



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

April 10, 2015

Mr. Kevin K. Davison
Site Vice President
Prairie Island Nuclear Generating Plant
Northern States Power Company - Minnesota
1717 Wakonade Drive East
Welch, MN 55089

SUBJECT: PRAIRIE ISLAND NUCLEAR GENERATING PLANT UNITS 1 AND 2 –
CLOSEOUT OF GENERIC LETTER 2004-02, “POTENTIAL IMPACT OF
DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION DURING DESIGN
BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS”
(TAC NOS. MC4707 AND MC4708)

Dear Mr. Davison:

The U.S. Nuclear Regulatory Commission (NRC) issued Generic Letter (GL) 2004-02, “Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors” (Agencywide Documents Access and Management System (ADAMS) Accession No. ML042360586) dated September 13, 2004, requesting that licensees address the issues raised by Generic Safety Issue (GSI) - 191, “Assessment of Debris Accumulation on Pressurized Water Reactor [PWR] Sump Performance.”

The stated purpose of GL 2004-02 was focused on demonstrating compliance with Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Section 50.46, “Acceptance Criteria For Emergency Core Cooling Systems For Light Water Reactors.” Specifically, the GL requested addressees to perform an evaluation of the emergency core cooling system (ECCS) and containment spray system (CSS) recirculation and, if necessary, take additional action to ensure system function. This action was requested in light of the potential susceptibility of PWR sump screens to blockage during a design-basis accident requiring recirculation operation of the ECCS or CSS, and based on the potential for additional adverse effects due to debris blockage of flowpaths necessary for ECCS and CSS recirculation and containment drainage.

By letter dated March 7, 2005 (ADAMS Accession No. ML050670014), Nuclear Management Company, LLC, a predecessor license holder to Northern States Power Company, a Minnesota corporation (NSPM, the licensee), provided responses to GL 2004-02 for the Prairie Island Nuclear Generating Plant (PINGP), Units 1 and 2. In order to complete its review, the NRC staff issued requests for additional information (RAIs) in a letter dated June 2, 2005 (ADAMS Accession No. ML051520370).

By letter dated July 11, 2005 (ADAMS Accession No. ML051930570), the licensee provided responses to the RAIs. By letter dated August 31, 2005 (ADAMS Accession No. ML052440054), the licensee provided supplemental information. The NRC staff reviewed the licensee’s RAI responses and supplemental information, and determined that further information was necessary to complete its review. The staff issued additional RAIs by letter dated February 9, 2006 (ADAMS Accession No. ML060370394).

K. Davison

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By letters dated February 28, 2008 (ADAMS Accession No. ML080590629), and March 31, 2008 (ADAMS Accession No. ML080920532), the licensee responded to the RAIs and provided supplemental information.

The NRC staff reviewed the RAI responses and supplemental information. In a letter dated June 1, 2009 (ADAMS Accession No. ML091330014), the NRC staff concluded that it had no further questions regarding the licensee's completion of corrective actions for GL 2004-02, with the exception of the resolution of the issue of in-vessel downstream effects. The staff's conclusion was based, in part, on the very low debris loading at PINGP as discussed in the licensee's RAI responses and supplemental information.

By letter dated March 9, 2015 (ADAMS Accession No. ML15068A337), the licensee addressed in-vessel downstream effects, the remaining open issue for PINGP associated with GL 2004-02. The NRC staff performed a review of the licensee's response and documented its conclusions in the enclosed summary (ADAMS Accession No. ML15084A023).

The NRC staff reviewed all of NSPM's responses and RAI supplements regarding GL 2004-02. Based on its review, the staff finds that NSPM provided adequate information as requested by GL 2004-02. The staff finds the information provided demonstrates that debris will not inhibit ECCS or CSS performance and the intended system functions in accordance with 10 CFR 50.46 to assure adequate long-term core cooling following a design basis accident.

Based on the above, NRC staff finds the licensee's responses to GL 2004-02 are adequate and considers GL 2004-02 closed for the Prairie Island Nuclear Generating Plant, Units 1 and 2. No further information or action is requested of the licensee.

If you have any questions, please call me at 301-415-3049.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry A. Beltz", with a long horizontal flourish extending to the right.

