



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

May 9, 2013

Mr. James E. Lynch  
Site Vice President  
Northern States Power Company - Minnesota  
Prairie Island Nuclear Generating Plant  
1717 Wakonade Drive East  
Welch, MN 55089-9642

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS RE: ADDITION OF FUEL OIL LICENSE BASES AND REVISION OF TECHNICAL SPECIFICATIONS (TS) 3.7.8, "COOLING WATER SYSTEM" AND TS 3.8.3, "DIESEL FUEL OIL" (TAC NOS. ME6849 AND ME6850)

Dear Mr. Lynch:

The U.S. Nuclear Regulatory Commission has issued the enclosed Amendment No. 207 to Renewed Facility Operating License No. DPR-42 and Amendment No. 194 to Renewed Facility Operating License No. DPR-60 for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated August 11, 2011, as supplemented by letters dated February 21, 2012, July 9, 2012, October 4, 2012, February 8, 2013, and April 30, 2013.

The amendments revise the PINGP licensing basis to address plant capability related to the diesel fuel oil supplies during a design basis accident with a loss of offsite power and a single failure. The amendments also revise the TS fuel oil storage volume requirements to reflect the new licensing basis, resolve non-conservative emergency diesel generator fuel oil supply volumes, incorporate portions of TS Task Force Traveler 501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control," and make other administrative changes to the TS.

J. E. Lynch

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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,

A handwritten signature in black ink, appearing to read "Thomas J. Wengert". The signature is fluid and cursive, with a large, sweeping initial "T".

Thomas J. Wengert, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures:

1. Amendment No. 207 to DPR-42
2. Amendment No. 194 to DPR-60
3. Safety Evaluation

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

NORTHERN STATES POWER COMPANY - MINNESOTA

DOCKET NO. 50-282

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 1

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 207  
License No. DPR-42

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Northern States Power Company, a Minnesota Corporation (NSPM, the licensee), dated August 11, 2011, as supplemented by letters dated February 21, 2012, July 9, 2012, October 4, 2012, February 8, 2013, and April 30, 2013, 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 Renewed 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. 207, are hereby incorporated in the renewed operating license. NSPM shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert D. Carlson, Chief  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility Operating  
License and Technical Specifications

Date of Issuance: May 9, 2013



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

NORTHERN STATES POWER COMPANY - MINNESOTA

DOCKET NO. 50-306

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNIT 2

AMENDMENT TO RENEWED FACILITY OPERATING LICENSE

Amendment No. 194  
License No. DPR-60

1. The U.S. Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by Northern States Power Company, a Minnesota Corporation (NSPM, the licensee), dated August 11, 2011, as supplemented by letters dated February 21, 2012, July 9, 2012, October 4, 2012, February 8, 2013, and April 30, 2013, 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 Renewed 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. 194, are hereby incorporated in the renewed operating license. NSPM shall operate the facility in accordance with the Technical Specifications.

3. This license amendment is effective as of the date of its issuance and shall be implemented within 90 days.

FOR THE NUCLEAR REGULATORY COMMISSION



Robert D. Carlson, Chief  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Attachment:  
Changes to the Renewed Facility Operating  
License and Technical Specifications

Date of Issuance: May 9, 2013

ATTACHMENT TO LICENSE AMENDMENT NOS. 207 AND 194

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

DOCKET NOS. 50-282 AND 50-306

Replace the following pages of the Renewed Facility Operating License Nos. DPR-42 and DPR-60 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the area of change.

REMOVE

INSERT

DPR-42, License Page 3  
DPR-60, License Page 3

DPR-42, License Page 3  
DPR-60, License Page 3

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

INSERT

3.7.8-4  
3.7.8-5  
3.8.3-1  
3.8.3-2

3.7.8-4  
3.7.8-5  
3.8.3-1  
3.8.3-2

- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, NSPM to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility;
- (6) Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to transfer byproduct materials from other job sites owned by NSPM for the purpose of volume reduction and decontamination.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

NSPM is authorized to operate the facility at steady state reactor core power levels not in excess of 1677 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 207, are hereby incorporated in the renewed operating license. NSPM shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

NSPM shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains



- (3) Pursuant to the Act and 10 CFR Parts 30, 40 and 70, NSPM to receive, possess, and use at any time any byproduct, source and special nuclear material as sealed neutron sources for reactor startup, sealed sources for reactor instrumentation and radiation monitoring equipment calibration, and as fission detectors in amounts as required;
- (4) Pursuant to the Act and 10 CFR Parts 30, 40, and 70, NSPM to receive, possess and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument and equipment calibration or associated with radioactive apparatus or components;
- (5) Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to possess but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility;
- (6) Pursuant to the Act and 10 CFR Parts 30 and 70, NSPM to transfer byproduct materials from other job sites owned by NSPM for the purposes of volume reduction and decontamination.

