



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

April 29, 2010

Mr. Mark A. Schimmel  
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 AND EXEMPTION REQUEST TO SUPPORT THE  
USE OF OPTIMIZED ZIRLO™ FUEL ROD CLADDING (TAC NOS. ME2790,  
ME2791, ME2792, AND ME2793)

Dear Mr. Schimmel:

By letter to the U.S. Nuclear Regulatory Commission (NRC) dated November 24, 2009, (Agencywide Documents Access and Management System Accession No. ML093280883), Northern States Power Company, a Minnesota corporation (the licensee), doing business as Xcel Energy, submitted a request to revise Technical Specifications (TSs) to allow the use of Optimized ZIRLO™ fuel rod cladding material for the Prairie Island Nuclear Generating Plant, Units 1 and 2. In your letter, you also requested an exemption from certain requirements of 10 CFR 50.46, "Acceptance Criteria for Emergency Core Cooling Systems for Light Water Nuclear Power Reactors," and 10 CFR Part 50, Appendix K, "ECCS Evaluation Models," to support the proposed TS changes.

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. During a discussion with your staff on April 22, 2010, it was agreed that you would provide a response by June 1, 2010.

M. Schimmel

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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. 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 that reads "Thomas J. Wengert". The signature is written in a cursive style with a large, prominent initial "T".

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

PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2

DOCKET NOS. 50-282 AND 50-306

By application dated November 24, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession No. ML093280883), Northern States Power Company, a Minnesota Corporation, doing business as Xcel Energy, requested changes to the Technical Specifications for Prairie Island Nuclear Generating Plant (PINGP) Units 1 and 2 (Reference 1). The proposed changes would revise TS 4.2.1, "Fuel Assemblies" and TS 5.6.5, "Core Operating Limits Report" to allow the use of Optimized ZIRLO™ fuel cladding material in PINGP Units 1 and 2.

The U.S. Nuclear Regulatory Commission (NRC) staff has reviewed the license amendment request (LAR) and determined that the following additional information is required in order to complete its review.

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.

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.

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, LAR (Reference 2) 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..."

ENCLOSURE

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

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).

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.

REFERENCES

1. WCAP-12610-P-A and CENPD-404-P-A, Addendum 1-A, "Optimized ZIRLO™", Westinghouse Electric Company, July 2006 (ADAMS Accession No. ML062080576, Non-Publicly Available).
2. Letter from Xcel Energy (Mark A. Schimmel) to USNRC, "License Amendment Request and Exemption Request to Support the Use of Optimized ZIRLO™ Fuel Rod Cladding," Xcel Energy, November 24, 2009 (ADAMS Accession No. ML093280883).

M. Schimmel

- 2 -

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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

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Request for Additional Information

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ADAMS Accession Number: ML101121020

\*via memo dated 3/30/2010

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