Terry A. Beltz, 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:
Closeout Summary

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U.S. NUCLEAR REGULATORY COMMISSION STAFF REVIEW
OF THE DOCUMENTATION PROVIDED BY
NORTHERN STATES POWER COMPANY – MINNESOTA
FOR THE PRAIRIE ISLAND NUCLEAR GENERATING PLANT, UNITS 1 AND 2
CONCERNING RESOLUTION OF GENERIC LETTER 2004-02
POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION
DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED-WATER REACTORS

1.0 INTRODUCTION

A fundamental function of the emergency core cooling system (ECCS) is to recirculate water that has collected at the bottom of the containment through the reactor core following a break in the reactor coolant system (RCS) piping to ensure long-term removal of decay heat from the reactor fuel. Leaks from the RCS, hypothetical scenarios known as loss-of-coolant accidents (LOCAs), are part of every plant's design basis. Hence, nuclear plants are designed and licensed with the expectation that they are able to remove reactor decay heat following a LOCA to prevent core damage. Long-term cooling following a LOCA is a basic safety function for nuclear reactors. The recirculation sump provides a water source to the ECCS in pressurized-water reactors (PWRs) once the primary water source has been depleted.

If a LOCA occurs, piping thermal insulation and other materials may be dislodged by the two-phase coolant jet emanating from the broken RCS pipe. This debris may transport, via flows coming from the RCS break or from the containment spray system (CSS), to the pool of water that collects at the bottom of containment following a LOCA. Once transported to the sump pool, the debris could be drawn towards the ECCS sump strainers, which are designed to prevent debris from entering the ECCS and the reactor core. If this debris were to clog the strainers and prevent cooling from entering the reactor core, containment cooling could be lost and result in core damage and containment failure.

It is also possible that some debris would bypass the sump strainer and lodge in the reactor core. This could result in reduced core cooling and potential core damage. If the ECCS strainers were to remain functional, even with core cooling reduced, containment cooling would be maintained and the containment function would not be adversely affected.

Findings from research and industry operating experience raised questions concerning the adequacy of PWR sump designs. Research findings demonstrated that, compared to other LOCAs, the amount of debris generated by a high-energy line break (HELB) could be greater. The debris from a HELB could also be finer (and thus more easily transportable,) and could be comprised of certain combinations of debris (i.e., fibrous material plus particulate material) that could result in a substantially greater flow restriction than an equivalent amount of either type of

Enclosure

debris alone. These research findings prompted the U.S. Nuclear Regulatory Commission (NRC) to open Generic Safety Issue (GSI) -191, "Assessment of Debris Accumulation on PWR Sump Performance," in 1996. This resulted in new research for PWRs in the late 1990s. GSI-191 focuses on reasonable assurance that the provisions of Title 10 of the *Code of Federal Regulations* (10 CFR) Section 50.46(b)(5) are met. This rule, which is deterministic, requires maintaining long-term core cooling after initiation of the ECCS. The objective of GSI-191 is to ensure that post-accident debris blockage will not impede or prevent the operation of the ECCS and CSS in recirculation mode at PWRs during LOCAs or other HELB accidents for which sump recirculation is required. The NRC completed its review of GSI-191 in 2002 and documented the results in a parametric study that concluded that sump clogging at PWRs was a credible concern.

GSI-191 concluded that debris clogging of sump strainers could lead to recirculation system ineffectiveness as a result of a loss of net positive suction head (NPSH) for the ECCS and CSS recirculation pumps. Resolution of GSI-191 involves two distinct but related safety concerns: (1) potential clogging of the sump strainers that results in ECCS and/or CSS pump failure; and (2) potential clogging of flow channels within the reactor vessel because of debris bypass of the sump strainer (in-vessel effects). Clogging at either the strainer or in-vessel channels can result in a loss of the long-term cooling safety function.

After completing the technical assessment of GSI-191, the NRC issued Bulletin 03-01, "Potential Impact of Debris Blockage on Emergency Sump Recirculation at Pressurized-Water Reactors" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML031600259), on June 9, 2003. The Office of Nuclear Reactor Regulation (NRR) requested and obtained the review and endorsement of the bulletin from the Committee to Review Generic Requirements (CRGR) (ADAMS Accession No. ML031210035). As a result of the emergent issues discussed in Bulletin 03-01, the NRC staff requested an expedited response from PWR licensees on the status of their compliance of regulatory requirements concerning the ECCS and CSS recirculation functions based on a mechanistic analysis. The NRC staff asked licensees, who chose not to confirm regulatory compliance, to describe any interim compensatory measures that they had implemented or will implement to reduce risk until the analysis could be completed. All PWR licensees responded to Bulletin 03-01. The NRC staff reviewed all licensees' Bulletin 03-01 responses and found them acceptable.