C. This renewed operating license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

NSPM is authorized to operate the facility at steady state reactor core power levels not in excess of 1677 megawatts thermal.

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 194, are hereby incorporated in the renewed operating license. NSPM shall operate the facility in accordance with the Technical Specifications.

(3) Physical Protection

NSPM shall fully implement and maintain in effect all provisions of the Commission-approved physical security, guard training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822) and to the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. -----NOTE----- Separate Condition entry is allowed for each stored diesel driven CL pump fuel oil supply. -----</p> <p>One or both stored diesel driven CL pump fuel oil supply(s) &lt; 7 days and ≥ 6 days.</p>	<p>D.1 Restore fuel oil supply to ≥ 7 days.</p>	<p>48 hours</p> <p><u>AND</u></p> <p>9 days from discovery of failure to meet the LCO</p>
<p>E. -----NOTE----- Separate Condition entry is allowed for each stored diesel driven CL pump fuel oil supply. -----</p> <p>One or both stored diesel driven CL pump fuel oil supply(s) &lt; 6 days.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Condition D not met.</p>	<p>E.1 Declare associated diesel driven CL pump inoperable.</p>	<p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.7.8.1 -----NOTE----- Isolation of CL flow to individual components does not render the CL System inoperable. -----  Verify each CL System manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.</p>	31 days
<p>SR 3.7.8.2 Verify each required diesel driven CL pump starts and assumes load within one minute.</p>	31 days
<p>SR 3.7.8.3 Verify each stored diesel driven CL pump fuel oil supply contains <math>\geq 7</math> day supply.</p>	31 days
<p>SR 3.7.8.4 Verify OPERABILITY of required vertical motor driven CL pump.</p>	92 days
<p>SR 3.7.8.5 Verify each CL System automatic valve required to mitigate accidents that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.</p>	24 months
<p>SR 3.7.8.6 Verify the required diesel driven and required vertical motor driven CL pumps start automatically on an actual or simulated actuation signal.</p>	24 months

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil

LCO 3.8.3 Each stored diesel generator (DG) fuel oil supply shall be within limits.

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

-----NOTE-----  
Separate Condition entry is allowed for each stored DG fuel oil supply.  
-----

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both stored DG fuel oil supply(s) < 7 days and ≥ 6 days.	A.1 Restore fuel oil supply to ≥ 7 days.	48 hours
B. One or more fuel oil tank(s) with stored DG fuel oil properties not within limits.	B.1 Restore fuel oil properties to within limits.	7 days
C. Required Action and associated Completion Time of Condition B not met.	C.1 Isolate the associated fuel oil tank(s).	2 hours

**ACTIONS (continued)**

CONDITION	REQUIRED ACTION	COMPLETION TIME
<p>D. One or both stored DG fuel oil supply(s) &lt; 6 days.</p> <p><u>OR</u></p> <p>Required Action and associated Completion Time of Conditions A or C not met.</p>	<p>-----NOTE-----</p> <p>Enter applicable Conditions and Required Actions of LCO 3.7.8, "CL System" for CL train(s) made inoperable as a result of stored fuel oil properties not within limits.</p> <p>-----</p> <p>D.1 Declare associated DG inoperable.</p>	<p>Immediately</p>

**SURVEILLANCE REQUIREMENTS**

SURVEILLANCE	FREQUENCY
<p>SR 3.8.3.1 Verify each stored DG fuel oil supply contains <math>\geq 7</math> day supply.</p>	<p>31 days</p>
<p>SR 3.8.3.2 Verify fuel oil properties of new and stored fuel oil are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program.</p>	<p>In accordance with the Diesel Fuel Oil Testing Program</p>



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

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 207 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-42

AND AMENDMENT NO. 194 TO RENEWED FACILITY

OPERATING LICENSE NO. DPR-60

NORTHERN STATES POWER COMPANY - MINNESOTA

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

1.0 INTRODUCTION

By application dated August 11, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112240140), as supplemented by letters dated February 21, 2012, July 9, 2012, October 4, 2012, February 8, 2013, and April 30, 2013 (ADAMS Accession Nos. ML12054A057, ML12192A213, ML12279A116, ML13039A332, and ML13121A092, respectively), Northern States Power Company, a Minnesota corporation (the licensee), doing business as Xcel Energy, submitted an application for an amendment to Renewed Facility Operating Licenses DPR-42 and DPR-60 for Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, respectively.

