UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

Michael M. Gibson, Chairman
Dr. Gary S. Arnold
Nicholas G. Trikouros

In the Matter of NORTHERN STATES POWER CO. (Prairie Island Nuclear Generating Plant, Independent Spent Fuel Storage Installation)	Docket No. 72-10-ISFSI-2 ASLBP No. 12-922-01-ISFSI-MLR-BD01 November 4, 2015

ORDER
(Approving Settlement, Eliminating Disclosures, and Terminating Proceeding)

On October 16, 2015, the Northern States Power Company ("Northern States"), the Prairie Island Indian Community ("PIIC"), and the NRC Staff jointly moved to settle and dismiss the sole remaining admitted contention in this proceeding, which concerns the storage of high burnup spent nuclear fuel:[1]

> Contention 6: Northern States' License Renewal Application Is Deficient Because It Did Not Adequately Address the Potential Degradation of High Burnup Fuel Due to Aging During Storage, Subsequent Handling, and Transportation. 10 C.F.R. § 72.122 Requires Confinement Barriers and Systems to Protect Degradation of Fuel and to Not Pose Operational Safety Problems.[2]

As discussed below, the Board grants the joint motion and terminates the proceeding.[3]

[1] See Joint Motion for Approval of Settlement and Dismissal of PIIC Contention 6 and Termination of Proceeding (Oct. 16, 2015) [hereinafter "Settlement Motion"].

[2] See LBP-12-24, 76 NRC 503, 526 (2012).

[3] On October 23, 2015, the parties jointly moved to suspend disclosure obligations while the Board considered the Settlement Motion. Joint Motion to Suspend Disclosure Obligations

I. Procedural Background

This proceeding arises from Northern States' application for a forty-year extension of its license to operate the Prairie Island Independent Spent Fuel Storage Installation ("ISFSI"). On December 20, 2012, the Board granted PIIC's petition to intervene, admitted three of PIIC's seven proffered contentions,[4] and held in abeyance certain other contentions related to "waste confidence," i.e., the long-term storage of spent nuclear fuel.[5] On November 19, 2013, the NRC published a Draft Environmental Assessment, as well as a Draft Finding of No Significant Impact, regarding the extension of Northern States' ISFSI license.[6] PIIC subsequently moved to admit several renewed and/or amended contentions, and the Board admitted an additional contention and amended others.[7] After all the waste confidence contentions were dismissed following completion of the so-called Continued Storage Rule,[8] three environmental contentions and one safety contention remained.[9]

Pending Settlement at 1–2 (Oct. 23, 2015). Since the parties' Settlement Motion is being granted, this October 23 motion is now moot.

[4] See LBP-12-24, 76 NRC at 511–23, 527–28, 530 (admitting Contentions 2 and 4 in part, and Contention 6 in whole).

[5] Id. at 530 (holding in abeyance all of Contention 1 and a portion of Contentions 2 and 4).

[6] 78 Fed. Reg. 69,460 (Nov. 19, 2013).

[7] LBP-14-6, 79 NRC 404, 433 (2014) (admitting renewed, amended Contention 3 and amending Contention 2). The Board continued to hold in abeyance certain contentions or portions of contentions addressing waste confidence issues. Id. (holding in abeyance amended Contention 1 and a portion of amended Contention 2).

[8] See Licensing Board Order (Dismissing Waste Confidence-Based Contentions in Accordance with CLI-14-08) at 5 (Oct. 2, 2014) (unpublished).

[9] PIIC also moved to admit an additional contention relating to the Continued Storage Rule and the trust responsibility due Indian Tribes, but its motion was denied. LBP-14-16, 80 NRC 183 (2014). LBP-14-16 also provides a thorough background discussion of the proceeding prior to 2015. Id. at 186–90.

The parties thereafter engaged in settlement discussions regarding the admitted contentions, and on March 10, 2015, the Board approved the parties' joint motion to settle and dismiss the three environmental contentions in the proceeding.[10] On March 27, 2015, Northern States sought summary disposition of Contention 6, the remaining safety contention in the proceeding.[11] On April 27, 2015, PIIC answered and filed a cross-motion for partial summary disposition.[12] The parties then entered into settlement discussions regarding Contention 6, and the Board agreed to defer temporarily the deadline for further pleadings, as well as any ruling on the dispositive cross-motions, while those settlement discussions proceeded.[13] On October 16, 2015, the parties filed the instant Settlement Motion.

