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PRAIRIE ISLAND
Technical Specifications
UPDATING INSTRUCTIONS
Effective Date: 7/24/2015

☐ PINGP

☒ ISFSI

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NORTHERN STATES POWER COMPANY, A MINNESOTA CORPORATION (NSPM)
DOCKET NO. 72-10
PRAIRIE ISLAND INDEPENDENT SPENT FUEL STORAGE INSTALLATION
AMENDMENT TO MATERIALS LICENSE NO. SNM-2506

Amendment No. 9
License No. SNM-2506

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The amendment application dated May 23, 2014, as supplemented by the letter on November 19, 2014, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
 - B. The Prairie Island Independent Spent Fuel Storage Installation will continue to operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
 - C. There is reasonable assurance that (i) the activities authorized by this amendment can be conducted without endangering public health and safety, and (ii) such activities will be conducted in compliance with the Commission's regulations;
 - D. The issuance of this amendment will not be inimical to the common defense and security or to public health and safety; and
 - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.
2. Accordingly, the license is amended by the enclosed changes to Materials License No. SNM-2506, indicated by margin notations.

3. This license amendment is effective as of the date of its issuance.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Michele Sampson, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Amended License

Date of Issuance: April 10, 2015

LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR FUEL AND HIGH-LEVEL RADIOACTIVE WASTE

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974 (Public Law 93-438), and Title 10, *Code of Federal Regulations*, Chapter 1, Part 72, and in reliance on statements and representations heretofore made by the licensee, a license is hereby issued authorizing the licensee to receive, acquire, and possess the power reactor spent fuel and other radioactive materials associated with spent fuel storage designated below; to use such material for the purpose(s) and at the place(s) designated below; and to deliver or transfer such material to persons authorized to receive it in accordance with the regulations of the applicable Part(s). This license shall be deemed to contain the conditions specified in Section 183 of the Atomic Energy Act of 1954, as amended, and is subject to all applicable rules, regulations, and orders of the Nuclear Regulatory Commission now or hereafter in effect and to any conditions specified herein.

Licensee		3. License No.	SNM-2506
1. Northern States Power Company, a Minnesota corporation (NSPM) ¹		Amendment No.	9
2. 414 Nicollet Mall Minneapolis, Minnesota, 55401-1927		4. Expiration Date	October 31, 2013
		5. Docket or Reference No.	72-10
6. Byproduct, Source, and/or Special Nuclear Material	7. Chemical or Physical Form	8. Maximum Amount That Licensee May Possess at Any One Time Under This License	

Spent fuel assemblies from Prairie Island Nuclear Station Units 1 and 2 reactors, using natural water for cooling and enriched not greater than 3.85 (TN-40) and not greater than 5.00 (TN-40HT) percent U-235, and associated radioactive materials related to receipt, storage and transfer of the fuel assemblies

A. As UO₂ clad with zirconium or zirconium alloys

A. 715.29 TeU of spent fuel assemblies

B. Irradiated fuel assembly inserts from the Prairie Island Nuclear Station Units 1 and 2 reactors. An insert may be a burnable poison rod assembly (BPRA) or a thimble plug device (TPD).

B. SS 304 structure, Inconel 718 spring, and borated pyrex glass.

B. One BPRA or TPD per spent fuel assembly.

¹ Northern States Power Company was incorporated in Minnesota as a wholly owned subsidiary of Xcel Energy Inc., effective August 18, 2000. This license, as amended, was amended to reflect the Commission's consent per 10 CFR Part 72, Section 72.50, to the license transfer approved by order dated May 12, 2000.

**LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR
FUEL AND HIGH-LEVEL RADIOACTIVE WASTE
SUPPLEMENTARY SHEET**

9. Authorized Use: For use in accordance with the conditions in this license and the Technical Specifications contained in Appendix A. The basis for this license was submitted in the Safety Analysis dated August 31, 1990, and supplements dated October 29, 1990; April 2, June 5, October 9 and 31, November 15, December 11, 20, and 23, 1991; January 17, February 6, 10, and 12, March 2 and 5, April 3, 22, and 23, July 10, August 12, 13, and 14, 1992; October 2, 1995; August 31, October 29, and November 24, 1999; and February 2, March 14, October 16, 2000; and February 12, 2001; March 28, June 26, and August 29, 2008; June 26, and September 28, 2009; January 18, May 4, July 27, 2010; and July 17, December 5, 2013, and May 23, 2014 and as further supplemented and amended in accordance with 10 CFR 72.70 and 10 CFR 72.48.

The material identified in 6 and 7 above is authorized for receipt, possession, storage, and transfer.

10. Authorized Place of Use: The licensed material is to be received, possessed, transferred, and stored at the Prairie Island ISFSI located on the Prairie Island Nuclear Generating Plant site in Goodhue County, Minnesota.
11. This site is described in Chapter 2 of the Technical Specifications and Safety Analysis Report (TS/SAR) for the Prairie Island ISFSI.
12. The Technical Specifications contained in Appendix A attached hereto are incorporated into the license. NSPM shall operate the installation in accordance with the Technical Specifications in Appendix A.
13. NSPM shall fully implement and maintain in effect all provisions of the ISFSI physical security, guard training and qualification, and safeguards contingency plans previously approved by the Commission and all amendments made pursuant to the authority of 10 CFR 72.56, 72.44(e), and 72.186. The plans, which contain safeguards information protected under 10 CFR 73.21, are entitled: "Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation Physical Security Plan," Revision 0, submitted by letter dated March 10, 1992; "Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation Security Force Training and Qualification Plan," Revision 0, submitted by letter dated March 10, 1992; and "Prairie Island Nuclear Generating Plant Independent Spent Fuel Storage Installation Safeguards Contingency Plan," Revision 0, submitted by letter dated March 10, 1992.
14. The Technical Specifications for Environmental Protection contained in Appendix A attached hereto are incorporated into the license.

Specifications required pursuant to 10 CFR 72.44(d), stating limits on the release of radioactive materials for compliance with limits of 10 CFR Part 20 and "as low as is reasonably achievable objective" for effluents are not applicable. Spent fuel storage cask external surface contamination within the limits of Technical Specification 3.2.1 ensures that the offsite dose will be inconsequential. In addition, there are no normal or off-normal releases or effluents expected from the double-sealed storage casks of the ISFSI.

Specifications required pursuant to 10 CFR 72.44(d)(1), for operating procedures, for control of effluents, and for the maintenance and use of equipment in radioactive waste treatment systems, to meet the requirements of 10 CFR 72.104 are not applicable. There are, by the design of the sealed storage casks at the ISFSI, no effluent releases. Also, cask loading and unloading operations and waste treatment will occur at the Prairie Island Nuclear Generating Plant, under the specifications of its operating licenses.

**LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR
FUEL AND HIGH-LEVEL RADIOACTIVE WASTE
SUPPLEMENTARY SHEET**

15. No spent nuclear fuel shall be allowed to be loaded until such time as the following preoperational license conditions are satisfied:
- A A training exercise (Dry Run) of all spent fuel storage cask loading and handling activities shall be held, which shall include, but not be limited to, those listed, and which need not be performed in the order listed:
- a. Moving cask in and out of spent fuel pool area
 - b. Loading fuel assembly (using dummy assembly)
 - c. Cask drying, sealing, and cover gas backfilling operations
 - d. Moving cask to, and placing it on, the storage pad
 - e. Returning the cask to the auxiliary building
 - f. Unloading the cask
 - g. Decontaminating the cask
 - h. All dry-run activities shall be done using written procedures
 - i. The activities listed above shall be performed or modified and performed to show that each activity can be successfully executed before actual fuel loading.
- B The Prairie Island Nuclear Generating Plant Emergency Plan shall be reviewed and modified, as required, to include the ISFSI.
- C A training module shall be developed for the Prairie Island Nuclear Generating Plant Training Program, establishing an ISFSI Training and Certification Program that will include the following:
- a. Cask Design (overview)
 - b. ISFSI Facility Design (overview)
 - c. ISFSI Safety Analysis (overview)
 - d. Fuel loading and cask handling procedures and off-normal procedures
 - e. ISFSI License (overview).
- D The Prairie Island Nuclear Generating Plant Radiation Protection Procedures shall be reviewed and modified, as required, to include the ISFSI.
- E The Prairie Island Nuclear Generating Plant Administrative Procedures shall be reviewed and modified, as required, to include the ISFSI.