The licensee proposed changes to the PINGP licensing basis to address plant capability related to the diesel fuel oil (DFO) supplies during a design basis accident with a loss of offsite power and a single failure. The proposed technical specification (TS) changes revise fuel oil volume requirements to reflect the addition to the licensing basis, resolve non-conservative emergency diesel generator (EDG) fuel oil supply volumes, incorporate portions of Technical Specification Task Force (TSTF) Traveler 501, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" and make other administrative changes to the TSs.

The supplemental letters dated February 21, 2012, July 9, 2012, October 4, 2012, February 8, 2013, and April 30, 2013, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the Nuclear Regulatory Commission (NRC or the Commission) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on December 13, 2011 (76 FR 77568).

Enclosure

## 2.0 REGULATORY EVALUATION

### 2.1 Regulatory Criteria

Section 1.2 of the PINGP updated safety analysis report (USAR) addresses station design conformance with the NRC General Design Criteria (GDC). The principal design criteria for PINGP were developed considering the seventy GDC for Nuclear Power Plant Construction Permits proposed by the Atomic Energy Commission (AEC) in a proposed rule-making for Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50 that was published in the *Federal Register* on July 11, 1967. The criteria relevant to the proposed license amendment request (LAR) concern the following:

AEC GDC 24, "Emergency Power for Protection Systems," states that in the event of loss of all offsite power, sufficient alternate sources of power shall be provided to permit the required functioning of the protection systems. The facility is supplied with normal, reserve and emergency power to provide for the required functioning of protection systems. In the event of a reactor and turbine trip, emergency power is supplied by two diesel generators per unit, as described in Section 8 of the PINGP USAR. Any one diesel is capable of supplying the emergency power requirements for that unit.

AEC GDC 39, "Emergency Power for Engineered Safety Features (ESF)," states that alternate power systems shall be provided and designed with adequate independency, redundancy, capacity, and testability to permit the functioning required of the ESF. As a minimum, the onsite power system and the offsite power system shall each, independently, provide this capacity assuming a failure of a single active component in each power system. At PINGP, reliability of electric power supply is ensured through two independent connections to the system grid, and a redundant source of emergency power from four diesel generators installed in the facility. Power to the ESF is assured even with the failure of a single active component in each system.

Regulations applicable to the proposed change include 10 CFR 50.36, "Technical Specifications."

Paragraph (c)(2)(ii)(C) of 10 CFR 50.36 states, in part, that a TS limiting condition for operation of a nuclear reactor must be established for each structure, system, or component that is part of the primary success path and which functions or actuates to mitigate a design basis accident or transient that presents a challenge to the integrity of a fission product barrier.

Section 50.36 of 10 CFR requires that TS include items in five specific categories related to station operation. These categories are: (1) safety limits, limiting safety system settings, and limiting control settings; (2) limiting conditions for operation; (3) Surveillance Requirements (SRs); (4) design features; and (5) administrative controls. The proposed changes to TS 3.7.8 and TS 3.8.3 concern the limiting conditions for operation and the SRs.

Revision 1 to TSTF-501 is applicable to the LAR. The Traveler revises TS 3.8.3, "Diesel Fuel Oil, Lube Oil, and Starting Air," by replacing the numerical volume requirements for stored DFO

and lube oil inventory with an equivalent supply based on a capability to support a specified number of days of operation. The Traveler specifies that DFO and lube oil numerical volumes equivalent to a specified number of days of operation will be stated in the TS Bases and controlled under the TS Bases Control Program. This change was incorporated into Revision 4 of NUREG-1431, "Standard Technical Specifications, Westinghouse Plants." Consistent with the guidance of Section 16, "Technical Specifications," of the NRC Standard Review Plan (NUREG-0800), proposed plant-specific TSs satisfy 10 CFR 50.36 and are acceptable if they are consistent with the regulatory guidance of the appropriate standard TSs and present plant-specific values for parameters at the indicated level of detail.

NRC Regulatory Guide (RG) 1.9, "Application and Testing of Safety-Related Diesel Generators in Nuclear Power Plants," Revision 4, dated March 2007, describes a method acceptable to the NRC staff for complying with the Commission's regulations with regard to design and testing of diesel generators.

AEC Safety Guide 9, "Selection of Diesel Generator Set Capacity for Standby Power Supplies," dated March 1971, (subsequently superseded by NRC RG 1.9) was applicable when PINGP Unit 1 received its operating license in 1974. This guide describes an acceptable basis for the selection of diesel generator sets of sufficient capacity and margin to implement GDC 17.