II. Settlement Proposal

The parties state that, as part of the settlement, Northern States has "agreed to several revisions" of its Aging Management Program ("AMP") regarding high burnup fuel, "and to a revised license condition requiring submission of certain [evaluations] related to the continued storage of [high burnup fuel]."[14] As initially proposed, the license would have allowed for compliance with the high burnup fuel AMP in one of two ways. The AMP required Northern

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[10] Licensing Board Order (Approving Settlement and Dismissal of Contentions 2 Through 4) (Mar. 10, 2015) (unpublished).

[11] Northern State Power Company's Motion for Summary Disposition of the Prairie Island Indian Community's Contention 6 (High Burnup Fuel) (Mar. 27, 2015) [hereinafter "Northern States' Summary Disposition Motion"].

[12] PIIC's Answer to [Northern States'] Motion For Summary Disposition of PIIC's Contention 6 (High Burnup Fuel) & Cross Motion for Partial Summary Disposition of PIIC's Contention 6 (High Burnup Fuel) (Apr. 27, 2015).

[13] Licensing Board Order (Approving Deferral of Answers & Ruling on Contention 6 Summary Disposition Motions) at 2 (May 11, 2015) (unpublished).

[14] Settlement Motion at 3. The proposed settlement agreement is provided as Attachment 1 to the Settlement Motion. See id., attach. 1, Settlement Agreement Between the Prairie Island Indian Community and Northern States Power Company (Oct. 8, 2015) [hereinafter "Settlement Agreement"].

States to evaluate data arising from a U.S. Department of Energy pilot project on dry cask storage of high burnup fuel ("DOE Project") at certain formal points in time, called "Tollgate[s]," to confirm that the high burnup fuel assemblies at the Prairie Island ISFSI are operating within their licensing basis.[15] However, insofar as the DOE Project results were either unavailable or unreliable, Northern States could satisfy the requirements of the AMP with an alternative program meeting the requirements of NRC Interim Staff Guidance-24.[16] But, under the Settlement Agreement, mere compliance with NRC Interim Staff Guidance-24 no longer will be an available option to Northern States unless it obtains a license amendment authorizing the use of such an alternative program.[17] Accordingly, Northern States has agreed to revise its AMP to require the evaluation of data from the DOE Project as the sole method to confirm that the high burnup fuel assemblies meet their intended function while in the ISFSI.[18]

To implement this agreement, the amended AMP will require Northern States to simultaneously provide the NRC and PIIC with ISFSI performance evaluation data to be gathered in 2038 at the second of multiple Tollgate evaluations.[19] If the Tollgate 2 evaluation in

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[15] Settlement Motion at 3; Northern States' Summary Disposition Motion at 3. Northern States would use the data from the DOE Project "to determine (1) whether degradation is occurring, and (2) the actions required to manage fuel and cladding performance." See Northern States' Summary Disposition Motion at 10.

[16] Settlement Motion at 3.

[17] Id. at 4 ("This change removes [Northern States]'s ability to rely on an alternative program meeting [Interim Staff Guidance]-24 to gather confirmatory data unless the new program is approved by the NRC through a license amendment request.").

[18] See id. It is worth stressing that the data from the DOE Project would not be used to the exclusion of other information. Under the revised AMP, Northern States at all times must also "monitor, evaluate, and trend the information via its Operating Experience Program and/or the Corrective Action Program" to evaluate the performance of the high burnup fuel assemblies in its ISFSI. Settlement Agreement, attach. A, Revision to High Burnup Fuel AMP § A3.5.

[19] Settlement Motion at 4; Settlement Agreement ¶ 1; Settlement Agreement, attach. A, Revision to High Burnup Fuel AMP § A3.5. A license condition will be added to ensure that Northern

2038 indicates that the high burnup fuel cladding "will not meet its intended function" when stored in the ISFSI, then Northern States must seek a license amendment to identify "proposed actions for addressing the issues identified by the Tollgate 2 evaluation."[20] In addition, if by January 1, 2033—which is roughly five years before the Tollgate 2 evaluation—"it becomes evident that the DOE Project will not be completed in time to support the Tollgate 2 evaluation," Northern States must submit a license amendment to use another method, such as Interim Staff Guidance-24, to confirm that its high burnup fuel assemblies are still meeting the requirements of the high burnup fuel AMP.[21] Moreover, PIIC retains the right to participate in any license amendment proceeding concerning the issues addressed in the Settlement Agreement.[22] The parties also have agreed to meet every six months to discuss "the status of the high burnup fuel AMP, the DOE Cask Demonstration Project and other spent fuel storage issues."[23]

NRC regulations permit licensing boards broad powers necessary to "conduct a fair and impartial hearing according to law, to take appropriate action to control the prehearing and hearing process, to avoid delay and to maintain order."[24] Under this authority and the provisions of 10 C.F.R. § 2.338, boards are empowered to approve settlements proposed by the parties.[25]

States provides the results from both the first and second Tollgate evaluations to the NRC. Settlement Motion at 4.