In developing Bulletin 03-01, the NRC staff recognized that it might be necessary for licensees to undertake complex evaluations to determine whether regulatory compliance exists in light of the concerns identified in the bulletin and that the methodology needed to perform these evaluations was not currently available. As a result, that information was not requested in Bulletin 03-01, but licensees were informed that the NRC staff was preparing a generic letter (GL) that would request this information. GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ADAMS Accession No. ML042360586), was the follow-on information request referenced in Bulletin 03-01. This document set the expectations for resolution of PWR sump performance issues identified in GSI-191, to ensure the reliability of the ECCS and CSS at PWRs. NRR requested and obtained review and endorsement of the GL from the CRGR (ADAMS Accession No. ML040840034).

The GL 2004-02 requested that addressees perform an evaluation of the ECCS and CSS recirculation functions in light of the information provided in the letter and, if appropriate, take additional actions to ensure system function. Additionally, addressees were requested to submit the information specified in this letter to the NRC. This request is based on the identified potential susceptibility of PWR recirculation sump screens to debris blockage during design-basis accidents requiring recirculation operation of ECCS or CSS, and on the potential for additional adverse effects due to debris blockage of flowpaths necessary for ECCS and CSS recirculation and containment drainage. The GL 2004-02 required addressees to provide the NRC a written response in accordance with 10 CFR 50.54(f).

By letter dated May 28, 2004 (ADAMS Accession No. ML041550279), the Nuclear Energy Institute (NEI) submitted a report describing a methodology for use by PWRs in the evaluation of containment sump performance. NEI requested that the NRC review the methodology. The methodology was intended to allow licensees to address and resolve GSI-191 issues in an expeditious manner through a process that starts with a conservative baseline evaluation. The baseline evaluation serves to guide the analyst and provide a method for quick identification and evaluation of design features and processes that significantly affect the potential for adverse containment sump blockage for a given plant design. The baseline evaluation also facilitates the evaluation of potential modifications that can enhance the capability of the design to address sump debris blockage concerns and uncertainties and supports resolution of GSI-191. The report offers additional guidance that can be used to modify the conservative baseline evaluation results through revision to analytical methods or through modification to the plant design or operation.

By letter dated December 6, 2004 (ADAMS Package Accession No. ML043280641), the NRC issued an evaluation of the NEI methodology. The NRC staff concluded that the methodology, as approved in accordance with the staff's safety evaluation (SE), provides an acceptable overall guidance methodology for the plant-specific evaluation of the ECCS or CSS sump performance following postulated design basis accidents.

In response to the NRC staff SE conclusions on NEI 04-07, the Pressurized Water Reactor Owners Group (PWROG) sponsored the development of the following Westinghouse Commercial Atomic Power (WCAP) Topical Reports (TRs):

- TR-WCAP-16406-P-A, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191," Revision 1 (not publicly available), to address the effects of debris on piping systems and components.
- TR-WCAP-16530-NP-A, "Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," issued March 2008 (ADAMS Accession No. ML081150379), to provide a consistent approach for plants to evaluate the chemical effects that may occur post-accident in containment sump fluids.
- TR-WCAP-16793 NP-A, "Evaluation of Long-Term Cooling Considering Particulate, Fibrous and Chemical Debris in the Recirculating Fluid," Revision 2 (ADAMS Accession No. ML13239A114), to address the effects of debris on the reactor core.

The NRC staff reviewed the aforementioned TRs and found them acceptable to use (as qualified by the limitations and conditions (L&Cs) stated in the respective SEs).