NRC RG 1.137, "Fuel-Oil Systems for Standby Diesel Generators," provides guidance for complying with regulations regarding fuel oil systems and fuel oil quality for standby diesel generators. This RG endorses the calculation methods delineated in American National Standards Institute (ANSI) N195-1976, "Fuel Oil Systems for Standby Diesel-Generators," as acceptable to the NRC staff for complying with the pertinent requirements for the design of fuel oil systems for diesel generators at nuclear power plants.

## 2.2 Plant Design Information

As discussed in the USAR Section 10.3.13, the existing licensing basis for PINGP specifies that, for Unit 1, the minimum fuel oil supply (FOS) volume is sufficient to operate one EDG and one diesel-driven cooling water pump (DDCLP) for 14 days. For Unit 2, the FOS volume capacity is based on two EDGs operating for 7 days or one EDG operating for 14 days. This current FOS basis does not consider the effects of a single failure. The time period of 14 days was selected because it is longer than the time required to replenish FOS from outside sources during the Maximum Probable Flood (MPF), which the USAR identifies as 13 days.

The licensee provided, in part, the following description of the Unit 1 DFO system in Section 3 of the LAR (Reference 7.1):

The Unit 1 fuel oil system receives and stores diesel fuel oil and delivers it to the fuel oil systems of both safety and non-safety related components consisting of four generators, two [DDCLPs], one heating boiler, and a diesel driven fire pump.

...

Six Design Class I fuel oil storage tanks (19,500 nominal, 17,500 available gallons each) supply fuel oil to the two EDG D1/D2 and the two DDCLPs. Each tank is equipped with a transfer pump to pump fuel from the tank to the nominal



capacity 500 gallon day tank of either EDG or either DDCLP. These six Design Class I tanks are interconnected such that any tank can be manually aligned to supply any diesel day tank.

The system's six Design Class I fuel oil storage tanks can be separated mechanically and are separated electrically into two trains of FOS. Mechanical separation of the two trains can be achieved through the configuration and valve line up of the DFO tanks. Each train consists of three Class I safety related fuel oil storage tanks. Two tanks are normally aligned to supply its associated [train's] EDG and the other tank is normally aligned to the associated train's DDCLP. These three tanks are interconnected with safety related quality valving and piping such that any tank can be aligned to supply either the EDG or DDCLP day tanks.

Electrical separation of the two Unit 1 FOS trains is achieved through powering each train's DFO tank transfer pumps from separate Unit 1 instrument buses, panels, transformers, 480V buses and 4kV buses. ...

The licensee provided, in part, the following description of the Unit 2 DFO system in Section 3 of the LAR (Reference 7.1):

The Unit 2 fuel oil system receives and stores diesel fuel oil for the operational needs of EDGs D5/D6. The fuel oil system also provides a means of transferring fuel oil between fuel oil storage tanks and a means of filtering new and transferred oil.

The Unit 2 fuel oil system consists of a non-Design Class I fuel oil receiving tank, four Design Class I fuel oil storage tanks (32,800 nominal, 30,800 available gallons each), four fuel oil transfer pumps, two fuel oil day tanks, one fuel oil recirculating pump, four fuel oil transfer recirculation filters, a receiving tank recirculating filter, and associated piping, valving and instrumentation.

The system can be separated mechanically and is separated electrically into two trains of FOS. Mechanical separation of the two trains can be achieved through the configuration and valve line up of the DFO tanks. Each train consists of two Class I safety related fuel oil storage tanks. These two tanks are interconnected with safety related valving and piping such that either tank can be aligned to supply its associated train's EDG. ...

Electrical separation of the two Unit 2 FOS trains is achieved through powering each train's DFO tank transfer pumps from separate instrument buses, panels, transformers, 480V buses and 4kV buses.

In its February 21, 2012, response to the NRC staff's request for additional information (RAI), the licensee stated that EDGs D1 and D2 supply power to the Unit 1 safeguards buses and transferrable loads, and EDGs D5 and D6 supply power to the Unit 2 safeguards buses and transferrable loads.

### 2.3 Description of the PINGP Electrical Power System

The PINGP USAR, Section 8.1, states that two EDG sets dedicated to each unit are connected to the safeguards buses to supply shutdown power in the event of loss of all other alternating current (AC) auxiliary power. The EDG arrangement provides adequate capacity to supply the ESF for the design-basis accident (DBA) in one unit, assuming the failure of a single component in the system. In the event of a loss-of-coolant accident (LOCA) coincident with a loss of offsite power (LOOP) event, emergency power is available from two EDGs dedicated to each unit.