[20] Settlement Motion at 4; Settlement Agreement ¶ 1.

[21] Settlement Motion at 4; Settlement Agreement ¶ 1.

[22] See Settlement Agreement ¶ 3.

[23] Id. ¶ 2; see also Settlement Motion at 4.

[24] 10 C.F.R § 2.319.

[25] The parties bring this settlement request "[p]ursuant to 10 C.F.R. § 2.338(i)." Settlement Motion at 1. The first sentence of 10 C.F.R. § 2.338(i) states: "Following issuance of a notice of hearing, a settlement must be approved by the presiding officer or the Commission as appropriate in order to be binding in the proceeding" (emphasis added). Here, however, no notice of hearing has been issued. Nevertheless, in the Board's estimation, it is not necessary

Licensing boards are to approve settlements when they are "fair and reasonable and comport[] with the public interest."[26] The parties appear in agreement that Northern States' revisions to its license and AMP satisfy PIIC's concerns,[27] and PIIC has consented in its Settlement Agreement

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for a notice of hearing to be issued before the Board can approve this settlement. The Commission's regulations, viewed in context, contemplate presiding officer approval of proposed settlements in proceedings with admitted contentions.

Before 2004, the settlement provision for Subpart L proceedings was found in 10 C.F.R. § 2.1241, and stated explicitly that "[a] settlement must be approved by the presiding officer or the Commission as appropriate in order to be binding in the proceeding." Id. § 2.1241 (2003). While this provision was replaced by the more general one governing settlements found in 10 C.F.R. § 2.338, the Commission explicitly noted that this change was made to consolidate regulatory text and provide guidance on the use of alternative dispute resolution; it was not adopted to effect any material alteration in the process for accepting settlements. See Changes to Adjudicatory Process, Final Rule, 69 Fed. Reg. 2182, 2225 (Jan. 14, 2004) ("Section 2.338 is a new provision that consolidates and amplifies the previous rules pertaining to settlement (10 CFR 2.203, 2.759, 2.1241). . . . The Commission intends no change in the bases for accepting a settlement under the new rule."). That the Commission still requires presiding officer approval for settlements in contested proceedings with admitted contentions is evidenced from other provisions of section 2.338. See 10 C.F.R. § 2.338(g) ("A settlement must be in the form of a proposed settlement agreement, a consent order, and a motion for its entry that includes the reasons why it should be accepted.").

Of the three provisions that were combined in the 2004 rulemaking, only 10 C.F.R. § 2.203 (2003), which was itself limited to enforcement proceedings, referred to a notice of hearing as part of the settlement procedure. See id. § 2.203 (2003) ("At any time after the issuance of an order designating the time and place of hearing . . . the staff and a licensee or other person may enter into a stipulation for the settlement of the proceeding or the compromise of a civil penalty."). This language has been present since 1962. See Revision of Rules, Final Rule, 27 Fed. Reg. 377, 380 (Jan 13, 1962). Consequently, it is the Board's estimation that this language in no way limits the Board's responsibility to approve settlements to instances only where a notice of hearing, a procedural document, has previously been issued; rather, this language requires presiding officer approval of settlements after contentions have been admitted and "set for hearing." See Civil Penalties, Final Rule, 36 Fed. Reg. 16,894, 16,895 (Aug. 26, 1971).

[26] See, e.g., Me. Yankee Atomic Power Co. (Me. Yankee Atomic Power Station), LBP-01-27, 54 NRC 219, 219 (2001), review declined, SECY Memorandum to Board and Parties on Order Approving Settlement and Terminating Proceeding (Nov. 19, 2001) (ADAMS Accession No. ML013230492).

[27] Settlement Motion at 5. Although the Staff is not a signatory to the Settlement Agreement, see Settlement Agreement at 3, the Settlement Motion indicates that the Staff has agreed to the changes in the AMP and to the revised license condition requiring the submission of certain information related to the continued storage of high burnup fuel. See Settlement Motion at 3–4.

to the dismissal of Contention 6.[28] The Board finds dismissal of this contention, in accordance with the terms of the parties' Settlement Agreement, to be in the public interest and consistent with the Commission's policy to encourage "fair and reasonable settlement and resolution of issues proposed for litigation."[29] We therefore grant the Settlement Motion. A copy of the Settlement Agreement is provided as Attachment 1 to this order.

