121 cooling water pump as a safeguards cooling water pump. The cooling water pump #121 can be used as an equivalent replacement for either of the diesel-driven safeguards cooling water pumps.

Technical Specification Sections 3.3.D.1.a and b would be replaced with a new TS Section 3.3.D.1.a requiring four of the five cooling water pumps to be OPERABLE. The proposed TS Section 3.3.D.1.a requires changes that certain conditions be met if the inoperable cooling water pump is one of the diesel-driven safeguards cooling water pumps. If the inoperable cooling water pump is one of the diesel-driven cooling water pumps, then #121 cooling water pump shall be aligned as shown in the table below. All changes in valve positions will be under direct administrative controls implemented by approved plant procedures.

Inoperable Pump	Valve Alignment	Power Supply to Bus 27 (#121 Cooling Water Pump)
#12 Cooling Water Pump	MV-32037 or MV-32036 closed; and associated Bkr Locked Off, or MV-32034 and MV-32035 open; and both Bkrs Locked Off	Bus 25
#22 Cooling Water Pump	MV-32034 or MV-32035 closed; and the associated Bkr Locked Off, or MV-32037 and MV-32036 open; and both Bkrs Locked Off	Bus 26

Technical Specification Section 3.3.D.1.c would be renumbered as 3.3.D.1.b. A new TS Section 3.3.D.1.c would be added to clearly reflect the existing requirement for two cooling water headers to be OPERABLE.

A new TS Section 3.3.D.1.d would be added to require a 19,000 gallon minimum fuel supply in the interconnected storage tanks for the diesel-driven cooling water pumps. Also, the new TS Section 3.3.D.1.d would state that the 19,000 gallon requirement is included in the 70,000 gallon total diesel fuel oil requirement of TS Section 3.7.A.5 for Unit 1.

Technical Specification Sections 3.3.D.2.a and b would be replaced by revised TS Section 3.3.D.2.a to reflect a limiting condition for operation applicable when two of the five cooling water pumps are inoperable. Technical Specification Section 3.3.D.2.a, as proposed, requires that certain conditions be met if the two inoperable pumps are safeguards pumps (i.e., #12 cooling water pump, #22 cooling water pump, #121 cooling water pump). The conditions to be met are:

(1) the engineered safety features associated with the OPERABLE safeguards cooling water pump are OPERABLE;

(2) both paths from the transmission grid to the unit 4KV safeguards buses are OPERABLE (applicable to Unit 1 operation only); and

(3) the AOT for two safeguards pumps inoperable simultaneously may not exceed 7 days in any consecutive 30 day period.

Technical Specification Sections 3.3.D.2.c, d, e, and f would be renumbered as 3.3.D.2.b, c, d, and e.

Basis 3.3 would be revised to reflect the above changes and would state that: (A) TS Section 3.3.D.1.a assures that an automatic safety injection signal to the cooling water header isolation valves will not align both OPERABLE safeguards pumps to the same safeguards train, (B) TS Section 3.3.D.1.a also assures that the vertical motor-driven (#121) cooling water pump is aligned to provide cooling water to the same train as that from which it is powered, and (C) that cooling water can be supplied by either of the two horizontal motor-driven cooling water pumps, by a safeguards motor-driven pump or by either of two safeguards diesel-driven pumps. Basis 3.3 would also be revised to include the 19,000 gallon minimum fuel supply and to clarify that the 19,000 gallon requirement is included in the 70,000 gallon total onsite requirement of TS Section 3.7.A.5 for Unit 1.

Evaluation:

The new TS Section 3.3.D.1.c would reflect the existing TS requirement for two cooling water headers to be OPERABLE. This is not a new requirement since TS Section 3.3.D.2.c currently provides the limiting condition for operation (LCO) with one of the two required cooling water headers inoperable.

Technical Specification Section 3.3.D.1.d would reflect the requirement for a minimum fuel supply of 19,000 gallons for diesel-driven cooling water pumps. Existing TS include this minimum fuel supply as part of the 70,000 gallon total required by TS Section 3.7.A.5 for Unit 1. Based on the other TS changes proposed in this amendment application, it is necessary to clarify TS Section 3.3.D. This is not a new requirement but is a clarification of the existing TS requirement.

Revised TS Section 3.3.D.2.a reflects a LCO when two of the five cooling water pumps are inoperable. The revised TS allows two of the five cooling water pumps to be inoperable for 7 days, whether the pump is a safeguards pump or a non-safeguards pump.

Technical Specification Section 3.3.D.2.a is being revised in TS Section 3.3.D.2.a.(2) to specifically apply to Unit 1 since diesel generators D1 and D2, which require cooling water system flow, are being dedicated to Unit 1. Unit 2 diesel generators D5 and D6 do not require cooling water system support and, therefore, loss of redundancy in the cooling water system does not degrade the Unit 2 onsite emergency AC power system.

The proposed amendment would also revise TS Section 3.3.D.2.a.(2) to clarify that both paths from the transmission grid are to the unit rather than plant 4kV safeguards buses.

Revised TS Section 3.3.D.2.a.(3) acknowledges the more restrictive condition of inoperability (i.e., two safeguards pumps inoperable simultaneously) and restricts this condition of inoperability so that it may not exceed 7 days in any consecutive 30-day period. This revised specification retains this restriction from the current TS Section 3.3.D.2.a. Technical Specification Sections 3.3.D.2.d, e, f, and g would be renumbered as TS Sections 3.3.D.2.c, d, e, and f for editorial reasons.

The proposed changes to TS Section 3.3 and the associated bases have been evaluated by the staff. The staff has concluded that the proposed changes provide appropriate LCO and AOT reflecting the modified cooling water system. These changes will be available to mitigate a design basis event and are acceptable.

2.7.2 Surveillance Test for Automatic Start Capability

Discussion:

The proposed TS change to TS Section 4.5.A.5.a would add a surveillance test requiring a demonstration of automatic start capability of the vertical motor-driven cooling water pump at each refueling outage.

A new TS Section 4.5.B.1.c would require that the vertical motor-driven cooling water pump be operated at quarterly intervals. The specification is written to reflect that an acceptable level of performance shall be that the pump starts and reaches its required developed head and the control board indications and visual observations indicate that the pump is operating properly for at least 15 minutes.

Evaluation:

Upgrading of the vertical motor-driven cooling water pump as a safeguards pump requires that it be subjected to periodic surveillance testing as required by 10 CFR 50.36(c)(3). The proposed surveillance testing is equivalent to that performed for the other safety-related portions of the cooling water system and provides the required level of assurance necessary to ensure equipment operability.

3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Minnesota State Official was notified of the proposed issuance of the amendment. The State Official had no comments.

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and a change to the surveillance requirements. The NRC staff has determined that the amendments involve no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendments involve no significant hazards consideration and there has been no public comment on such finding (57 FR 13134). Accordingly, the amendments meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendments.

5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendments will not be inimical to the common defense and security or to the health and safety of the public.

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