Two EDGs, D1 and D2, are dedicated to Unit 1 to provide onsite standby power sources for 4 kilovolt (kV) safeguards buses 15 and 16. These EDGs are each rated at 2750 kW continuous (for 8760 hours), 0.8 power factor (PF), 900 revolutions per minute (rpm), 4160 Volt (V), three phase, 60 Hertz (Hz). The 1000-hour rating of each EDG is 3000 kW. The 30-minute rating of each EDG is 3250 kW. The PINGP USAR, Section 8.4, states that the Unit 1 EDGs were sized per AEC Safety Guide 9, Paragraph C-2, which requires the predicted load seen by an EDG not to exceed the smaller of either the 2000-hour rating or 90 percent of the 30-minute rating.

Two DDCLPs are located in redundant cooling water trains that provide cooling water to the Unit 1 EDGs and the following components shared between the two units: auxiliary feedwater pumps, air compressors, component cooling water heat exchangers, containment fan-coil units, and the Auxiliary Building unit coolers. The Cooling Water (CL) system provides cooling to the Unit 1 EDGs via the EDG heat exchangers.

Two EDGs, D5 and D6, are dedicated to Unit 2 to provide onsite standby power sources for 4 kV safeguards buses 25 and 26. Each EDG is composed of two tandem-drive generator sets. The two Unit 2 EDGs are 4 kV, three phase, 5400 kW continuous (8760 hour basis), 0.8 power factor, 1200 rpm, 4160 V, 3-phase, 60 Hz machines. The Unit 2 EDGs have dedicated air-cooled radiator cooling systems and are not dependent on the CL system for cooling.

Fuel oil is supplied to the diesel engines from a dedicated day tank (one per EDG). The day tank fuel oil is normally supplied from external underground storage tanks via fuel oil transfer pumps. In its response to an NRC RAI, the licensee provided calculations for the EDG fuel oil storage requirements (Reference 7.4).

### 2.4 Proposed Changes

In its August 11, 2011, application, the licensee described the proposed changes to the PINGP design bases and the TSs. Attachment 1 of the Enclosure to the LAR provides marked up TS pages reflecting the proposed changes. The licensee's proposed changes are summarized below.

#### 2.4.1 Licensing Bases Change

The licensee is proposing to change the current licensing bases to maintain the EDG and the DDCLP safety functions in the event of a DBA and LOOP with an active single failure. The licensee also requested additional license basis requirements to maintain two trains of EDG FOS, and for the CL system to have two trains of DDCLP FOS.

#### 2.4.2 Cooling Water System Technical Specification Changes

The licensee is proposing a change to TS 3.7.8, "Cooling Water System." The changes include:

- Add a note for Separate Condition entry to allow each train's DDCLP FOS to enter Condition D and Condition E separately.
- Add the preface "One or both" to Condition D to allow for Separate Condition entry.
- Replace the specific FOS gallon requirement with a number of days requirement for condition D.
- Add the preface "One or both" to Condition E to allow for Separate Condition entry.
- Replace the specific FOS gallon requirement with a number of day's requirement for condition E.
- Add "each" and remove the "s" in "pumps" in the surveillance requirement (SR) 3.7.8.3.

#### 2.4.3 Diesel Fuel Oil Technical Specification Changes

The licensee is proposing a change to TS 3.8.3, "Diesel Fuel Oil." The changes include:

- Add a note for Separate Condition entry to allow each train's stored diesel generator FOS to enter conditions separately.
- Replace "The" with "Each" in the limiting condition for operation (LCO).
- Replace "the" with "associated" and replace "DG(s)" with "DG" in the applicability statement.
- Add the preface "One or both" to Condition A to allow for Separate Condition entry.
- Replace the specific FOS gallon requirement with a number of days requirement for condition A.
- Add "properties" to Condition B.
- Remove "tank(s)" and add the "s" to "limits" in Required Action B.1.
- Remove "DG" in Required Action C.1.
- Add the preface "One or both" to Condition D to allow for Separate Condition entry.
- Replace the specific FOS gallon requirement with a number of days requirement for condition D.
- Add "associated" and removed the "s" from "DGs" from Required Action D.1
- Add "each" to SR 3.8.3.1 and replace the specific FOS gallon requirement with a number of days requirement.

### 3.0 TECHNICAL EVALUATION

#### 3.1 Change in License Basis for EDG Fuel Supply

A "single failure" is defined as an occurrence that results in the loss of capability of a component to perform its intended safety functions. Multiple failures resulting from a single occurrence are considered to be a single failure. Fluid and electric systems are considered to be designed against an assumed single failure if neither: (1) a single failure of any active component (assuming passive components function properly), nor (2) a single failure of a passive component (assuming active components function properly), results in a loss of the capability of

the system to perform its safety functions. The licensee has identified where the current TS does not meet the intent of AEC GDC 39 in that it does not ensure adequate independence and redundancy to maintain the EDG and DDCLP safety function with an active single failure during a LOOP and DBA. Section 2.2 of the LAR describes single failure vulnerabilities identified between February 2010, and December 2010.