III. Conclusion

As there are no remaining contentions in this proceeding, this proceeding is hereby terminated.[30] Concomitantly, the cross-motions for summary disposition filed by Northern States and PIIC are dismissed as moot.

It is so ORDERED.

THE ATOMIC SAFETY
AND LICENSING BOARD

/RA/

Michael M. Gibson, Chair
ADMINISTRATIVE JUDGE

/RA/

Dr. Gary S. Arnold
ADMINISTRATIVE JUDGE

/RA/

Nicholas G. Trikouros
ADMINISTRATIVE JUDGE

Rockville, Maryland
November 4, 2015

[28] Settlement Agreement ¶ 4.

[29] 10 C.F.R. § 2.338.

[30] Exelon Generation Co. (Byron Nuclear Power Station, Units 1 & 2 et al.), CLI-14-6, 79 NRC 445, 449 (2014) ("Under our practice, 'once all contentions have been decided, the contested [adjudicatory] proceeding is terminated.'" (quoting Va. Electric & Power Co. (N. Anna Power Station, Unit 3), CLI-12-14, 75 NRC 692, 699 (2012) (modification in original))).

Attachment 1

SETTLEMENT AGREEMENT BETWEEN THE PRAIRIE ISLAND INDIAN COMMUNITY AND NORTHERN STATES POWER COMPANY

This Settlement Agreement is made and entered into as of October 8, 2015, by and between the Prairie Island Indian Community ("PIIC") and Northern States Power Company, a Minnesota corporation ("NSPM"), hereinafter referred to collectively as "Parties."

WHEREAS, NSPM has submitted a License Renewal Application, dated October 20, 2011, ("LRA") to the U.S. Nuclear Regulatory Commission ("NRC"), seeking renewal of the Prairie Island Independent Fuel Storage Installation ("ISFSI") site-specific license, Special Nuclear Material License No. 2506;

WHEREAS, on August 24, 2012, the PIIC filed a Request for Hearing and Petition to Intervene ("Petition") in the NRC proceeding to renew the ISFSI license, Docket No. 72-10. Among the contentions that PIIC raised in its Petition was a contention relating to the potential degradation of high burnup fuel during the extended storage period ("Contention 6");

WHEREAS, on November 8, 2012, the Atomic Safety and Licensing Board established to preside over the proceeding ("ASLB") heard oral arguments regarding the Petition, including the admissibility of PIIC Contention 6;

WHEREAS, on December 20, 2012, the ASLB granted the Petition and admitted three contentions including, as limited by the ASLB, PIIC Contention 6;

WHEREAS, on July 31, 2014, NSPM responded to NRC requests for additional information ("RAI Response") and provided a high burnup fuel aging management program ("AMP") that relies on the Department of Energy's High Burnup Fuel Cask Research and Development Project ("DOE Cask Demonstration Project") to monitor the performance of high burnup fuel during storage;

WHEREAS, on February 27, 2015, NSPM provided a presentation to PIIC representatives regarding the potential degradation of high burnup fuel during storage, NSPM's AMP and the DOE Cask Demonstration Project;

WHEREAS, in order to address the PIIC's concerns, NSPM and PIIC agreed that NSPM's high burnup fuel AMP would be revised and submitted to the NRC in substantially the same form as provided in Attachment A;

WHEREAS, PIIC and NSPM both desire that PIIC remain informed of activities related to NSPM's high burnup fuel AMP and the DOE Cask Demonstration Project results, as well as other developments associated with continued storage of fuel at the ISFSI.

NOW, THEREFORE, in consideration of the premises and mutual promises herein, PIIC and NSPM agree as follows:

1. As provided in the high burnup fuel AMP revision in Attachment A, NSPM agrees to provide the evaluation of high burnup fuel performance required by Tollgate 2 to the NRC with simultaneous copies to PIIC. NSPM further agrees that, if the Tollgate 2 evaluation indicates that the high burnup fuel will not meet its intended function, it will submit a license amendment request to the NRC with its proposed actions to address the issue indicated by the evaluation and to continue safe storage of high burnup fuel. Finally, NSPM agrees that if by January 1, 2033, it becomes evident that the DOE Cask Demonstration Project will not be completed in time to support the Tollgate 2 evaluation, NSPM will submit a license amendment request to the NRC outlining its plans to demonstrate that the fuel performance acceptance criteria specified in the high burnup fuel AMP will continue to be met. This license amendment request will be submitted no later than December 31, 2033.

