



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

August 7, 2012

Mr. James E. Molden
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 FOR SPENT FUEL POOL CRITICALITY CHANGES
(TAC NOS. ME6984 AND ME6985)**

Dear Mr. Molden:

By letter dated August 19, 2011, (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112360231), as supplemented by letter dated May 16, 2012 (ADAMS Accession No. ML12139A198), Northern States Power Company (NSPM, the licensee), a Minnesota corporation, doing business as Xcel Energy, requested approval from the U.S. Nuclear Regulatory Commission (NRC) for amendments to technical specifications (TS) 3.7.17, "Spent Fuel Pool Storage" and TS 4.3.1, "Fuel Storage Criticality," 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. On July 19, 2012, Mr. Glenn Adams of your staff agreed that you would provide a response to this request by September 5, 2012.

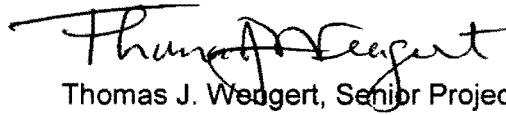
The NRC staff considers that timely responses to requests for additional information help ensure sufficient time is available for staff review and contribute toward the NRC's goal of efficient and effective use of staff resources.

J. Molden

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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 long horizontal stroke at the beginning and a large, stylized "W" for the last name.

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

By letter dated August 19, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML112360231), as supplemented by letter dated May 16, 2012 (ADAMS Accession No. ML12139A198), Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy, requested approval from the U.S. Nuclear Regulatory Commission (NRC) for amendments to technical specifications (TS) 3.7.17, "Spent Fuel Pool Storage" and TS 4.3.1, "Fuel Storage Criticality," for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. The NRC staff has reviewed this request and has determined that the following information is required to complete its review.

This RAI concerns the licensee's May 16, 2012 RAI response (hereafter referred to as "the response").

Reactor Systems Branch (SRXB) RAIs

RAI-SRXB-1

During a June 21, 2012, teleconference, the licensee provided clarifications on the KENO model supporting the gadolinia sensitivity analysis in terms of assumed burnup distribution and axial poison loading.

A review of NUREG/CR-6760 shows that the axial effects were not considered for the gadolinia burnable absorber. NUREG/CR-6760 appears to suggest that a 2-D model may under-predict the integral fuel burnable absorber effects relative to a 3-D model that includes an axial burnup distribution and actual poison loading. To ensure that the no-gadolinia assumption remains valid for the full range of credited burnup, provide a quantitative analysis modeling the effects of axially-distributed burnup and appropriate axial poison loading.

NUREG/CR-6760 also appears to indicate that the spectral hardening due to the presence of strong neutron absorbers may also affect the results. Therefore, include both borated and unborated conditions in the analysis.

RAI-SRXB-2:

The response to RAI-SRXB-2 does not appear to adequately address Array G (3x3 with a rod cluster control assembly). Show that the selected design basis assembly remains limiting for Array G.

Enclosure

RAI-SRXB-3:

The response to RAI-SRXB-3 shows the optimum condition for 4 percent ^{235}U fresh fuel.

- a. What is the basis for 4 percent ^{235}U assumption?
- b. What accounts for the difference in k-effective results between Table 3-1 (12x12 case) and Figure 3-2 at the volume fraction used in the final analysis?

RAI-SRXB-4 (Axial blankets):

Show that neglecting the hollow annular pellets in the blankets is always conservative.

RAI-SRXB-5 (Axial profile):

Provide the analysis results that support the selection of the axial burnup profiles used in the analysis (e.g., k-effective results and corresponding "shape depletion factors").

RAI-SRXB-6 (Operation with control rods):

In Figures 6-1 through 6-10, what are the differences in assumptions between the "Design basis" cases and the "Rodded" cases?

RAI-SRXB-7 (Criticality code validation fission product bias):

The specifics of the referenced Turkey Point analysis differ from the PINGP analysis. Show that the approach used in the PINGP analysis is conservative relative to the method described in the interim staff guidance.

J. Molden

- 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

Docket Nos. 50-282 and 50-306

Enclosure:
Request for Additional Information

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ADAMS Accession Number: ML12215A252

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