The current PINGP TS LCO 3.8.3 requires maintenance of a FOS inventory sufficient to operate one Unit 1 EDG and one Unit 2 EDG for 14 days. Similarly, PINGP TS LCO 3.7.8 requires maintenance of a FOS inventory sufficient to operate one DDCLP for 14 days. These requirements do not take into consideration an active single failure. The current TS LCOs are not derived from the length of time to mitigate a DBA, but from the length of the MPF. The existing TSs would allow distribution of fuel among the available storage tanks in configurations where a single failure of a power supply to certain fuel oil transfer pumps would reduce the available amount of fuel oil below the volume necessary to support mitigation of a design basis accident over the 7-day operating period discussed in RG 1.137. The licensee proposed changes to the TS to meet the intent of AEC GDC 39 by requiring that adequate fuel oil inventory be maintained in each of the separated fuel oil subsystems to support operation of the associated EDG or DDCLP for seven days.

Additionally, during a PINGP Component Design Basis Inspection (CDBI) it was identified that if a Unit 1 EDG operates at its upper TS frequency the EDG load is increased and the DFO consumption rate is increased. The licensee has revised the Unit 1 FOS storage capacity calculation and proposes to incorporate portions of TSTF-501.

In its February 8, 2013, letter, the licensee clarified that the proposed changes to the TS will require the Unit 1 DFO storage system to have two trains of FOS sufficient to operate each Unit 1 EDG and each DDCLP for seven days and for the Unit 2 DFO storage system to have two trains of FOS sufficient to operate each Unit 2 EDG for seven days. This will ensure that, in the event of a DBA coupled with a single failure, at least one EDG at each unit and one DDCLP at Unit 1 will be available to support plant safe shutdown.

The 14-day fuel oil supply requirement for a MPF will be retained in the USAR. This requirement is still satisfied through the respective cross tie capability among the tanks in each unit. Any combination of the six storage tanks for Unit 1 and four storage tanks for Unit 2 can be used to meet the 14-day storage capacity requirement for MPF.

The licensee states that no physical changes to the plant are proposed. Since no identified single failure would affect both fuel oil subsystems, the revised requirements would assure adequate fuel oil inventory considering the effects of a single active failure. Therefore, the proposed addition to the FOS design basis is acceptable because it is consistent with the PINGP AEC GDC 39 requirement for the onsite power system to support required ESF functions assuming a failure of a single active component.

### 3.2 Technical Specification Changes

The licensee is proposing to revise TS 3.7.8, TS SR 3.7.8.3, TS 3.8.3, and TS SR 3.8.3.1. The changes would establish a requirement for each fuel oil subsystem supporting a DDCLP or required EDG to contain a 7-day fuel oil supply, while permitting separate condition entry for

each subsystem. In addition to the above licensing basis change, the licensee also requests the application of TSTF-501, Revision 1, which relocates the specific minimum volumetric numeric value (gallons) of the stored fuel requirement from the TSs to the TS Bases, where they are subject to the TS Bases Control Program. The TS volumetric value is replaced by the minimum operating time (days). The proposed changes to TS 3.8.3, "Diesel Fuel Oil" and SR 3.8.3.1 are consistent with TSTF-501.

The replacement of the TS minimum fuel oil volume with the minimum required operating time in days that is included in TSTF-501 is based on ANSI N195-1976, which states that onsite fuel oil storage shall be sufficient to operate the minimum number of diesel generators following the limiting design-basis accident for either seven days or the time required to replenish the fuel oil from sources outside the plant site following any limiting design basis accident without interrupting the operation of the diesel, whichever is longer. The DFO consumption calculation addresses the fuel quantity needed; the acceptability of the methodology is addressed in Section 3.3 of this safety evaluation (SE).

Section 2.2 of this SE provides a description of the Unit 1 and Unit 2 DFO systems. Two mechanically and electrically redundant and independent subsystems each have the capacity to store more than seven days of supply of fuel oil for the required diesel generators. The proposed separate entry condition for each diesel generator fuel oil subsystem is consistent with Revision 4 of NUREG 1431 because the EDG and the associated fuel oil subsystem are sufficiently independent. The proposed TS changes provide the wording consistent with NUREG 1431, Revision 4.