2. NSPM agrees to meet in person or telephonically with PIIC representatives, its members, and/or its technical expert(s) at six-month intervals (i.e. separately or during quarterly staff meetings) to discuss and receive feedback concerning the status of the high burnup fuel AMP, the DOE Cask Demonstration Project and other spent fuel storage issues. The purpose of these interactions is to enhance open communication and PIIC involvement with and interchange of information concerning the continued storage of spent fuel at NSPM's Prairie Island ISFSI. The updates on the high burnup spent fuel issue will include, among other things: a description of significant licensee, industry, and government meetings on the high burnup spent fuel issue; a discussion of contentions and decisions from other NRC licensing proceedings involving high burnup spent fuel; and other items of interest that may have a bearing on the high burnup spent fuel issue. The meetings will also include a forecast of significant activities over the next six-month period.

3. PIIC agrees that NSPM's revised high burnup fuel AMP and the NRC's license condition requiring submittal of Tollgate 1 and 2 evaluations to the NRC address PIIC's concerns raised in PIIC Contention 6; provided, however, that PIIC reserves the right provided for in NRC regulations to participate in any license amendment proceeding to modify the Tollgate 1 and 2 evaluation requirements set forth in NSPM's revised high burnup fuel AMP or the NRC's license condition requiring submittal of Tollgate 1 and 2 evaluations to the NRC (including any license amendment proceeding initiated in accordance with paragraph 1), and to reassert, without restriction, PIIC's concerns raised in PIIC Contention 6 in any such license amendment proceeding.

4. PIIC consents to the dismissal of PIIC Contention 6 and agrees to take such other actions as may be reasonably necessary to obtain the dismissal of Contention 6. PIIC and NSPM agree to file a joint motion seeking a Consent Order from the ASLB approving this Settlement Agreement and dismissing PIIC Contention 6.

5. NSPM and PIIC expressly waive any and all further procedural steps before the ASLB or any right to challenge or contest the validity of any order entered by that Board in accordance with this Settlement. The Parties also expressly waive all rights to seek administrative and judicial review or otherwise to contest the validity of any order entered by the ASLB approving this Settlement Agreement and the dismissal of PIIC Contention 6, so long as such order is fully consistent with each provision of this Settlement Agreement.

6. NSPM and PIIC agree that an order entered by the ASLB in accordance with this Settlement Agreement will have the same force and effect as an order entered after a full hearing.

7. NSPM and PIIC acknowledge this Settlement Agreement resolves the matters identified in this Settlement Agreement that are required to be adjudicated.

8. This Settlement Agreement shall be effective upon the last signature dated below. In the event that the ASLB disapproves this Settlement Agreement, it shall be null and void.

IN WITNESS WHEREOF, the Parties have caused this Settlement Agreement to be signed by their respective representatives on the dates indicated below.

For NORTHERN STATES POWER COMPANY - MINNESOTA

Kevin Davison 10-6-2015

Kevin Davison Date
Site Vice President,
Prairie Island Nuclear Generating Plant

For the PRAIRIE ISLAND INDIAN COMMUNITY

By:

Ronald John 10.8.15

Ronald Johnson Date
Tribal Council President

These recommendations have been addressed at PINGP and are incorporated in the applicable existing PINGP maintenance procedures.

Precedent License Renewal Applications OE
A review of precedent ISFSI license renewal applications was performed to evaluate any relevant operating experience. ISFSIs included in this review were Calvert Cliffs Nuclear Power Plant, H. B. Robinson Steam Electric Station, and Surry Power Station. The results of these reviews concluded that the Prairie Island ISFSI Inspection and Monitoring Activities Program is effective in monitoring and detecting degradation and taking effective corrective actions as needed to preclude loss of intended function.

Conclusion
The OE, reviews, and monitoring described above confirm that any potential aging effects will be identified, evaluated, and managed effectively, ensuring that these structures and components remain capable of performing their intended functions.

A2.10.3 Comparison to NUREG-1927 Program Element

This PINGP program element is consistent with NUREG-1927, Element 10, Operating Experience.

A3.0 HIGH BURNUP FUEL MONITORING PROGRAM

The Prairie Island ISFSI provides for long-term dry fuel interim storage for high burnup spent fuel assemblies, i.e., fuel assemblies with discharge burnups greater than 45 GWD/MTU, until such time that the spent fuel assemblies may be shipped off-site for final disposition. The cask system presently utilized at the Prairie Island ISFSI for the storage of high burnup spent fuel is the Transnuclear TN-40HT which has a 40 fuel assembly capacity and is designed for outdoor storage.

