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KIMSSO1

May 1, 2008\

From: Bruce Loesch / Document Control / Prairie Island Nuclear Plant
To: ISFSI Tech Spec Copyholders

Subject: Entire Re-issue of ISFSI Tech Specs

Copyholder,

Enclose you will find a complete re-issue of the ISFSI Tech Spec pages.
This is being done to ensure your manual is up to date.

This re-issue includes an Editorial Correction to Page 1 of Amendment No. 5
to Materials License SNM-2506, per NRC letter dated February 7, 2008.

Please Remove all pages currently in your manual and Replace with the attached pages.
If you have any questions, feel free to contact me at 612-330-6349 ext.4664.

Thank you,
Bruce Loesch



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

NORTHERN STATES POWER COMPANY
PRAIRIE ISLAND INDEPENDENT SPENT FUEL STORAGE INSTALLATION
MATERIALS LICENSE NO. SNM-2506

The Nuclear Regulatory Commission (the Commission) has found that:

- A. The application, filed by the Northern States Power Company (NSP) (applicant) for a materials license to receive, store, and transfer spent fuel from Prairie Island Nuclear Generating Plant in an independent spent fuel storage installation (ISFSI) located at its Prairie Island Nuclear Generating Plant site, meets the standards and requirements of the Atomic Energy Act of 1954, as amended (Act), and the Commission's regulations set forth in 10 CFR Chapter I;
- B. The Prairie Island ISFSI will operate in conformity with the application, as amended, the provisions of the Act, and the rules and regulations of the Commission;
- C. The proposed site complies with the criteria in Subpart E of 10 CFR Part 72;
- D. The proposed ISFSI will not pose an undue risk to the safe operation of the Prairie Island Nuclear Generating Plant Units 1 and 2;
- E. The applicant's proposed ISFSI design complies with the 10 CFR Part 72, Subpart F, with the exception of 10 CFR 72.124(b);
- F. The applicant is qualified, by reason of training and experience, to conduct the operation covered by the regulation in 10 CFR Part 72;
- G. The applicant's proposed operating procedures to protect health and to minimize danger to life and property are adequate;
- H. The applicant is financially qualified to engage in the activities, in accordance with the regulations in 10 CFR Part 72;
- I. The applicant's proposed quality assurance plan complies with 10 CFR Part 72, Subpart G;
- J. The applicant's proposed physical protection provisions comply with 10 CFR Part 72, Subpart H;
- K. The applicant's proposed personnel training program complies with 10 CFR Part 72, Subpart I;

- L. The applicant's proposed decommissioning plan, pursuant to 10 CFR 72.30 provides reasonable assurance that the decontamination and decommissioning of the Prairie Island ISFSI at the end of its useful life will provide adequate protection to the health and safety of the public.
- M. The applicant's proposed emergency plan complies with 10 CFR 72.32;
- N. The applicant has satisfied the applicable provisions of 10 CFR Part 170;
- O. There is reasonable assurance (1) that the activities authorized by the license can be conducted without endangering the health and safety of the public, and (2) that such activities will be conducted in compliance with the regulations of the Commission set forth in 10 CFR Chapter I; and
- P. The issuance of this license will not be inimical to the common defense and security nor to the health and safety of the public.

Accordingly, based on the foregoing findings, Materials License No. SNM-2506 is hereby issued to Northern States Power Company to read as follows:



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

NUCLEAR MANAGEMENT COMPANY, LLC
DOCKET NO. 72-10
PRAIRIE ISLAND INDEPENDENT SPENT FUEL STORAGE INSTALLATION
AMENDMENT TO MATERIALS LICENSE NO. SNM-2506

Amendment 5
License SNM-2506

1. The Nuclear Regulatory Commission (the Commission) has found that:
 - A. The amendment application dated August 31, 1999, as supplemented November 8, 1999; March 13, April 6, and October 16, 2000, 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

E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety and Safeguards

Enclosure: Revised License Pages

Date of Issuance of Amendment: February 12, 2001

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 1. Northern States Power Company ² Nuclear Management Company, LLC ¹ 2. 414 Nicollet Mall Minneapolis, Minnesota 55410	3. License No. SNM-2506 Amendment No. 5 4. Expiration Date October 31, 2013 5. Docket or Reference No. 72-10
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6. Byproduct, Source, and/or
Special Nuclear Material

7. Chemical and/or Physical Form

8. Maximum Amount That Licensee
May Possess at Any One Time
Under This License

A. 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 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 reactor. 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 Nuclear Management Company, LLC, hereinafter referred to as NMC, succeeds Northern States Power Company as operator of the Prairie Island Independent Spent Fuel Storage Installation. Consequently, NMC is authorized to act as agent for Northern States Power Company and has exclusive responsibility and control over physical construction, operation, and maintenance of the facility.