The proposed TS changes require each stored diesel generator fuel oil supply to be sufficient for seven days of operation and have fuel oil properties within specified limits. The applicability will be changed to apply when the associated EDG is required to be Operable. Instead of specifying the required number of gallons in the TS Condition for each fuel oil supply, the TS Conditions will specify the required number of days that each fuel oil subsystem must support. The required volume of fuel oil to support the 7-day operation requirement will be determined consistent with the methodology evaluated in the following section of this SE. This TS structure is consistent with TSTF-501 and NUREG 1431, Revision 4 and, therefore, is acceptable.

### 3.3 Evaluation of Licensee's Methodology for Calculation of Fuel Oil Consumption

The existing licensing basis for PINGP provides the minimum FOS volume required to operate one EDG and one DDCLP for 14-days, as discussed in USAR Section 10.3. This current FOS basis does not consider the effects of a single failure. In its LAR, the licensee stated that the time period of 14 days was selected because it is longer than the time required to replenish the FOS from outside sources during the MPF, which the USAR identifies as 13 days.

The proposed changes to the licensing basis address the single failure criteria for the FOS during a DBA with a LOOP. The proposed TS changes revise current requirements to reflect the addition to the licensing basis, resolve non-conservative EDG and DDCLP fuel oil supply volumes, incorporate changes consistent with TSTF 501, Revision 1, and make other administrative changes to the TS. The proposed changes do not impact the current licensing basis requirement to have sufficient fuel oil for one DDCLP for Unit 1 and one EDG for each unit to operate for 14 days in the event of a flood.

In its February 8, 2013, RAI response, the licensee clarified that the proposed additional licensing basis changes to TS 3.7.8 and TS 3.8.3 will ensure that the Unit 1 DFO storage system will have redundant trains of FOS sufficient to operate each Unit 1 EDG and one DDCLP for seven days and for the Unit 2 DFO storage system to have two trains of FOS sufficient to operate each Unit 2 EDG for a minimum of seven days. The 7-day period is consistent with recommendations of RG 1.137.

In response to the NRC staff's RAI, the licensee provided clarifications on the evaluation methods used to calculate the FOS requirements, flow paths, and components, and the testing considerations to satisfy the existing and proposed licensing basis. Specifically, in its October 4, 2012, response to the staff's RAI question, the licensee included the following details:

- The calculated seven-day fuel oil consumption volume for the Unit 1 FOS is approximately 38,940 gallons for each train, of which approximately 29,100 gallons are for the EDG.
- The calculation uses the time-dependent method prescribed in ANSI N195-1976 and includes a 10 percent margin and fuel oil volume required for periodic testing of the EDG and the DDCLP.
- A bounding load profile considered 2750 kW for the first eight-hours and 1700 kW for the remainder of the seven-day period.
- The licensee also stated that the load and loading profile are based on the worst case postulated accident condition loads and, by using this profile for the eight hour timeframe, all DBA scenarios for peak loading and time to reduce the loading are enveloped.

In its February 21, 2012, RAI response, the licensee stated that significant nonsafety-related loads that may be powered from the EDGs, such as air compressors, charging pumps, and spent fuel pool cooling pumps, are included in the loading calculation. For calculating the fuel oil requirements, the licensee used fuel oil consumption rates based on factory and pre-operational testing, and verified by observation of actual consumption during periodic testing. The licensee included margin to allow for power losses in the electrical distribution system and EDG frequency variations.

A similar methodology for the Unit 2 EDGs used a bounding load profile of 3900 kW for the first eight hours and 2700 kW for the balance of the 7-day period. The fuel oil requirement was calculated to be approximately 41,430 gallons for each train.

Consistent with TSTF-501, Revision 1, the licensee plans to relocate the FOS numerical volume requirements from the TS to the TS Bases so that they may be modified under licensee control in accordance with the TS Bases Control Program.

The NRC staff finds that the methodology used to calculate the fuel oil storage requirements, and the relocation of the fuel oil storage volume numerical values to the TS Bases is consistent with TSTF-501 and, therefore, acceptable.

### 3.4 Evaluation of Licensee's Dedication of Fuel Oil Supply Subsystems

The LAR stated that six Design Class I fuel oil storage tanks supply fuel oil to the two Unit 1 EDGs (D1 and D2) and the two DDCLPs. Each tank is equipped with a fuel oil transfer pump to pump fuel from the tank to the nominal capacity 500 gallon day tank of either EDG or either DDCLP. The six storage tanks are interconnected such that any tank can be manually aligned to supply any diesel day tank and any combination of the six tanks can be used to meet the 14-day storage capacity requirement for a probable maximum flood. Based on the cross-tie capability, the licensee had originally proposed to use three tanks for each train of Unit 1 EDG and DDCLP combination to store the required fuel oil volume.