After the NRC staff's evaluation of licensee responses to GL 2004-02, the staff found that there was a misunderstanding between the industry and the NRC on the level of detail necessary to respond to GL 2004-02. The NRC staff, in concert with stakeholders, developed a content guide for responding to requests for additional information (RAIs) concerning GL 2004-02. By letter dated August 15, 2007 (ADAMS Accession No. ML071060091), the NRC issued the content guide describing the necessary information to be submitted to allow the NRC staff to verify that each licensee's analyses, testing and corrective actions associated with GL 2004-02 are adequate to demonstrate that ECCS and CSS will perform their intended functions following any design-basis accident. By letter dated November 21, 2007 (ADAMS Accession No. ML073110389), the NRC issued a revised content guide.

The content guide described the following information needed to be submitted to the NRC:

- Corrective Actions for GL 2004-02
- Break Selection
- Debris Generation/Zone of Influence (ZOI) (excluding coatings)
- Debris Characteristics
- Latent Debris
- Debris Transport
- Head Loss and Vortexing
- Net Positive Suction Head
- Coatings Evaluation
- Debris Source Term
- Screen Modification Package
- Sump Structural Analysis
- Upstream Effects
- Downstream Effects – Components and Systems
- Downstream Effects – Fuel and Vessel
- Chemical Effects
- Licensing Basis

Resolution of GSI-191 has been more difficult than anticipated. Based on the interactions with stakeholders and the results of the industry testing, the NRC staff in 2012 developed three options that will be effective ways to resolve GSI-191. These options were documented and proposed to the Commission in SECY-12-0093, "Closure Options for Generic Safety Issue - 191, Assessment of Debris Accumulation on Pressurized-Water Reactor Sump Performance," dated July 9, 2012 (ADAMS Accession No. ML121310648). The options are summarized as follows:

- Option 1 would require licensees to demonstrate compliance with 10 CFR 50.46, "Acceptance criteria for emergency core cooling systems for light-water nuclear power reactors," through approved models and test methods. These will be low fiber plants with less than 15 grams of fiber per fuel assembly.

- Option 2 requires implementation of additional mitigative measures and allows additional time for licensees to resolve issues through further industry testing or use of a risk informed approach.
 - Option 2 Deterministic: Industry to perform more testing and analysis and submit TR-WCAP for NRC review and approval (in-vessel only).
 - Option 2 Risk-Informed: Use the South Texas Project pilot approach currently under review with NRR staff.
- Option 3 involves separating the regulatory treatment of the sump strainer and in-vessel effects.

The options allowed industry alternative approaches for resolving GSI-191. The options are innovative and creative, as well as risk informed and safety-focused. The Commission issued a Staff Requirements Memorandum on December 14, 2012 (ADAMS Accession No. ML12349A378), approving all three options for closure of GSI-191.

By letter dated May 9, 2013 (ADAMS Accession No. ML13129A375), Northern States Power Company - Minnesota (the licensee) stated that they will pursue Option 1 for the closure of GSI-191 and GL 2004-02 for the Prairie Island Nuclear Generating Plant, Units 1 and 2 (Prairie Island).

The following is a list of documentation provided by the licensee in response to GL 2004-02:

RESPONSES TO GL 2004-02		
DOCUMENT DATE	ACCESSION NUMBER	
March 7, 2005	ML050670014	
1st NRC RAI letter dated June 2, 2005 (Accession No. ML051520370)		
Licensee Responses to RAIs		
July 11, 2005	ML051930570	
August 31, 2005	ML052440054	Supplemental Information
2nd NRC RAI letter dated February 9, 2006 (Accession No. ML060370394)		
Licensee Responses to RAIs		
February 28, 2008	ML080590629	
March 31, 2008	ML080920532	

NRC's No Further Question letter dated June 1, 2009 (Accession No. ML091330014)		
Licensee Response to In-Vessel Downstream Effects		
March 9, 2015	ML15068A337	

The NRC staff reviewed the licensee's responses through March 31, 2008, and by letter dated June 1, 2009 (ADAMS Accession No. ML091330014). The staff concluded that it had no further questions regarding the licensee's completion of corrective actions for GL 2004-02 in establishing compliance with 10 CFR 50.46, with the exception of demonstrating that in-vessel downstream effects issues are resolved. The staff's in-vessel downstream effects review is discussed below. Additionally, the NRC staff notes that the debris loading at Prairie Island is less than 15 grams of fiber per fuel assembly, as discussed in the licensee's RAIs responses and supplemental information.