The Aging Management Review of the high burnup fuel spent fuel assemblies in a dry inert environment did not identify any aging effects/mechanisms that could lead to a loss of intended function. However, it is recognized that there has been relatively little operating experience, to date, with dry storage of high burnup fuel. Reference A5.8 provides a listing of a significant amount of scientific analysis examining the long term performance of high burnup spent fuel. These analyses provide a sound foundation for the technical basis that long term storage of high burnup fuel, i.e., greater than 20 years, may be performed safely and in compliance with regulations. However, it is also recognized that scientific analysis is not a complete substitute for confirmatory operating experience. Therefore, the purpose of the High Burnup Fuel Monitoring Program is to confirm that the high burnup fuel assemblies' intended function(s) are maintained during the period of extended operations.

A description of the High Burnup Fuel Monitoring Program is provided below. Although the program is a confirmatory program, the description below uses each attribute of an effective AMP as described in NUREG-1927 for the renewal of a site-specific Part 72 license to the extent possible.

A3.1 AMP Element 1: Scope of the Program

Fuel Stored in a TN-40HT Cask is limited to an assembly average burnup of 60 GWd/MTU (note that the nominal burnup value is lower to account for uncertainties). The cladding materials for the Prairie Island high burnup fuel are Zircaloy-4 and Zirlo™, and the fuel is stored in a dry helium environment. High burnup fuel was first placed into dry storage in a TN-40 HT cask on April 4, 2013.

The High Burnup Fuel Monitoring Program relies upon the joint Electric Power Research Institute (EPRI) and Department of Energy (DOE) "High Burnup Dry Storage Cask Research and Development Project" (HDRP) (Reference A5.9) or an alternative program meeting the guidance in Interim Staff Guidance (ISG) 24, Reference A5.10, as a surrogate program to monitor the condition of high burnup spent fuel assemblies in dry storage.

The HDRP is a program designed to collect data from a spent nuclear fuel storage system containing high burnup fuel in a dry helium environment. The program entails loading and storing a TN-32 bolted lid cask (the Research Project Cask) at Dominion Virginia Power's North Anna Power Station with intact high burnup spent nuclear fuel (with nominal burnups ranging between 53 GWd/MTU and 58 GWd/MTU). The fuel assemblies to be used in the program include four different kinds of cladding (Zircaloy-4, low-tin Zircaloy-4, Zirlo™, and M5™). The Research Project Cask is to be licensed to the temperature limits contained in ISG-11, Reference A5.7, and loaded such that the fuel cladding temperature is as close to the limit as practicable. Aging effects will be determined for material/environment combinations per ISG-24 Rev. 0 or the "High Burnup Dry Storage Cask Research and Development Project" (HDRP).

A3.2 AMP Element 2: Preventive Actions

The High Burnup Fuel Monitoring Program consists of condition monitoring to confirm there is no degradation of a high burnup fuel assembly that would result in a loss of intended function(s). Other than the initial design limits placed on loading operations, no preventive or mitigating attributes are associated with these activities.

During the initial loading operations of the TN-40HT casks, the design and ISFSI Technical Specifications (TS) require that the fuel be stored in a dry inert environment. TS 3.1.1, "Cask Cavity Vacuum Drying," demonstrates that the cask cavity is dry by maintaining a cavity absolute pressure less than or equal to 10 mbar for a 30 minute period with the cask isolated from the vacuum pump. TS 3.1.2, "Cask Helium Backfill Pressure," requires that the cask then be backfilled with helium. These two TS requirements ensure that the high burnup fuel is stored in an inert environment thus preventing cladding degradation due to oxidation mechanisms. TS 3.1.2 also requires that the helium environment be established within 34 hours of commencing cask draining. This time requirement ensures that the peak cladding temperature remains below 752°F (i.e., the temperature specified in ISG-11), thus mitigating degradation due to cladding creep.

A3.3 AMP Element 3: Parameters Monitored/ Inspected

Either the surveillance demonstration program as described in the HDRP or an alternative program should meet the guidance of ISG-24, Rev. 0.

A3.4 AMP Element 4: Detection of Aging Effects

Either the surveillance demonstration program as described in the HDRP or an alternative program should meet the guidance of ISG-24, Rev. 0.

A3.5 AMP Element 5: Monitoring & Trending

As information/data from a fuel performance surveillance demonstration program becomes available, NSPM will monitor, evaluate, and trend the information via its Operating Experience Program and/or the Corrective Action Program to determine what actions should be taken to manage fuel and cladding performance, if any.

