



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

January 19, 2012

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

**SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2 -
REQUEST FOR ADDITIONAL INFORMATION RELATED TO LICENSE
AMENDMENT REQUEST TO ADD DIESEL FUEL OIL LICENSE BASES AND
REVISE TECHNICAL SPECIFICATIONS 3.7.8 AND 3.8.3
(TAC NOS. ME6849 AND ME6850)**

Dear Mr. Schimmel:

By letter dated August 11, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112240140), Northern States Power Company, a Minnesota corporation (NSPM, the licensee), doing business as Xcel Energy, requested approval from the Nuclear Regulatory Commission (NRC) for additional diesel fuel oil license bases and amendments to Technical Specifications 3.7.8, "Cooling Water (CL) System" and 3.8.3, "Diesel Fuel Oil," for the Prairie Island Nuclear Generating Plant, Units 1 and 2.

The NRC staff is reviewing your submittal and has determined that additional information is required to complete the review. The specific information requested is addressed in the enclosure to this letter. During a discussion with your staff on January 6, 2012, it was agreed that you would provide a response to this request by February 27, 2012.

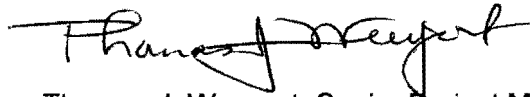
The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

M. Schimmel

- 2 -

If circumstances result in the need to revise the requested response date, please contact me at (301) 415-4037.

Sincerely,

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

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

Enclosure:
Request for Additional Information

cc w/encl: Distribution via ListServ

REQUEST FOR ADDITIONAL INFORMATION (RAI)

PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

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Component Performance and Testing Branch (EPTB) RAIs

RAI EPTB-1

On Page 20 of the license amendment request (LAR), in the section titled "Regulatory Guide (RG) 1.137, "Fuel-Oil Systems for Standby Diesel Generators," it is stated that NSPM uses American National Standards Institute (ANSI) N195-1976 methodology in determining emergency diesel generator (EDG) fuel oil consumption rates. ANSI N195-1976 does not provide methodology to determine EDG fuel oil consumption rates.

- a) Please provide the methodology that was used in determining EDG fuel consumption rates, and provide information as to how ANSI N195-1976 was used in the design of the fuel oil system.
- b) If the calculation uses a load dependent method, provide a detailed discussion on how the machine efficiencies were evaluated and validated for the varying load conditions delineated in Updated Safety Analysis Report (USAR) Tables 8.4-1 and 8.4-2.

RAI EPTB-2

Please confirm that the conservative method in ANSI N195-1976 was used to calculate the required fuel oil storage capacity. Also, confirm that the fuel oil storage capacity contains an explicit allowance for fuel consumption required by periodic testing, as required by ANSI N195-1976.

RAI EPTB-3

It is stated on Page 10 of the LAR that, "The 14 day fuel oil supply (FOS) requirement was included in the original TS issued and thus has been the license basis for the FOS volume throughout the operation of the plant. The basis of the 14 day supply is derived from [Final Safety Analysis Report (FSAR)] Section 2.7, "Hydrology", sub-section 2.7.3 which states: "It was estimated that the flood stage would remain above elevation 695 feet [mean sea level (msl)] for

Enclosure

approximately 13 days.” The period of 14 days bounds the need to supply power for the 13 day duration of the maximum probable flood, after which the FOS can be replenished.”

Please explain how the 14-day FOS volume requirement is derived from the flood stage described in FSAR Section 2.7.

RAI EPTB-4

Please provide the acceptable range of American Petroleum Institute (API) gravity for fuel oil shipments that you receive for the FOS. What is the API gravity that is used in the fuel oil storage volume calculation?

RAI EPTB-5

It is stated on Page 17 of the LAR that, “The diesel fuel oil (DFO) program also requires the following quarterly samples of copper corrosion, flash point, cloud point, water and sediment, ash, distillation recovery, end point recovery, saybolt viscosity, gravity (API), sulfur, and [cetane] index for the Unit 2 FOS.” Please note if any of these requirements are applicable to the Unit 1 FOS.

RAI EPTB-6

Reference 7, on page 25 of the LAR, does not provide the revision number of RG 1.137. Please identify the revision number of this RG that is used for this LAR.

RAI EPTB-7

Please discuss whether or not PINGP is currently using Ultra Low Sulfur Diesel (ULSD) fuel.

RAI EPTB-8

Are the FOS values that are currently in the TSs and the diesel generator manufacturer’s fuel consumption values based on ULSD fuel? If not, what type of fuel are they based on?