**LICENSE FOR INDEPENDENT STORAGE OF SPENT NUCLEAR
FUEL AND HIGH-LEVEL RADIOACTIVE WASTE
SUPPLEMENTARY SHEET**

- F A procedure shall be developed and implemented for the documentation of the characterizations performed to select spent fuel to be stored in the casks. Such procedure shall include independent verification of fuel assembly selection by an individual other than the original individual making the selection.
- G A procedure shall be developed and implemented for two independent determinations (two samples analyzed by different individuals) of the boron concentration in the water used to fill the cask cavity for fuel loading and unloading activities.
- H Written procedures shall be implemented to describe actions to be taken during operation, off-normal, and emergency conditions.
16. The design, construction, and operation of the ISFSI shall be accomplished in accordance with the U.S. Nuclear Regulatory Commission Regulations specified in Title 10 of the U.S. Code of Federal Regulations. All commitments to the applicable NRC regulatory guides and to engineering and construction codes shall be carried out.
17. Fuel and cask movement and handling activities that are to be performed in the Prairie Island Nuclear Generating Plant Auxiliary Building will be governed by the requirements of the Prairie Island Nuclear Generating Plant Facility Operating Licenses (DRP-42 and -60) and associated Technical Specifications.
18. The TN-40HT confinement boundary base material and associated welds shall be helium leak tested at the fabricator in accordance with ANSI N-14.5 to "leaktight" criteria. The TN-40 confinement boundary base material and associated welds shall be helium leak tested at the fabricator in accordance with ANSI N14.5 to "leaktight" criteria, if fabricated after the date of Amendment No. 7 approval.
19. This license is effective as of the date of issuance shown below.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Michele Sampson, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

Date of Issuance: October 19, 1993

As amended by
Amendment No. 9 dated April 10, 2015

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
RECORD OF REVISIONS
TECHNICAL SPECIFICATION CHANGES AND LICENSE AMENDMENTS**

NSP Revision (REV) No.	Date of Issue	License Amendment No.	Remarks
ORIGINAL	10/19/93	-	License Issued
1	3/17/94	1	Correction to Page 1 of License
2	2/1/96	2	Change to p. 6-1
3	8/7/00	3	Change to p. 6-1
4	8/18/00	4	License reissue only
5	2/12/01	5	Change to Sec. 3/4
5*	5/1/08	Correction to Amendment 5	Correction to page 1 of License, per NRC letter dated February 7, 2008
6	9/22/08	6	Transfer of operating authority
7	8/20/10	7	Reformatted and Inclusion of TN-40HT design
8	3/10/14	8	Revised absorber and aluminum plate minimum allowed thermal conductance
9	7/24/2015	9	Revise surveillance requirements in TS 3.1.2

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
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*Re-issued 6/3/14 to add sidebars

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action A.1 and associated Completion Time not met.	B.1 Return cask to pool and reflood.	7 days