2.0 IN-VESSEL DOWNSTREAM EFFECTS - FUEL AND VESSEL

The objective of the downstream effects review, fuel and vessel section, is to evaluate the effects that debris carried downstream of the containment sump screen and into the reactor vessel has on long-term core cooling.

INITIAL NRC STAFF REVIEW

The initial NRC staff review is based on documentation provided by the licensee through March 31, 2008.

By letters dated February 28, 2008, and March 31, 2008, the licensee submitted supplemental responses to GL 2004-02. The licensee stated in these letters that it performed an evaluation of the effects of ECCS sump strainer bypassed debris on post-LOCA long-term core cooling at Prairie Island using the guidance in WCAP-16793-NP, Revision 0. The evaluation showed that long-term core cooling can be achieved and the maximum fuel clad temperature, after the initial core quench, can be maintained below 800 degrees Fahrenheit (°F). However, the licensee acknowledged that the NRC staff had not issued a final SE on WCAP-16793-NP, Revision 0. Therefore, in its letter dated May 9, 2013, the licensee committed to submit its final response prior to the end of the second Unit 1 refueling outage occurring after January 1, 2013, documenting how Prairie Island meets the L&Cs in the final NRC SE.

By letter dated June 1, 2009, the NRC staff expressed reasonable assurance that the likelihood of unacceptable in-vessel debris impact at Prairie Island was very low because of the low debris loading. However, because the GL 2004-02 response referred to and relied on a topical report for which the NRC had not yet issued an SE, the NRC staff deferred issuance of a closure letter to Prairie Island for GL 2004-02 until uncertainties regarding the issues with WCAP-16793-NP were reduced. Further, the staff stated that the licensee could wait for the issues to be resolved through the WCAP process, or could demonstrate that in-vessel downstream effects issues were resolved by demonstrating, without reference to WCAP-16793 or the NRC staff's SE, that in-vessel downstream effects were addressed for Prairie Island.

FINAL NRC STAFF REVIEW

By letter dated March 9, 2015, the licensee submitted a revised GL 2004-02 in-vessel downstream effects resolution for Prairie Island. The final NRC staff's review is based on the licensee's March 9, 2015, letter.

Evaluation Criteria

On April 8, 2013, the NRC staff issued an SE (ADAMS Accession No. ML13084A154) on TR WCAP-16793-NP, Revision 2, finding the TR an acceptable model for assessing the effects of sump strainer bypassed fibrous, particulate, and chemical debris on core cooling in PWRs. The TR guidance and acceptance bases were developed through analyses and flow testing using representative fuel assemblies and ECCS flow rates. In order to demonstrate adequate core cooling capability, the TR, the limitations and conditions section of the NRC SE of the TR, and the GL 2004-02 response to the content guide (ADAMS Accession No. ML073110278) require certain actions of the licensee. These requirements, and the licensee's actions for meeting these requirements, are described herein.

The GL 2004-02 response content guide required a response to item (n), "Downstream Effects - Fuel and Vessel," to confirm that the licensee's evaluation is consistent with, or bounded by, the industry generic guidance contained in TR WCAP-16793-NP, as modified by the NRC staff's conditions and limitations stated in the NRC SE on that document. Also, the response shall briefly summarize the application of the WCAP evaluation methods and include the following information:

- a) The available driving head and ECCS flow rate used in the evaluation of the hot-leg break LOCA scenario;
- b) The type(s) of fuel and inlet filters installed in the plant;
- c) The results of the LOCA Deposition Analysis Model (LOCADM) calculation, including the predicted peak clad temperature;
- d) The amount of fiber (in grams per fuel assembly) that is assumed to reach the core inlet after a LOCA;
- e) The method(s) used to estimate the quantity and size distribution of the fibrous debris that would pass through the ECCS sump strainer and reach the core inlet after a LOCA; and,
- f) A description of any deviations from, or exceptions to the WCAP or the NRC SE for the WCAP.

In its letter dated March 9, 2015, the licensee stated that Prairie Island meets 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 its analysis of in-vessel downstream effects. As the WCAP-16793-NP, Revision 2,

methodology represents an NRC-approved model, successful completion of the in-vessel downstream effects analysis in accordance with the WCAP and associated SE indicates compliance with 10 CFR 50.46 as it relates to in-vessel downstream effects, and resolves this final outstanding item for Prairie Island.

