

Mr. Roger O. Anders Director  
Nuclear Energy Engineering  
Northern States Power Company  
414 Nicollet Mall  
Minneapolis, Minnesota 55401

November 25, 1997

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NOS. 1 AND 2 -  
ISSUANCE OF AMENDMENTS RE: TURBINE-DRIVEN AUXILIARY  
FEEDWATER OPERABILITY DURING UNIT STARTUP (TAC NOS. M99722  
AND M99723)

Dear Mr. Anderson:

The Commission has issued the enclosed Amendment No. 134 to Facility Operating License No. DPR-42 and Amendment No. 126 to Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant, Unit Nos. 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TS) in response to your application dated September 26, 1997. Your application is partially responsive to the NRC's October 16, 1997, letter to you concerning TS interpretations for auxiliary feedwater system operability. However, you should continue to pursue an additional application to address the outstanding issues.

The amendments revise TS 3.4.B, "Auxiliary Feedwater System," to provide specific guidance for conducting post-maintenance operational testing of the turbine-driven auxiliary feedwater pump and associated system valves to meet limiting conditions for operation and establish system operability during unit startup. An additional change revises Table TS.3.5.2B to permit, during Mode 2 when the main feedwater pumps are not required to be operated, the bypassing of the auto start feature of the auxiliary feedwater pumps that results from the trip of both main feedwater pumps.

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  
T.J. Kim for:

Beth A. Wetzel, Senior Project Manager  
Project Directorate III-1  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures: 1. Amendment No. 134 to DPR-42  
2. Amendment No. 126 to DPR-60  
3. Safety Evaluation

cc w/encl: See next page

DISTRIBUTION: See attached page



DOCUMENT NAME: G:\WPDOCS\PRAIRIE\PI99722.AMD

\*See previous concurrence.

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DATED: November 25, 1997

AMENDMENT NO.134 TO FACILITY OPERATING LICENSE NO. DPR-42-PRAIRIE ISLAND UNIT 1  
AMENDMENT NO.126 TO FACILITY OPERATING LICENSE NO. DPR-60-PRAIRIE ISLAND UNIT 2

Docket File

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Mr. Roger O. Anderson, Director  
Northern States Power Company

Prairie Island Nuclear Generating  
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5636 Sturgeon Lake Road  
Welch, Minnesota 55089



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**NORTHERN STATES POWER COMPANY**

**DOCKET NO. 50-282**

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NO. 1**

**AMENDMENT TO FACILITY OPERATING LICENSE**

Amendment No. 134  
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 September 26, 1997, 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. 134, 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 issuance, with full implementation within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, appearing to read "Beth A. Wetzel for".

Beth A. Wetzel, Senior Project Manager  
Project Directorate III-1  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: November 25, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 134

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

TS.3.4-2

Table TS.3.5-2B  
(Page 5 of 9)

INSERT

TS.3.4-2

Table TS.3.5-2B  
(Page 5 of 9)

- 3.4.B.1.
  - d. A minimum of 100,000 gallons of water is available in the condensate storage tanks and a backup supply of river water is available through the cooling water system.
  - e. Motor operated valves MV-32242 and MV-32243 (Unit 2 valves MV-32248 and MV-32249) shall have valve position monitor lights OPERABLE and shall be locked in the open position by having the motor control center supply breakers physically locked in the off position.
  - f. Manual valves in the above systems that could (if one is improperly positioned) reduce flow below that assumed for accident analysis shall be locked in the proper position for emergency use. During POWER OPERATION, changes in valve position will be under direct administrative control.
  - g. The condensate supply cross connect valve C-41-2, to the auxiliary feedwater pumps shall be blocked and tagged open. Any changes in position of this valve shall be under direct administrative control.
- 2. During STARTUP OPERATION or POWER OPERATION, any one of the following conditions of inoperability may exist for each unit provided STARTUP OPERATION is discontinued (except as noted in 3.4.B.2.a) until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, place the affected unit (or either unit in the case of a motor driven AFW pump inoperability) in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant system average temperature below 350°F within the following 6 hours.
  - a. A Turbine Driven AFW pump, system valves and piping may be inoperable for 72 hours. STARTUP OPERATION may continue with a Turbine Driven AFW Pump and/or associated system valves inoperable based solely on the In-Service testing requirements of TS section 4.2.A.2 and flow verification having not been met, provided all other requirements for operability are satisfied. The pump and/or associated system valves must be tested and operable prior to exceeding 10% reactor power or 72 hours from increasing RCS temperature above 350°F.
  - b. A motor driven AFW pump, system valves and piping may be inoperable for 72 hours.
  - c. The condensate storage tanks may be inoperable for 48 hours provided the cooling water system is available as a backup supply of water to the auxiliary feedwater pumps.
  - d. The backup supply of river water provided by the cooling water system may be inoperable for 48 hours provided a minimum of 100,000 gallons of water is available in the condensate storage tanks.
  - e. The valve position monitor lights for motor operated valves MV-32242 and MV-32243 (Unit 2 valves MV-32248 and MV-32249) may be inoperable for 72 hours provided the associated valves' positions are verified to be open once each shift.