Similarly, NSPM will use its Operating Experience Program and/or Corrective Action Program to determine what actions should be taken if it receives information/ data from other sources than the demonstration program on fuel performance.

Formal evaluations of the aggregate feedback from the HDRP and other sources of information will be performed at the specific points in time during the period of extended operation delineated in the table below. These evaluations will include an assessment of the continued ability of the high burnup fuel assemblies to continue to perform their intended function(s) at each point.

Toll Gate	Year *	Assessment
1	2028	Evaluate information obtained from the HDRP loading and initial period of storage along with other available sources of information. If the HDRP NDE (i.e., cask gas sampling, temperature data) has not been obtained at this point and no other information is available then NSPM has to provide evidence to the NRC that no more than 1% of the HBF has failed.

Toll Gate	Year *	Assessment
2	2038	2.a - (i) Evaluate information obtained from the destructive (DE) and non-destructive (NDE) examination of the fuel placed into storage in the HDRP along with other available sources of information and provide the evaluation to the NRC with simultaneous copies to the Prairie Island Indian Community. (ii) If the aggregate of this information indicates that the high burnup fuel assemblies will not perform "intended function(s)" – as that term is used in NRC regulations – NSPM will submit a License Amendment Request to NRC with its proposed actions to address the issues indicated by the evaluation and to continue safe storage of high burnup fuel. (iii) If the aggregate of this information confirms the ability of the high burnup fuel assemblies to continue to perform intended function(s) for the remainder of the period of extended operations, subsequent assessments may be cancelled. 2.b If by January 1, 2033 it becomes evident that the HDRP DE of the fuel will not be completed in time to support the assessment required by Toll Gate 2.a, NSPM will submit a License Amendment Request to the NRC outlining its plans to obtain evidence to demonstrate that the fuel performance acceptance criteria 1-4 in element 6 continue to be met. This License Amendment Request will be submitted to the NRC for approval no later than December 31, 2033. The evaluation using this evidence will be completed by 2038.
3	2048	Evaluate any other new information.

* Assessments are due by April 4 of the year identified in the table

The above assessments are not, by definition, stopping points. No particular action, unless noted in this AMP, other than performing an assessment is required to continue cask operation. To proceed, an assessment of aggregated available operating experience (both domestic and international), including data from monitoring and inspection programs, NRC-generated communications, and other information will be performed. The evaluation will include an assessment

of the ability of the high burnup fuel assemblies to continue to perform their intended function(s).

A3.6 AMP Element 6: Acceptance Criteria

- The HDRP or any other demonstration used to provide fuel performance data should meet the acceptance criteria guidance of ISG-24 Rev 0.
- If any of the following fuel performance criteria are exceeded in the HDRP or alternative program, a corrective action is required[1]:
    1. Cladding Creep: total creep strain extrapolated to the total approved storage duration based on the best fit to the data, accounting for initial condition uncertainty shall be less than 1%
    2. Hydrogen – maximum hydrogen content of the cover gas over the approved storage period shall be extrapolated from the gas measurements to be less than 5%
    3. Drying – The moisture content in the cask , accounting for measurement uncertainty, shall indicate no greater than one liter of residual water after the drying process is complete
    4. Fuel rod breach – fission gas analysis shall not indicate more than 1% of the fuel rod cladding breaches

A3.7 AMP Element 7: Corrective Actions

The NSPM Corrective Action Program commensurate with 10 CFR 50 Appendix B will be followed.

In addition, at each of the assessments in AMP Section 5, the impact of the aggregate feedback will be assessed and actions taken when warranted. These evaluations will address any lessons learned and take appropriate corrective actions, including:

- Perform repairs or replacements
- Modify this confirmatory program in a timely manner
- Adjust age-related degradation monitoring and inspection programs (e.g., scope, frequency)
- Actions to prevent reoccurrence
- An evaluation of the DCSS to perform it's safety and retrievability functions
- Evaluation of the effect of the corrective actions on this component to other safety components.

A3.8 AMP Element 8: Confirmation Process

The confirmation process is part of the NSPM Corrective Action Program and ensures that the corrective actions taken are adequate and appropriate, have been completed, and are effective. The focus of the confirmation process is on the follow-up actions that must be taken to verify effective implementation of corrective actions. The measure of effectiveness is in terms of correcting the

[1] While it is not a fuel performance criteria, the spatial distribution and time history of the temperature must be known to evaluate the relationship between the performance of the rods in the HDRP and the HBF rod behavior expected in the TN-40HT cask.

adverse condition and precluding repetition of significant conditions adverse to quality. Procedures include provisions for timely evaluation of adverse conditions and implementation of any corrective actions required, including root cause evaluations and prevention of recurrence where appropriate. These procedures provide for tracking, coordinating, monitoring, reviewing, verifying, validating, and approving corrective actions, to ensure effective corrective actions are taken.

