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MAY 2 6 2010

L-PI-10-045
10 CFR 50.90

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

Supplement to License Amendment Request to Support the Use of Optimized ZIRLO™ Fuel Rod Cladding – Response to Requests for Additional Information (TAC Nos. ME2790, ME2791, ME2792, and ME2793)

References: 1. Letter from Northern States Power Company, a Minnesota corporation, to the Nuclear Regulatory Commission, "License Amendment Request and Exemption Request to Support the Use of Optimized ZIRLO™ Fuel Rod Cladding", L-PI-09-125, dated November 24, 2009, ADAMS Accession Number ML093280883

2. Letter from T. Wengert (NRC) to M. Schimmel (NSPM), Prairie Island Nuclear Generating Plant, Units 1 and 2 – Request for Additional Information Related to License Amendment Request and Exemption Request to Support the Use of Optimized ZIRLO™ Fuel Rod Cladding (TAC Nos. ME2790, ME2791, ME2792, and ME2793), dated April 29, 2010, ADAMS Accession Number ML101121020

In Reference 1, Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy, submitted a License Amendment Request (LAR) for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2, to support the use of Optimized ZIRLO™. In Reference 2, the Nuclear Regulatory Commission (NRC) Staff requested additional information to support the review of Reference 1. Enclosure 1 to this letter provides the responses to the NRC Staff requests for additional information. NSPM submits this supplement 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 November 24, 2009 submittal.

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

If there are any questions or if additional information is needed, please contact Glenn Adams at 612-330-6777.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.

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

Executed on MAY 2 6 2010

Mark A. Schimmel
Site Vice President, Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota

Enclosure (1)

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

ENCLOSURE 1

This enclosure includes responses from the Northern States Power Company, a Minnesota corporation (NSPM), to Requests for Additional Information (RAI) provided by the Nuclear Regulatory Commission (NRC) in a letter dated April 29, 2010 (ADAMS accession number ML101121020). These RAI responses are provided in support of NSPM's License Amendment Request (LAR) to support the use of Optimized ZIRLO™ Fuel Rod Cladding submitted November 24, 2009 (ADAMS accession number ML093280883).

RAI 1: Current fuel loading of PINGP core

In July 2009, through license amendments 192 and 181 for Unit 1 and Unit 2, respectively, the NRC approved PINGP's request to transition from 0.400-inch outer diameter (OD) VANTAGE+ (400V+) fuel to Westinghouse 0.422-inch OD VANTAGE+ (422V+) fuel. This approval permitted transition to 422V+ fuel beginning with Cycle 26 (Fall 2009) for PINGP Unit 1 and Cycle 26 (Spring 2010) for Unit 2. Please provide responses to the following questions in relation to the above amendments.

1. *Provide the composition of the current PINGP Units 1 and 2 cores with respect to the number of 422V+ and 400V+ assemblies.*

2. *Provide details with respect to the number and type of fuel assemblies with Optimized ZIRLO™ clad that are being planned for the upcoming reload campaign.*

NSPM Response:

1. Current Core Composition – As of April 29, 2010 (the date of NRC RAI), the Unit 1 core loading (Cycle 26) was composed of 73 assemblies of the 400 Vantage+ (400V+) design, and 48 assemblies of the 422 Vantage+ (422V+) design. On that same date, Unit 2 core loading (Unit 2 Cycle 25) was composed of 121 assemblies of the 400V+ design, and no assemblies of the 422V+ design. The recently-completed Unit 2 Cycle 26 reload included 56 fuel assemblies of 422V+ design.

2. Planned Core Composition of Optimized ZIRLO™ cladding - The next unit 1 reload (Cycle 27) is expected to occur in spring of 2011. All fresh bundles for this reload are expected to use Optimized ZIRLO™ cladding. This will be the first use of this cladding type at PINGP. Although no final decision has yet been made, it is expected that this will be a 41-assembly reload. The Unit 2 reload just completed in May, 2010 for Cycle 26 included 56 fresh fuel assemblies. None of these assemblies use Optimized ZIRLO™ cladding.

RAI 2: Material specification

Provide a Table that lists the material composition and the content tolerances of Optimized ZIRLO™ alloy fuel cladding that will be loaded in to the PINGP core for the next cycle.

