

NRR-PMDAPEm Resource

From: Wengert, Thomas
Sent: Tuesday, June 25, 2013 11:39 AM
To: Adams, Glenn D. (Glenn.Adams@xenuclear.com)
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Subject: Prairie Island NGP - SFPC LAR Draft RAI (TAC Nos. ME6984 and ME6985)
Attachments: PINGP Draft RAI Round 04 Rev 0A .pdf

Glenn,

Please see the attached draft RAI concerning the Prairie Island spent fuel pool criticality license amendment request. Please review and let's arrange for a conference call at your earliest convenience for the NRC staff to clarify this request.

Regards,

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REQUEST FOR ADDITIONAL INFORMATION

NORTHERN STATES POWER COMPANY – MINNESOTA

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. 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 (TSs) 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 Technical Specifications (TSs).

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 rodged 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 rodged operation exposure in the cycle immediately prior to discharge to the spent fuel pool, this exposure experienced while rodged 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 rodged 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 rodged 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 rodged 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 rodged operation would not have had time to burnout. Therefore the NRC staff requests that the licensee provide justification for not continuing the rodged operation penalty for the entire life of each affected fuel assembly.

The NRC staff believes that storing any fuel assembly that has more than 1 GWd/MTU of rodged 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 rodde operation evaluation methodology for review or strike the phrase from the commitment.

DRAFT