The licensee determined the amount of fiber that could bypass its ECCS strainer using the methods allowed in the NRC Staff SE for WCAP-16793, Revision 2. The SE allows a licensee to determine the quantity of strainer bypass for its strainer by using the results of strainer testing conducted on a strainer of the same manufacture and perforation size as that in the plant. If necessary, the results were to be prorated to the plant's strainer area, approach velocity, debris types, and debris quantities.

The licensee performed a plant-specific evaluation of the maximum fuel clad temperature and deposit thickness for Prairie Island using WCAP-16793-NP, Revision 2, and the associated NRC SE for that document. The evaluation results are as follows:

1. The maximum calculated cladding temperature is 420°F. This is less than the WCAP-recommended maximum cladding temperature of 800°F.
2. The total deposition thickness is 0.0036 inches (3.6 mils). This is less than the WCAP-recommended total debris deposition thickness of 0.050 inches.

Also, in its letter dated March 9, 2015, the licensee satisfactorily demonstrated compliance with the 14 L&Cs of the NRC's SE for WCAP-16793-NP-A, Revision 2.

Based on the above information, the licensee documented that Prairie Island, Units 1 and 2, meets the requirements specified in WCAP-16793-NP, Revision 2, and the specifications, limitations, and conditions listed in the associated NRC SE.

NRC STAFF FINAL CONCLUSION

The NRC staff reviewed the description of the analyses, strainer bypass testing, and compliance with the L&Cs of the SE, as described in the licensee's GL 2004-02 response to Item (n). The staff finds that the licensee's response in addressing in-vessel downstream effects for the Prairie Island Nuclear Generating Plant, Units 1 and 2, satisfies the requirements stated in TR WCAP-16793-NP-A, Revision 2, and the NRC's SE for that document. As such, the staff concludes that the licensee adequately addressed the potential effects of ECCS sump strainer bypassed debris on core cooling at Prairie Island. Therefore, the NRC staff considers this item closed for GL 2004-02.

3.0 CONCLUSION

The NRC staff performed a thorough review of all of the licensee's supplements and RAI responses associated with GL 2004-02. The staff's conclusion associated with in-vessel downstream effects is documented above. Based on the above evaluation and its June 1, 2009, letter, the NRC staff finds that the licensee provided adequate information as requested in GL 2004-02.

The stated purpose of GL 2004-02 was focused on demonstrating compliance with 10 CFR 50.46. Specifically, the GL requested addressees to perform an evaluation of ECCS and CSS recirculation and, if necessary, take additional action to ensure system function in light of the potential for debris to adversely affect long-term core cooling. The NRC staff finds the information provided by the licensee demonstrates that debris will not inhibit ECCS or CSS from performing their intended functions in accordance 10 CFR 50.46 to assure adequate long-term core cooling following a design-basis accident.

Based on the above, the NRC staff finds the licensee's responses to GL 2004-02 to be adequate, and considers GL 2004-02 to be closed for the Prairie Island Nuclear Generating Plant, Units 1 and 2.

By letters dated February 28, 2008 (ADAMS Accession No. ML080590629), and March 31, 2008 (ADAMS Accession No. ML080920532), the licensee responded to the RAIs and provided supplemental information.

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By letter dated March 9, 2015 (ADAMS Accession No. ML15068A337), the licensee addressed in-vessel downstream effects, the remaining open issue for PINGP associated with GL 2004-02. The NRC staff performed a review of the licensee's response and documented its conclusions in the enclosed summary (ADAMS Accession No. ML15084A023).

The NRC staff reviewed all of NSPM's responses and RAI supplements regarding GL 2004-02. Based on its review, the staff finds that NSPM provided adequate information as requested by GL 2004-02. The staff finds the information provided demonstrates that debris will not inhibit ECCS or CSS performance and the intended system functions in accordance with 10 CFR 50.46 to assure adequate long-term core cooling following a design basis accident.

Based on the above, NRC staff finds the licensee's responses to GL 2004-02 are adequate and considers GL 2004-02 closed for the Prairie Island Nuclear Generating Plant, Units 1 and 2. No further information or action is requested of the licensee.

If you have any questions, please call me at 301-415-3049.

Sincerely,

/RA/

Terry A. Beltz, 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:
Closeout Summary

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