Table TS.3.5-2B (Page 5 of 9)

## ENGINEERED SAFETY FEATURE ACTUATION TABLE INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
7. AUXILIARY FEEDWATER					
a. Manual	2	1	2	1, 2, 3	26
b. Steam Generator Lo-Low Water Level	3/SG	2/SG in any SG	2/SG in each S G	1, 2, 3	24
c. Undervoltage on 4.16kV Buses 11 and 12 (Unit 2: 21 and 22) (Start Turbine Driven Pump only)	2/bus	1/bus on both buses	2 on one bus	1, 2	29
d. Trip of Both Main Feedwater Pumps					
1. Turbine Driven	2	2	2	1, 2*	26
2. Motor Driven	2	2	2	1, 2*	26
e. Safety Injection	See Functional Unit 1 above for all Safety Injection initiating functions and requirements.				
f. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	30

- \* The Auxiliary Feedwater auto start of the Turbine and Motor Driven AFW pumps caused by the Trip of Both Main Feedwater Pumps maybe bypassed during Startup and Shutdown Operations when the Main Feedwater Pumps are not required to supply feedwater to the Steam Generators.





**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

**NORTHERN STATES POWER COMPANY**

**DOCKET NO. 50-306**

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT NO. 2**

**AMENDMENT TO FACILITY OPERATING LICENSE**

Amendment No. 126  
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 September 26, 1997, 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. 126 , 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 issuance, with full implementation within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Beth A. Wetzel, Senior Project Manager  
Project Directorate III-1  
Division of Reactor Projects - III/IV  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: November 25, 1997

ATTACHMENT TO LICENSE AMENDMENT NO. 126

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

TS.3.4-2

Table TS.3.5-2B  
(Page 5 of 9)

INSERT

TS.3.4-2

Table TS.3.5-2B  
(Page 5 of 9)

- 3.4.B.1. d. A minimum of 100,000 gallons of water is available in the condensate storage tanks and a backup supply of river water is available through the cooling water system.
- e. Motor operated valves MV-32242 and MV-32243 (Unit 2 valves MV-32248 and MV-32249) shall have valve position monitor lights OPERABLE and shall be locked in the open position by having the motor control center supply breakers physically locked in the off position.
- f. Manual valves in the above systems that could (if one is improperly positioned) reduce flow below that assumed for accident analysis shall be locked in the proper position for emergency use. During POWER OPERATION, changes in valve position will be under direct administrative control.
- g. The condensate supply cross connect valve C-41-2, to the auxiliary feedwater pumps shall be blocked and tagged open. Any changes in position of this valve shall be under direct administrative control.
2. During STARTUP OPERATION or POWER OPERATION, any one of the following conditions of inoperability may exist for each unit provided STARTUP OPERATION is discontinued (except as noted in 3.4.B.2.a) until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, place the affected unit (or either unit in the case of a motor driven AFW pump inoperability) in at least HOT SHUTDOWN within the next 6 hours and reduce reactor coolant system average temperature below 350°F within the following 6 hours.
- a. A Turbine Driven AFW pump, system valves and piping may be inoperable for 72 hours. STARTUP OPERATION may continue with a Turbine Driven AFW Pump and/or associated system valves inoperable based solely on the In-Service testing requirements of TS section 4.2.A.2 and flow verification having not been met, provided all other requirements for operability are satisfied. The pump and/or associated system valves must be tested and operable prior to exceeding 10% reactor power or 72 hours from increasing RCS temperature above 350°F.
- b. A motor driven AFW pump, system valves and piping may be inoperable for 72 hours.
- c. The condensate storage tanks may be inoperable for 48 hours provided the cooling water system is available as a backup supply of water to the auxiliary feedwater pumps.
- d. The backup supply of river water provided by the cooling water system may be inoperable for 48 hours provided a minimum of 100,000 gallons of water is available in the condensate storage tanks.
- e. The valve position monitor lights for motor operated valves MV-32242 and MV-32243 (Unit 2 valves MV-32248 and MV-32249) may be inoperable for 72 hours provided the associated valves' positions are verified to be open once each shift.