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<p>SR 3.1.2.1 -----NOTE----- Not required to be met prior to the specified Frequency. -----</p> <p>Verify that a helium environment has been established in the cask cavity.</p>	Once within 34 hours after commencing cask draining
<p>SR 3.1.2.2 -----NOTE----- Not required to be met prior to the specified Frequency. -----</p> <p>Verify that the cask cavity pressure is ≤ 14 mbar absolute.</p>	Once prior to pressurization (SR 3.1.2.3)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
SR 3.1.2.3 -----NOTE----- Not required to be met prior to the specified Frequency. ----- Verify that the cask cavity helium pressure is ≥ 1345 mbar absolute and ≤ 1445 mbar absolute.	Once prior leak testing (SR 3.1.3.1)

**PRAIRIE ISLAND NUCLEAR GENERATING PLANT
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
RECORD OF REVISION BASES CHANGES AND LICENSE AMENDMENTS**

NSPM Revision (REV) No.	Date of Issue	License Amendment No.	Remarks
-	-	1 through 6	Original Bases were part of Technical Specifications
7	8/20/2010	7	Initial Issue of revised format and Inclusion of TN-40HT design.
8	12/12/2012	-	Clarify "helium environment" requirement in ISFSI SR 3.1.2.1.
9	8/27/13	-	Revise B 3.1.5 paraphrase of regulatory requirements.
10	7/24/2015	9	Revise SR for B 3.1.2.

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BASES

ACTIONS
(continued)

B.1

If a helium cask environment cannot be achieved and maintained, fuel clad temperatures may increase beyond the analyzed condition. Therefore, the cask will be required to be placed back into the spent fuel pool within 7 days and re-flooded. This time is sufficient time to return the cask to the spent fuel pool and re-flood the cask cavity. Once placed in the spent fuel pool, the fuel is provided adequate decay heat removal to maintain the loaded fuel within limits.

SURVEILLANCE
REQUIREMENTS

SR 3.1.2.1

This Surveillance is modified by a Note. The Note clarifies that meeting the Surveillance is not required, and thus there is not a failure to meet the LCO per SR 3.0.1 and SR 3.0.4 does not apply, prior to the specified Frequency.

While, the effective thermal conductivity of the cavity gas is not dependant upon pressure, it is dependant upon the make-up of the gases within the cask cavity. Thermal analyses have shown that maximum fuel cladding temperature limit of 752°F is not exceeded during LOADING OPERATIONS provided a 75% helium environment (based on partial pressure) is established within the cask. Thus, design basis heat removal requirements will be satisfied provided an environment of at least 75% helium has been established, and maintained in the cask cavity within the 34 hour vacuum drying time frame (Reference 3).

SR 3.1.2.2

This Surveillance is modified by a Note. The Note clarifies that meeting the Surveillance is not required, and thus there is not a failure to meet the LCO per SR 3.0.1, and SR 3.0.4 does not apply prior to the specified Frequency.

Evacuating the cask cavity to the specified vacuum prior to pressurization (see SR 3.1.2.3) will ensure that the amount of oxidizing gases remaining in the cavity will be no greater than

SURVEILLANCE
REQUIREMENTS
(continued)

0.25% (volume). Below this concentration, degradation of stored cladding and fuel materials is not expected.

SR 3.1.2.3

This Surveillance is modified by a Note. The Note clarifies that meeting the Surveillance is not required, and thus there is not a failure to meet the LCO per SR 3.0.1 and SR 3.0.4 does not apply, prior to the specified Frequency.

The long-term integrity of the stored fuel is dependent on storage in a dry, inert environment and maintenance of adequate heat transfer mechanisms. Filling the cask cavity with helium at the initial pressure, following the evacuation in SR 3.1.2.2, will ensure that the amount of oxidizing gases remaining in the cavity will be no greater than 0.25% (volume). At this concentration, degradation of stored cladding and fuel materials is not expected. Also, maintaining pressure below the upper limiting value will ensure that cask cavity internal pressure will remain within limits for the life of the cask.

Backfilling with helium at a specified pressure must be performed successfully on each cask prior to performance of leak testing activities and TRANSPORT and STORAGE OPERATIONS.

REFERENCES

1. SAR Section 8.2.
 2. SAR Section A8.2.
 3. SAR Section A3.3.
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