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

Closure Plan for Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," for the Prairie Island Nuclear Generating Plant (TAC Nos. MC4707 and MC4708)

By letter dated September 13, 2004, the Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2004-02 (ML042360586), also known as Generic Safety Issue (GSI) 191, which requested specific plant information related to containment sump performance during a design basis accident. On behalf of the nuclear industry, the Nuclear Energy Institute (NEI) proposed that licensees would submit closure plans for GL 2004-02 by January 31, 2013, or 30 days following placement into the public record of the safety evaluation (SE) for WCAP-16793, Revision 2, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid", whichever occurs later. NRC letter to NEI dated November 21, 2012, (ML12326A497) concurred with the proposed schedule. The NRC SE for WCAP-16793, dated April 8, 2013, was placed in the public record on April 16, 2013. Pursuant to the industry schedule, Northern States Power Company, a Minnesota corporation, doing business as Xcel Energy (hereafter "NSPM"), by this letter provides the GL 2004-02 closure plan for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. NSPM submits this information in accordance with the provisions of 10 CFR 50.54(f).

Introduction

Through NEI, the nuclear industry proposed three options for closure of GL 2004-02. These options were considered and approved by the NRC in Staff Requirements Memorandum (SRM) SECY-12-0093 (ML121320270). NSPM selects Option 1 because PINGP Units 1 and 2 meet the requirements of 10 CFR 50.46, "Acceptance criteria for

emergency core cooling systems for light-water nuclear power reactors," based on approved models for analyses, strainer head loss testing, and in-vessel effects.

Current Resolution Status

NEI proposed "Clean Plant Criteria" for closure of GL 2004-02 issues in a letter dated December 22, 2011 (ML113570219). By letter dated May 2, 2012, (ML120730181) the NRC accepted these criteria and concluded:

> The NRC staff considers plants with very small amounts of fibrous debris and no other problematic debris available to transport to the ECCS [emergency core cooling system] recirculation strainer or to the core to have acceptably addressed the GSI-191 strainer and in-vessel issues. This position is based on the staff's review of the design of currently operating plants and testing applicable to those plants. Therefore, it is limited in applicability to the currently operating plants. Licensees may use the resolution criteria presented by NEI and the additional guidance in this letter to establish the plant design basis. Because plant designs vary, licensees should ensure that the assumptions in this position are valid for their specific design. The licensee's supplement to GL 2004-02 should describe the basis for the new design basis (e.g., the fiber levels and supporting assumptions) and any modifications or other changes, such as insulation removal or changes to the containment cleanliness program, that are required to bring the plant into alignment with the criteria.
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> Because the debris limits in this position are relatively small, licensees planning to implement the "low fiber" criteria should perform a thorough review of potential debris sources within containment to ensure that discovery of an unaccounted for debris source does not result in a potential inoperability of the recirculation or long term core cooling functions. Containment cleanliness should also be controlled to ensure that materials outside the design basis are removed from containment prior to requiring ECCS recirculation operable.

The Nuclear Management Company, LLC (NMC)* submitted letters dated February 28, 2008, (ML080590629) and March 31, 2008, (ML080920532) which provided resolution of GL 2004-02 issues with the exception of in-vessel effects. The evaluations described in these letters demonstrated that the PINGP containments contain very small amounts of fibrous debris and that there is no other problematic debris available to transport to the ECCS recirculation strainer or to the core. The PINGP supplements (ML080590629 and ML080920532) also described the modifications performed to bring the plant into alignment with the criteria; no further modifications are required or planned.

* On September 22, 2008, NMC transferred its operating authority to NSPM. By letter dated September 3, 2008, NSPM assumed responsibility for actions and commitments previously submitted by NMC.

The NRC reviewed the PINGP supplemental information provided by letters dated February 28, 2008, (ML080590629) and March 31, 2008, (ML080920532) and documented by letter dated June 1, 2009, (ML091330014) that the NRC had no further questions on completion of corrective actions for GL 2004-02 based on the very low potential debris loading at PINGP. However, the NRC deferred issuance of a closure letter to PINGP for GL 2004-02 at that time because the PINGP response referred to and relied on WCAP-16793 which was the subject of NRC on-going review.

NSPM intends to utilize the "Clean Plan Criteria" (ML120730181) to resolve GL 2004-02 issues. Letters dated February 28, 2008, (ML080590629), March 31, 2008, (ML080920532) and June 1, 2009, (ML091330014) demonstrated for PINGP that strainer head loss from all debris sources is less than allowable strainer head loss. NSPM has also determined that the quantity of fibrous debris assumed to be transported to the strainer, based on an assumed 45% fibrous debris strainer bypass reaching the reactor fuel, will be less than 15 grams per fuel assembly. NSPM has performed a thorough review of potential debris sources within containment and determined that there are no other debris sources within containment that could result in inoperability of the recirculation or long term core cooling functions.

Additionally, NSPM has implemented strict containment cleanliness programs, as described in the letters dated February 28, 2008, (ML080590629) and March 31, 2008, (ML080920532). As stipulated by the NRC in SECY-12-0093 (ML121320270), NSPM will demonstrate in the GL 2004-02 closure documentation that PINGP is in compliance with the limitations and conditions on WCAP-16793, Revision 2, provided in the SE.

Licensing Basis Commitments

As discussed below, NSPM commits to provide a GL 2004-02 closure letter for PINGP when the calculations have been updated to demonstrate the limitations and conditions of the SE for WCAP-16793, Revision 2, are met.

Resolutions Schedule

NSPM has resolved all open issues associated with GL 2004-02 except that the calculations require updating to confirm that the NRC limitations and conditions of the SE for WCAP-16793 are met. NSPM will update the GL 2004-02 calculations to reflect WCAP-16793, Revision 2, and demonstrate compliance with the limitations and conditions provided in the SE for the WCAP. These calculations will be completed within two Unit 1 refueling outages after January 1, 2013 (the latest refueling outage for either unit) as discussed in SECY-12-0093 (ML121320270). NSPM will update the current licensing basis (Updated Safety Analysis Report) following NRC acceptance of this closure plan for PINGP Units 1 and 2 and completion of the calculations.

NSPM will continue to monitor the Pressurized Water Reactor Owner's Group program to establish higher acceptable in-vessel debris limits. If higher limits are accepted by

the NRC, NSPM may pursue adoption of higher limits for PINGP through the applicable regulatory processes.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-388-1121.

Summary of Commitments

This letter makes one new commitment:

> Prior to the end of the second Unit 1 refueling outage after January 1, 2013, NSPM will submit a letter documenting the Prairie Island Nuclear Generating Plant Generic Letter 2004-02 calculations meet the limitations and conditions of the April 16, 2013 (ML13084A161) safety evaluation for WCAP-16793, Revision 2.

This letter makes no revisions to existing commitments.

I declare under penalty of perjury that the foregoing is true and correct.
Executed on 5/9/13

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

cc: Administrator, Region III, USNRC
Project Manager, PINGP, USNRC
Resident Inspector, PINGP, USNRC