² 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 effective this date 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**

License No. SNM-2506

Amendment No. 5

Docket or Reference No. 72-10

9. Authorized Use: For use in accordance with statements, representations, and the conditions of the Technical Specifications and Safety Analysis Report 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, and October 16, 2000.

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. NMC shall operate the installation in accordance with the Technical Specifications in Appendix A.

13. NMC 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 72.104 and "as low as is reasonably achievable objective" for effluents are not applicable. 10 CFR 72.104(c) ensures that the site 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**

License No. SNM-2506

Amendment No. 5

Docket or Reference No. 72-10

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 TN-40 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:
- Moving cask in and out of spent fuel pool area
 - Loading fuel assembly (using dummy assembly)
 - Cask drying, sealing, and cover gas backfilling operations
 - Moving cask to, and placing it on, the storage pad
 - Returning the cask to the auxiliary building
 - Unloading the cask
 - Decontaminating the cask
 - All dry-run activities shall be done using written procedures
 - The activities listed above shall be performed by 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:
- TN-40 Cask Design (overview)
 - ISFSI Facility Design (overview)
 - ISFSI Safety Analysis (overview)
 - Fuel loading and cask handling procedures and off-normal procedures
 - 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.
- 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.

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

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. This license is effective as of the date of issuance shown below.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

E. William Brach, Director
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

Date of Issuance: October 19, 1993

As amended by
Amendment 5 dated February 12, 2002

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
INDEPENDENT SPENT FUEL STORAGE INSTALLATION
APPENDIX A TECHNICAL SPECIFICATIONS RECORD OF REVISIONS

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*Correction to
Amendment 5

PRAIRIE ISLAND NUCLEAR GENERATING PLANT
RECORD OF TECHNICAL SPECIFICATION CHANGES AND LICENSE AMENDMENTS

NSP Revision (REV) No.	NRC Amendment No.	Date of Issue	Remarks
ORIGINAL	-	10/19/93	License Issued
1	1	3/17/94	Correction to Page 1 of License
2	2	2/1/96	Change to p. 6-1
3	3	8/7/00	Change to p. 6-1
4	4	8/18/00	
5	5	2/12/01	Change to Sec. 3/4
5*	Correction to Amendment 5	5/1/08	Correction to page 1 of License, per NRC letter dated February 7, 2008

PRAIRIE ISLAND
INDEPENDENT SPENT FUEL STORAGE INSTALLATION

APPENDIX "A"
TO
MATERIALS LICENSE SNM-2506

TECHNICAL SPECIFICATIONS

ISSUED BY THE UNITED STATES NUCLEAR REGULATORY COMMISSION

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INTRODUCTION

These Technical Specifications govern the safety of the receipt, possession, and storage of irradiated nuclear fuel at the Prairie Island Independent Spent Fuel Storage Installation and the transfer of such irradiated nuclear fuel to and from Units 1 and 2 of the Prairie Island Nuclear Generating Plant and the Prairie Island Independent Spent Fuel Storage Installation. The protection of the environment during the activities described above is also governed under these technical specifications. The loading of spent fuel into the TN-40 cask at the Prairie Island Nuclear Generating Plant Auxiliary Building is governed by the existing Prairie Island 10 CFR Part 50 operating licenses (DPR-42 and -60), technical specifications, and new specific procedures.

SECTION 1.0

DEFINITIONS

1.0 DEFINITIONS

The following definitions apply for the purpose of these Technical Specifications:

- a. ADMINISTRATIVE CONTROLS: Provisions relating to organization operating, emergency, and management procedures; recordkeeping, review, and audit; and reporting necessary to ensure that the operations involved in the movement, transfer, and storage of spent fuel at the Prairie Island ISFSI are performed in a safe manner.
- b. DESIGN FEATURES: Features of the facility associated with the basic design, such as materials of construction, geometric arrangements, dimensions, etc., which, if altered or modified, could have a significant effect on safety.
- c. FUEL ASSEMBLY: The unit of nuclear fuel in the form that is charged or discharged from the core of a light-water reactor (LWR). Normally, will consist of a rectangular arrangement of fuel and non-fuel held together by end fittings, spacers, and guide tubes.
- d. FUNCTIONAL AND OPERATING LIMITS: Limits on fuel handling and storage conditions necessary to protect the integrity of the stored fuel, to protect employees against occupational exposures, and to guard against the uncontrolled release of radioactive materials.
- e. LIMITING CONDITIONS: The minimum or maximum functional capabilities or performance levels of equipment required for safe operation of the facility.
- f. LOADING OPERATIONS: Loading Operations include all cask preparation steps before cask transport from the auxiliary building area.
- g. SURVEILLANCE INTERVAL: A surveillance interval is the interval between a surveillance check, test, or calibration. Unless specifically stated otherwise, the specific frequency for each surveillance requirement is met if the surveillance is performed within 1.25 times the interval specified in the frequency, as measured from the previous performance.