Table TS.3.5-2B (Page 5 of 9)

ENGINEERED SAFETY FEATURE ACTUATION TABLE INSTRUMENTATION

<u>FUNCTIONAL UNIT</u>	<u>TOTAL NO. OF CHANNELS</u>	<u>CHANNELS TO TRIP</u>	<u>MINIMUM CHANNELS OPERABLE</u>	<u>APPLICABLE MODES</u>	<u>ACTION</u>
7. AUXILIARY FEEDWATER					
a. Manual	2	1	2	1, 2, 3	26
b. Steam Generator Lo-Lo Water Level	3/SG	2/SG in any SG	2/SG in each S G	1, 2, 3	24
c. Undervoltage on 4.16kV Buses 11 and 12 (Unit 2: 21 and 22) (Start Turbine Driven Pump only)	2/bus	1/bus on both buses	2 on one bus	1, 2	29
d. Trip of Both Main Feedwater Pumps					
1. Turbine Driven	2	2	2	1, 2*	26
2. Motor Driven	2	2	2	1, 2*	26
e. Safety Injection	See Functional Unit 1 above for all Safety Injection initiating functions and requirements.				
f. Automatic Actuation Logic and Actuation Relays	2	1	2	1, 2, 3	30

- \* The Auxiliary Feedwater auto start of the Turbine and Motor Driven AFW pumps caused by the Trip of Both Main Feedwater Pumps maybe bypassed during Startup and Shutdown Operations when the Main Feedwater Pumps are not required to supply feedwater to the Steam Generators.



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 134 AND 126 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 September 26, 1997, the 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 (PINGP), Unit Nos. 1 and 2. The proposed amendments would revise TS 3.4.B, "Auxiliary Feedwater System," to provide specific guidance for conducting post-maintenance operational testing of the turbine-driven auxiliary feedwater (TDAFW) pump and associated system valves to meet operability and limiting conditions for operation during unit startup. An additional change is proposed to revise Table TS.3.5.2B to permit during Mode 2 bypassing one of the auto-start features of the auxiliary feedwater (AFW) pumps. The bypassed auto-start feature starts the AFW pumps when both main feedwater pumps trip. During startup (Mode 2), feedwater is initially supplied with the AFW pumps and the main feedwater pumps are not operating. This submittal partially addresses issues raised in the NRC's letter dated October 16, 1997, that reviewed TS interpretations for the AFW and safety injection systems at PINGP.

2.0 EVALUATION

The proposed amendments affect the TDAFW pumps and associated valves that supply water to the steam generators during startup and shutdown when use of the main feedwater pumps could overcool the reactor coolant system (RCS) and during accident scenarios when operation of the main feedwater pumps cannot be assumed and AFW system supplies emergency shutdown cooling. The AFW system at Prairie Island has four AFW pumps, one TDAFW pump associated with each unit, and two shared motor-driven AFW (MDAFW) pumps. The proposed amendments clarify the limiting conditions for operation (LCO) of the TDAFW pumps and the associated flowpaths and allow bypassing of the start signal for the AFW pumps on loss of the main feedwater pumps during the time that the main feedwater pumps are not operating.