NSPM Response:

NRC Safety Evaluation Report dated June 10, 2005, "Final Safety Evaluation for Addendum 1 to Topical Report WCAP-12610-P-A, and CENPD-404-P-A, Optimized ZIRLO™, (TAC No. MB8041)" includes a table that provides the allowable composition for Optimized ZIRLO™. As stated in that Safety Evaluation, the NRC Staff relies on Westinghouse's process and product specifications and quality records to ensure that the performance of future batches of Optimized ZIRLO™ material is consistent with the material's performance specified in Addendum 1 of WCAP-12610-P-A.

RAI 3: Waterside corrosion

Conditions and Limitations Number 3 in the NRC staff's Safety Evaluation for Reference 1 limits the maximum fuel rod waterside corrosion, as predicted by the best-estimate model. The November 24, 2009, license amendment request [] states:
"The maximum fuel rod waterside corrosion for the fuel product using Optimized ZIRLO™ fuel cladding will be confirmed to be less than the proprietary limits included in the topical report..."

Provide a summary of the process by which confirmation of the modified limits for Optimized ZIRLO™ maximum fuel rod waterside corrosion is achieved.

NSPM Response:

The process used to confirm that a core design satisfies the modified limits for Optimized ZIRLO™ maximum fuel rod waterside corrosion is embodied by the NRC-approved core reload process. On a reload basis, the maximum projected oxidation for all the fuel in the core for the specific cycle is assessed using current fuel performance models. Fuel oxidation projections are based on currently-approved corrosion models, not the new corrosion models proposed for Optimized ZIRLO™. The projected oxidation must be less than the limit specified in the topical report (WCAP-12610, Addendum 1); otherwise, the core would be required to be re-designed (per WCAP-9272-P-A) to ensure the limit is met. This core reload process addresses both the 400V+ and the 422V+ fuel designs used in transition cores.

RAI 4: Thermal and hydraulic design methodology

Provide a short summary of methodologies used in the thermal hydraulic analyses, evaluation of the departure from nucleate boiling (DNB) performance, and thermal margin calculations during the transition to Optimized ZIRLO™ clad fuel at PINGP.

This summary should contain brief discussion on the specific DNB correlation(s) used in the safety analyses, thermal hydraulic compatibility of the Optimized ZIRLO™ clad fuel with the co-resident assemblies, and the impact of Optimized ZIRLO™ clad on hot channel factors (if any).

NSPM Response:

The transition to Optimized ZIRLO™ clad fuel will employ the same thermal hydraulic methodologies that are described in WCAP-9272-P-A, Westinghouse Reload Safety Evaluation Methodology, Rev. 0, which are currently approved for use at PINGP and listed in Technical Specification 5.6.5, Core Operating Limits Report. The current methods remain valid for Optimized ZIRLO™ transition cores, as described in WCAP-12610-P-A Addendum 1 (page 18). This process is valid for all Vantage+ fuel designs licensed for PINGP, and is not complicated by the transition core designs. Thus, Optimized ZIRLO™ clad fuel will be compatible thermal-hydraulically with previously-approved co-resident fuel types and any impact on hot channel factors caused by different fuel types will be evaluated by the approved methods to ensure acceptance criteria are met.

Note that 422V+ design and the transition cores were approved for PINGP by license amendments 192/181 (ADAMS Accession No. ML091460809).

RAI 5: Transients and accidents

Describe the impact of Optimized ZIRLO™ clad fuel on current PINGP transients and accidents analyses methodology, including non-loss-of-coolant (LOCA) and LOCA events.

NSPM Response:

The transition to Optimized ZIRLO™ clad fuel will employ the same transient and accident analysis methodologies that are described in WCAP-9272-P-A, Westinghouse Reload Safety Evaluation Methodology, Rev. 0 and currently approved for use at PINGP and listed in Technical Specification 5.6.5, Core Operating Limits Report. The current methods remain valid for Optimized ZIRLO™ transition cores, as described in WCAP-12610-P-A Addendum 1 (pages 18-25). This process is valid for all Vantage+ fuel designs licensed for PINGP, and is not complicated by the transition core designs. 422V+ design and the transition cores were approved for PINGP by license amendments 192/181 (ADAMS Accession No. ML091460809). Therefore, there is no

impact to the transient and accident analysis methodologies, including non-LOCA and LOCA events.