Xcel Energy®

Prairie Island Nuclear Generating Plant
1717 Wakonade Drive East
Welch, MN 55089

July 17, 2013

L-PI-13-067
10 CFR 50.90

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Prairie Island Nuclear Generating Plant, Units 1 and 2
Dockets 50-282 and 50-306
Renewed License Nos. DPR-42 and DPR-60

Response to Request for Additional Information (RAI) Associated with Spent Fuel Pool Criticality Changes (TAC Nos. ME6984 and ME6985)

References:

1. Mark A Schimmel (NSPM) letter to Document Control Desk (NRC), License Amendment Request for Spent Fuel Pool Criticality Changes, dated August 19, 2011 (ADAMS Accession ML11236A133).

2. Thomas J Wengert (NRC) letter to James E Lynch (NSPM), 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), dated January 22, 2013 (ADAMS Accession No. ML13011A316).

3. James E Lynch (NSPM) letter to Document Control Desk (NRC), Response to Request for Additional Information (RAI) Associated with Spent Fuel Pool Criticality Changes (TAC Nos. ME6984 and ME6985), dated February 8, 2013 (ADAMS Accession No. ML13039A306).

4. Thomas Wengert (NRC) email to Glenn Adams (NSPM), Prairie Island NGP - SFPC LAR Draft RAI (TAC Nos. ME6984 and ME6985), dated June 25, 2013.

In a letter to the U.S. Nuclear Regulatory Commission (NRC) dated August 19, 2011 (Reference 1), the Northern States Power Company, a Minnesota corporation doing business as Xcel Energy (hereafter “NSPM”), requested an amendment to the Technical Specifications (TS) regarding Spent Fuel Pool (SFP) criticality for the Prairie Island Nuclear Generating Plant (PINGP).

To complete their review, the NRC staff requested additional information in Reference 2. In Reference 3, NSPM replied to Reference 2 and included a revision to the

commitment regarding treatment of fuel assemblies exposed to rodded operation. Subsequently in Reference 4, the NRC staff requested further clarification of the subject commitment. Clarification to that commitment is provided below as well as in the Enclosure.

NSPM submits this information in accordance with the provisions of 10 CFR 50.90.

The supplemental information provided in this letter does not impact the conclusions of the Determination of No Significant Hazards Consideration and Environmental Assessment presented in the August 19, 2011 submittal.

In accordance with 10 CFR 50.91, NSPM is notifying the State of Minnesota of this response to RAIs by transmitting a copy of this letter to the designated State Official.

Summary of Commitments

This letter revises commitment number 2 listed in Enclosure 7 of the original LAR, which was subsequently revised in the Reference 2 letter. The revised commitment reads as follows:

2. In conjunction with implementation of the proposed TS, procedures will be revised to require an assessment of a fuel assembly's exposure to rodded power operation in the core prior to moving that fuel assembly into the spent fuel pool (SFP) storage racks. If an assembly experiences more than 100 megawatt days per metric ton uranium (MWd/MTU) of core average full-power rodded operation exposure, this exposure experienced while rodded will not be credited for determining the coefficients used to categorize fuel assemblies as described in WCAP-17400-P.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on July 17, 2013.

James E. Lynch
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure

cc: Regional Administrator, Region III, USNRC
Project Manager, Prairie Island Nuclear Generating Plant, USNRC
Resident Inspector, Prairie Island Nuclear Generating Plant, USNRC
State of Minnesota (without enclosure)

ENCLOSURE

Spent Fuel Pool Criticality Analysis
Response to Request for Addition Information (RAI)

By letter dated August 19, 2011 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML11236A133), as supplemented by letters dated May 16, 2012 (ML12139A198), September 4, 2012 (ML12249A069), and February 8, 2013, (ML13039A306) Northern States Power Company, a Minnesota corporation doing business as Xcel Energy (the licensee), requested changes to the Technical Specifications (TS) for Prairie Island Nuclear Generating Plant, Units 1 and 2 (PINGP). Approval of this license amendment request (LAR) will correct non-conservatisms in the spent fuel pool (SFP) nuclear criticality safety (NCS) analysis of record and the associated TS.

To complete their review, the NRC staff requested additional information by electronic mail dated June 25, 2013

For clarity, the NRC RAI information is provided below in italics font and the NSPM response is provided in plain font.

The February 8, 2013, letter contained the following revised commitment:

> *In conjunction with implementation of the proposed TS, procedures will be revised to require an assessment of a fuel assembly's exposure to rodded power operation in the core prior to moving that fuel assembly into the spent fuel pool (SFP) storage racks. If an assembly experiences more than 100 megawatt days per metric ton uranium (MWd/MTU) of core average full-power rodded operation exposure in the cycle immediately prior to discharge to the spent fuel pool, this exposure experienced while rodded will not be credited for determining the coefficients used to categorize fuel assemblies as described in WCAP-17400-P. In addition if an assembly experiences more than 1 gigawatt day per metric ton uranium (GWd/MTU) of core average rodded operation lifetime exposure, the assembly shall be either treated as Fuel Category 1 or evaluated to determine which Fuel Category is appropriate for safe storage of the assembly.*

The second sentence of the commitment would require a fuel assembly that receives between 100 megawatt days per metric ton uranium (MWd/MTU) and 1 gigawatt day per metric ton uranium (GWd/MTU) of rodded operation during a cycle (aka cycle N) to have that portion of its depletion discounted when determining which fuel categories it satisfies for storage. However, that burnup would not have to be discounted for storage determinations following subsequent cycles of operation (i.e., cycles N+1 or N+2). NUREG-6759 indicates that once a positive reactivity effect occurs due to rodded operation, it probably does not ever burnout to zero; therefore any penalty that was incurred would have to follow that fuel assembly for its entire life. Even without that, if the affected fuel assemblies had to be offloaded within a few days of the start of the

N+1 cycle, the positive reactivity caused by the rodded operation would not have had time to burnout. Therefore the NRC staff requests that the licensee provide justification for not continuing the rodded operation penalty for the entire life of each affected fuel assembly.

Response: Rather than justifying the proposal to discount the rodded exposure in previous operating cycles, NSPM has elected to change the text of the commitment to eliminate the proposed practice. This is accomplished by striking the phrase "in the cycle immediately prior to discharge to the spent fuel pool."

The NRC staff believes that storing any fuel assembly that has more than 1 GWd/MTU of rodded operation as a fresh fuel assembly to be conservative and acceptable. However the phrase "…or evaluated to determine which Fuel Category is appropriate" implies an acceptable methodology for making that evaluation. The NRC staff has been unable to discern the methodology the licensee would use to make this evaluation from the currently submitted information. Therefore, the NRC staff requests the licensee to either provide the rodded operation evaluation methodology for review or strike the phrase from the commitment.

Response: Rather than providing the rodded operation evaluation methodology, NSPM has elected to change the text of the commitment to eliminate the proposed practice. This is accomplished by striking the last sentence of the commitment. In effect, the revised commitment will delete the 1 GWd/MTU threshold entirely such that any rodded exposure greater than 100 MWd/MTU will not be credited for determining the coefficients used to categorize fuel assemblies as described in WCAP-17400-P.