A3.9 AMP Element 9: Administrative Controls

The NSPM Quality Assurance Program, associated formal review and approval processes, and administrative controls applicable to this program and Aging Management Activities, are implemented in accordance with the requirements of the NSPM Quality Assurance Topical Report and 10 CFR Part 50, Appendix B. The administrative controls that govern AMAs at PINGP are established in accordance with the PINGP Administrative Control Program and associated Fleet Procedures.

A3.10 AMP Element 10: Operating Experience

Surrogate surveillance demonstration programs with storage conditions and fuel types similar to those in the dry storage system that satisfies the ISG-24 acceptance criteria are a viable method to obtain operating experience. NSPM intends to rely on the information from the HDRP with similar types of HBU fuel. The HDRP is viable as a surrogate surveillance program. Additional data/research to assess fuel performance from both domestic and international sources that are relevant to the fuel in the NSPM casks will also be used.

A4.0 Summary

The review of operating experience identified a number of incidents related to dry fuel storage. Although many of these were event-driven and most were not age-related, for those that did involve credible aging effects and mechanisms, evaluations were conducted to assess potential susceptibility. These evaluations indicated that the aging effects and mechanisms that were identified at the Prairie Island ISFSI are bounded by the Aging Management Reviews that were performed for those structures and components identified as within the scope of License Renewal.

Operating experience to date has not indicated any degradation that would affect the structures or component intended function(s). Inspections, monitoring, and surveillances continue to be conducted that would identify deficiencies. The Corrective Action Program is in place to track and correct deficiencies in a timely manner. Corrective actions have been effectively implemented when inspection and monitoring results have indicated degradation. Continued implementation of the ISFSI Inspection and Monitoring Activities Program and the High Burnup Fuel Monitoring Program provide reasonable assurance that the aging effects will be managed such that the intended functions will be maintained during the period of extended operation.

A5.0 References (Appendix A, Aging Management Program)

A5.1 NUREG-1927, *Standard Review Plan for Renewal of Spent Fuel Dry Cask Storage System Licenses and Certificates of Compliance*, March 2011.

A5.2 EPRI Report 1002882, *Dry Cask Storage Characterization Project, Final Report*, September 2002.

A5.3 Letter from D.A. Christian, Virginia Electric and Power Company to D.A. Cool (NRC), *Surry Independent Spent Fuel Storage Installation License Renewal Application*, dated April 29, 2002, ADAMS Accession Number ML021290068.

A5.4 Transnuclear Information Bulletin, April 2001.

A5.5 Letter from G. L. Stathes, Exelon Generation Company to Director Spent Fuel Project Office (NRC), *Submittal of Independent Spent Fuel Storage Installation (ISFSI) Cask Event Report*, dated December 01, 2010, ADAMS Accession Number ML110060275.

A5.6 American Concrete Institute, ACI 349.3R-96, *Evaluation of Existing Nuclear Safety-Related Concrete Structures*, January 1996.

A5.7 NRC Interim Staff Guidance 11, *Cladding Considerations for the Transportation and Storage of Spent Fuel*, Revision 3, November 17, 2003.

A5.8 Letter from R. McCullum (NEI) to M. Lombard (NRC), dated March 22, 2013, *Industry Analysis and Confirmatory Information Gathering Program to Support the Long-Term Storage of High Burnup Fuel (HBF)*, (ADAMS Accession No. ML13084A045).

A5.9 High Burnup Dry Storage Cask Research and Development Project Final Test Plan, February 27, 2014, DOE Contract No.: DE-NE-0000593.

A5.10 NRC Interim Staff Guidance 24, *The Use of a Demonstration Program as a Surveillance Tool for Confirmation of Integrity for Continued Storage of High Burnup Fuel Beyond 20 Years*, Revision 0, July 11, 2014.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

In the Matter of	)	
	)	
Northern States Power Company	)	Docket No. 72-10-ISFSI-2
	)	
(Prairie Island Nuclear Generating Plant, Independent Spent Fuel Storage Installation)	)	
	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing **ORDER (Approving Settlement, Eliminating Disclosures, and Terminating Proceeding) (LBP-15-30)** have been served upon the following persons by Electronic Information Exchange.

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[Original signed by Herald M. Speiser]
Office of the Secretary of the Commission

Dated at Rockville, Maryland
this 4th day of November, 2015