Electrical Engineering Branch (EEEE) RAIs

RAI EEEB-1

The LAR states that six Design Class I fuel oil storage tanks supply fuel oil to the two Unit 1 EDGs (D1/D2) and the two diesel driven cooling water pumps (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. The six 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. Please provide the following information:

- a) A flow diagram depicting the interties between the tanks and EDGs D1/D2 and the two DDCLPs, including valves that are required to operate for aligning the tanks. Identify the normal alignment required to satisfy TS requirements.
- b) Identify tanks and components that may be unavailable during routine and major maintenance activities and associated limiting conditions for operation (LCOs) that are applicable during the maintenance activities.
- c) Provide a detailed discussion on the power sources for each of the components required to align the fuel oil system for 14 day operation.
- d) Identify and provide a detailed discussion on the procedures that are used to validate each of the paths required to transfer fuel for 14 day operation of the EDGs and the DDCLPs.

RAI EEEB-2

The current TS SR 3.8.3.1 has the following requirement: Unit 1 \geq 42,000 gallons and Unit 2 \geq 75,000 gallons of fuel oil. Provide the original calculation that supports the volume requirement and establishes the basis for this volume, including details on loads (rating, duration of operation, etc.).

RAI EEEB-3

The LAR states that the FOS volume equivalent to 14 days and the EDG and DDCLP consumption rates were calculated using the EDG loading as stated in USAR Revision 31, Tables 8.4-1 and 8.4-2. These Tables are entitled "EMERGENCY DIESEL GENERATOR LOADING DURING UNIT 1 (2) LOCA/DBA COINCIDENT WITH LOOP UNIT 1 (2) (TRAIN B (A))" (emphasis added) and provide loading criteria for 14 day operation of the EDGs, indicating that PINGP was licensed for a 14 day fuel oil requirement for LOCA/DBA coincident with LOOP. The LAR is proposing to replace the current TS requirement to maintain a 14 day FOS with the requirement to maintain a 7 day FOS for loss of coolant accident (LOCA)/design basis accident (DBA) mitigation.

- a) Explain the differences between the USAR basis and the LAR basis.
- b) Explain why the single failure criteria, as identified in Atomic Energy Commission (AEC) General Design Criteria (GDC) 21 "Single Failure Definition" and GDC 39 "Emergency Power for Engineered Safety Features" are not applicable to the licensing basis, as implied by the USAR Tables.

RAI EEEB-4

USAR Tables 8.4-1 and 8.4-2 indicate that the load for Unit 1 Train B EDG decreases from 2447 kilowatts (kW) to 1525 kW within one hour and the Unit 2 Train A EDG load decreases from 3720 kW to 2509 kW within one hour. The loading remains steady for one hour to 14 days. Provide the following details:

- a) Excerpts from the accident analyses that support the decrease in loads required to mitigate the consequences of the worst case accident from the EDG loading perspective.
- b) Excerpts from plant procedures that allow plant operators to decrease EDG loading within one hour.

- c) Manual actions that control the addition of desirable non-safety related loads such as air compressors.

RAI EEEB-5

The LAR states that the current TS was found to be non-conservative during the 2007 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 increased consumption rate requires a greater FOS volume to supply the EDG than that specified in TS 3.8.3 Condition A and Condition D. Explain how the change from volume requirements to number of days that the FOS capacity will be available resolves the non-conservatism identified in the 2007 CDBI.

RAI EEEB-6

The LAR discusses the limitations of the current license bases and TS related to single active failure. In the LAR, an example is cited whereby an active failure of bus 111 could result in a FOS of 9,000 gallons for both the DDCLP and the Unit 1 EDG. It is further stated that NSPM has administrative controls in place to protect against this and the other active single failure vulnerabilities discussed in the background section of this LAR. Explain why hardware/structure changes are not required to maintain train separation and to eliminate vulnerabilities associated with single active failures.

Technical Specifications Branch (STSB) RAI

RAI STSB-1

The LAR states that, "The proposed TS changes revise current requirements to reflect the addition to the license bases, resolve non-conservative emergency diesel generator fuel oil supply volumes, **"incorporate portions of Technical Specification Task Force Traveler 501-A, "Relocate Stored Fuel Oil and Lube Oil Volume Values to Licensee Control" and provide administrative changes to the TS"** [Emphasis added]. Please identify all deviations from the referenced TSTF-501 and provide a brief explanation of the reason(s) for the deviation(s).

M. Schimmel

- 2 -

If circumstances result in the need to revise the requested response date, please contact me at (301) 415-4037.

Sincerely,

/RA/

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

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ADAMS Accession Number: ML120060309 * via memo dated 11/30/11

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