For frequencies specified as "once," the above interval extension does not apply.

If a required action requires performance of a surveillance, or its completion time requires periodic performance of "once per ...," the above frequency extension applies to the repetitive portion, not to the initial portion of the completion time.

- h. SURVEILLANCE REQUIREMENTS: Surveillance requirements include:
(i) inspection, test, and calibration activities to ensure that the necessary integrity of required systems, components, and the spent fuel in storage is maintained; (ii) confirmation that operation of the installation is within the required functional and operating limits; and (iii) a confirmation that the limiting conditions required for safe storage are met.

SECTION 2.0

FUNCTIONAL AND OPERATING LIMITS

2.1 CASK VACUUM PRESSURE DURING DRYING

SPECIFICATION: The cask cavity vacuum pressure during drying shall not exceed 10 mbar after stepped evacuation. The vacuum pressure shall be maintained for not less than 30 minutes.

APPLICABILITY: Applicable to all casks.

ACTION: If the required vacuum cannot be obtained.

1. Check and repair vacuum drying system as necessary.
2. Check and repair the cask seals as necessary.

If the specification is still not met, remove fuel from the cask.

BASIS: A stable vacuum pressure of less than 10 mbar indicates that all liquid water has evaporated in the cask cavity, and that the resulting inventory of oxidizing gases in the cask is less than 0.25 percent of the volume.

2.2 CASK HELIUM BACKFILL PRESSURE

SPECIFICATION: The cask cavity shall be backfilled with helium. The backfill pressure shall be 20 psia (1.4 bar) \pm 1 psia (70 mbar).

APPLICABILITY: Applicable to all casks.

ACTION: If the required pressure cannot be obtained:

1. Check and repair the cask seals as necessary.
2. If the backfill pressure exceeds the criterion, release a sufficient quantity of helium to lower the cask cavity pressure.

If the specification is still not met, remove fuel from the cask.

BASIS: The thermal analysis performed for the cask assumes the use of helium as a cover gas. Also, the use of an inert gas (helium) ensures long-term maintenance of fuel clad integrity.

The value of 20 psia (1.4 bar) was selected to ensure that the pressure within the cask remains within the pressure design limits.

2.3 MAXIMUM CASK LIFTING HEIGHT

SPECIFICATION: The cask lifting height with a non-single-failure-proof lifting device shall not exceed 46 cm (18 in.).

APPLICABILITY: This specification applies to handling of a loaded cask outside the auxiliary building.

ACTION: In the event of a cask drop from a height greater than 18 inches (45 cm), with fuel in the cask, the fuel shall be returned to the spent fuel pool and visually inspected. If the spent fuel meets the requirements for storage in the ISFSI, the fuel may be subsequently transferred to the ISFSI. The cask shall be removed from service and evaluated for further use or disposed of, as may be appropriate.

BASIS: The drop analyses performed for cask drop incidents, for a cask loaded with spent fuel, confirm that drops up to 18 inches (45 cm) can be sustained without unacceptable damage to the cask. This limiting condition ensures that the handling height limits will not be exceeded at the storage pad nor in transit to and from the spent fuel pool. Design of the cask is to ASME B&PV Code Section III, Division 1, Subsection NB for Class 1 components, Service Level D requirements.