However, in its February 8, 2013, RAI response concerning TS SR 3.8.1.5, which requires monthly verification of capability of the fuel oil transfer system to transfer fuel oil from the storage tank to the day tank, the licensee stated that two Design Class I storage tanks will be dedicated to each Unit 1 EDG and that one Design Class I storage tank in each train will be dedicated to one DDCLP. This configuration will be used to uniquely meet the TS 3.8.3 and TS 3.7.8 requirements for the EDGs and DDCLPs. Therefore, the licensee stated that the cross-tie capability between EDG fuel oil storage tanks, and DDCLP fuel oil storage tanks in the same train, will not be credited for satisfying TS requirements for each EDG or DDCLP.

The licensee stated that the storage tank cross-tie capability will be tested every refueling cycle to meet the 14-day storage requirement for the MPF. The licensee also stated that the design minimum volume of EDG fuel oil is 70,000 gallons and that this volume is also adequate to supply one DDCLP and one EDG for greater than 14 days. If a flood stage greater than 691.5 feet above mean sea level is forecast, the Class I storage tanks would be filled to the maximum 6-tank combined capacity of 105,000 gallons.

Unit 2 has dedicated fuel oil storage tanks for each EDG to store the required amount of fuel oil to meet the 7-day fuel oil requirement. The cross-tie between the tanks will be used to demonstrate the 14-day fuel oil supply requirement.

The flow path integrity for the 14-day operation (required during the MPF) will be verified through testing performed every refueling cycle. The flow path integrity for the DBA requirements will be verified every 31 days, as specified in TS SR 3.8.1.5.

In its LAR, the licensee stated that the 14-day FOS requirements for each unit will be maintained as part of the licensing basis and documented in the PINGP USAR. In its February 8, 2013, RAI response, the licensee further stated that the 14-day flow path integrity verification and the refueling cycle frequency will also be documented in the USAR.

The NRC staff finds that the proposed methodologies to maintain separate, dedicated storage tanks for the EDG fuel oil requirements, and dedicated storage tanks for the DDCLPs on Unit 1, to validate the operability of the flow paths at the proposed intervals, and to implement the defense-in-depth measures to increase the onsite capacity during predicted floods, satisfy AEC GDC 39 and, therefore, are acceptable.

### 3.5 Summary

The NRC staff has reviewed the proposed PINGP licensing basis and TS changes and has determined that the changes are acceptable. The licensing basis change involves the addition of a licensing basis element consistent with the PINGP principal design criterion developed to satisfy the intent of AEC GDC 39, while also maintaining the existing licensing basis element for flood mitigation capability. Since the licensing basis change conforms to the plant design criteria and does not reduce required capability, the change is acceptable. The TS change involves a change to the TS content consistent with the added licensing basis element and a change to the TS structure that is compliant with 10 CFR 50.36 and consistent with TSTF-501, Revision 1, and the most recent revision of the applicable standard TSs. In addition, the proposed changes meet the intent of the single failure criterion, and the performance capabilities of the onsite power sources are preserved. For these reasons, the NRC staff finds the proposed licensing basis and TS changes to be acceptable.

### 4.0 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.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change the requirements with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 or change the SRs. 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 (76 FR 77568; December 13, 2011). 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.

### 6.0 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) there is reasonable assurance that 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.



7.0 REFERENCES

- 7.1 License Amendment Request (LAR) to Add Diesel Fuel Oil License Bases and Revise Technical Specifications (TS) 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil" dated August 11, 2011 (ADAMS Accession No. ML112240140)
- 7.2 Supplement to License Amendment Request (LAR) to Add Diesel Fuel Oil License Bases and Revise Technical Specifications (TS) 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil" dated February 21, 2012 (ADAMS Accession No. ML12054A057)
- 7.3 Supplement to License Amendment Request (LAR) to Add Diesel Fuel Oil License Bases and Revise Technical Specifications (TS) 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil" dated July 9, 2012, (ADAMS Accession No. ML12192A213)
- 7.4 Supplement to License Amendment Request (LAR) to Add Diesel Fuel Oil License Bases and Revise Technical Specifications (TS) 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil" dated October 4, 2012 (ADAMS Accession No. ML12279A116)
- 7.5 Supplement to License Amendment Request (LAR) to Add Diesel Fuel Oil License Bases and Revise Technical Specifications (TS) 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil" dated February 8, 2013 (ADAMS Accession No. ML13039A332)

Principal Contributors: O. Hopkins  
G. Matharu

Date of issuance: May 9, 2013

J. E. Lynch

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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,

**/RA/**

Thomas J. Wengert, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket Nos. 50-282 and 50-306

Enclosures:

1. Amendment No. 207 to DPR-42
2. Amendment No. 194 to DPR-60
3. Safety Evaluation

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