Current TS 3.4.B, "Auxiliary Feedwater System," requires that a reactor shall not be made or maintained critical nor shall RCS average temperature exceed 350 °F unless the following conditions are satisfied:

- 1.a. For single unit operation, the turbine-driven pump associated with that reactor plus one motor-driven pump are OPERABLE.
- b. For two-unit operation, all four auxiliary feedwater pumps are OPERABLE.
- c. Valves and piping associated with the above components are operable except that during STARTUP OPERATION necessary changes may be made in motor-operated valve position. All such changes shall be under direct administrative control.

TS 3.4.B.1.e, f, and g ensure that valves in the flowpath are properly aligned for emergency shutdown cooling unless the valves are under direct administrative control.

TS 3.4.B.2 allows any one of five conditions to exist for each unit during STARTUP OPERATION or POWER OPERATION provided STARTUP OPERATION is discontinued until OPERABILITY is restored. If OPERABILITY is not restored within the time specified, the affected unit shall be placed in at least HOT SHUTDOWN within the next 6 hours and RCS average temperature shall be below 350 °F within the following 6 hours. Currently, one of the conditions, TS 3.4.B.2.a, allows 72 hours during which the TDAFW pump, system valves, and piping may be inoperable. However, there is no exception to the required discontinuation of STARTUP OPERATION.

The proposed change would add a parenthetical clarification, "(except as noted in 3.4.B.2.a)," to current TS 3.4.B.2. The proposed change to TS 3.4.B.2.a would allow STARTUP OPERATION to continue with a TDAFW pump and/or associated system valves inoperable based solely on the need to complete the inservice testing requirements of TS 4.2.A.2 and AFW flow verification, i.e., alignment of valves, provided all other requirements for operability are satisfied. The pump and/or associated system valves must be tested and operable prior to exceeding 10% reactor power or 72 hours from the time RCS temperature is increased above 350 °F. The limit of 10% reactor power is the maximum power level that the AFW can supply normal cooling. The 72-hour limit provides a specific duration based on the time when testing can be started, i.e., RCS temperature > 350 °F.

The current limiting conditions for operation do not provide the flexibility during unit startup to perform post-maintenance, surveillance, and inservice testing of the TDAFW pump and associated system flowpaths, i.e., assuring valves are aligned to verify design flowrates. Since sufficient steam pressure is needed to perform testing of the TDAFW pump, plant conditions are not adequate to perform testing before exceeding an RCS temperature of 350 °F. The proposed changes would modify the TS to allow testing the TDAFW pumps and associated system valves without having to terminate STARTUP OPERATION. Sufficient limits are specified for performing the required testing to prove the TDAFW pump and associated system valves are OPERABLE. The staff finds the proposed changes acceptable.

The amendment request includes a proposed change to Table TS.3.5-2B, Item 7, "Auxiliary Feedwater," subitem d, "Trip of Both Main Feedwater Pumps." During Modes 1 and 2, the current TS requires the actuation instrumentation that starts the TDAFW and MDAFW pumps when both main feedwater pumps trip to be OPERABLE. The proposed change to Item 7.d adds an asterisk to Mode 2 that allows the AFW pump auto-start actuation instrumentation to

be bypassed during startup and shutdown operations when the main feedwater pumps are not required to supply feedwater to the steam generators. As discussed in the NRC's October 16, 1997 letter to NSP, without the proposed change, compliance with the current TS would not allow placing an AFW pump selector switch in the shutdown-auto or manual positions. The staff agrees that use of the AFW system during startup and shutdown to avoid main feedwater pump damage is required at PINGP. Therefore, the proposed changes are acceptable.

### 3.0 STATE CONSULTATION

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

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to use of a facility component located within the restricted area as defined in 10 CFR Part 20. 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 (62 FR 54874). Accordingly, the amendments meet 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.

Principal Contributors:      W. LeFave  
   R. Giardina  
   L. Gundrum

Date: November 25, 1997