SECTION 3/4.0

LIMITING CONDITIONS / SURVEILLANCE REQUIREMENTS

3/4.1 FUEL TO BE STORED AT ISFSI

LIMITING CONDITION FOR OPERATION

3.1.1 The spent nuclear fuel to be received and stored in the TN-40 cask at the Prairie Island ISFSI shall meet the following requirements:

- (1) Only fuel irradiated at the Prairie Island Nuclear Generating Plant Unit Nos. 1 and 2 of the following assembly designs may be used:
 - Westinghouse 14x14 Standard
 - Exxon 14x14 Standard (includes high burnup Standard)
 - Exxon 14x14 TOPROD
 - Westinghouse 14x14 OFA
- (2) Maximum initial enrichment shall not exceed 3.85 weight percent U-235.
- (3) Maximum assembly average burnup shall not exceed 45,000 megawatt-days per metric ton uranium.
- (4) Fuel shall have cooled a minimum of 10 years after reactor discharge, before storage in the ISFSI.
- (5) Fuel shall be intact unconsolidated fuel. Partial fuel assemblies, that is, fuel assemblies from which fuel pins are missing must not be loaded unless dummy fuel pins are used to displace an amount of water equal to that displaced by the original pins.
- (6) Fuel assemblies known or suspected to have structural defects or gross cladding failures (other than pinhole leaks) sufficiently severe to adversely affect fuel handling and transfer capability shall not be loaded into the cask for storage.
- (7) The burnup of burnable poison rod assemblies (BPRA) inserted inside spent fuel assemblies shall not exceed a cask average of 30,000 MWD/MTU.
- (8) Any BPRA inserted inside any spent fuel assembly shall have cooled for a minimum of 18 years.
- (9) The burnup of thimble plugging devices (TPD) inserted inside spent fuel assemblies shall not exceed a cask average of 125,000 MWD/MTU.
- (10) Any TPD inserted inside any spent fuel assembly shall have cooled for a minimum of 9 years.

- (11) Maximum combined weight of a fuel assembly and any BPRA or TPD inserted within the assembly shall be less than 1330 lbs.
- (12) Maximum combined weight of all fuel assemblies, BPRA fuel inserts and TPD fuel inserts stored within a single cask shall be less than 52,000 lbs.
- (13) Maximum combined heat generation rate of a fuel assembly and any BPRA or TPD inserted within the assembly shall be less than 675 watts.

APPLICABILITY: This specification is applicable to all spent fuel to be loaded and stored in the TN-40 cask at the Prairie Island ISFSI.

ACTION: If the requirements of the above specification are not met, do not load the fuel assembly into the TN-40 cask.

SURVEILLANCE REQUIREMENTS:

- 4.1.1 Each fuel assembly and fuel assembly insert type (BPRA or TPD) to be loaded shall have the above specifications independently verified and documented.
- 4.1.2 Before inserting a spent fuel assembly into a cask and again before closing the cask, the identity of each fuel assembly and the type of each fuel assembly insert (BPRA or TPD) shall be independently verified and documented.

BASIS: The design criteria and subsequent safety analyses of the Prairie Island ISFSI and storage casks assumed certain characteristics and limitations for the fuel that is to be stored. Specification 3/4.1 ensures that the integrity of the fuel is protected by defining characteristics such as: the source of the spent fuel, maximum initial enrichment, irradiation history, and minimum post-irradiation cooling time.

A measure of the irradiation history of a fuel-insert is referred to as the "burnup" of the fuel insert. Application of this term to an item without any uranium content is not technically precise but provides for a consistent and concise terminology. The burnup of a fuel insert is defined to be the cumulative burnup accumulated by the host fuel assembly during the residency of the fuel insert.

This specification was derived to ensure that the peak fuel rod temperatures, cask surface dose rates, reactivity, and fuel mass are below the design values.

3/4.2 DISSOLVED BORON CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.2.1 The cask cavity shall be moderated only by water with a boron concentration greater than or equal to 1800 ppm.

APPLICABILITY: Applicable to all loading and unloading of casks.

ACTION:

1. With the measured boron concentration less than the specification before the beginning of cask loading and unloading operations, suspend all activities involving cask loading and unloading.
2. With the measured boron concentration less than the specification during cask loading and unloading operations, suspend all loading and unloading operations until the boron concentration is increased to 1800 ppm or greater.

SURVEILLANCE REQUIREMENTS

4.2.1.1 Within 4 hours before insertion of the first spent fuel assembly into a cask, verify and document that the dissolved boron concentration in water in the spent fuel pool and introduced into the cask cavity satisfies the limits specified above, in accordance with the requirements of the Prairie Island Nuclear Generating Station Operating Licenses (DPR-42 and -60).

4.2.1.2 Within 4 hours before flooding the cask cavity for unloading the fuel assemblies, verify and document that the dissolved boron concentration in water in the spent fuel pool and the water to be introduced into the cask cavity satisfies the limits specified above, in accordance with the requirements of the Prairie Island Nuclear Generating Station Operating Licenses (DPR-42 and -60). If the water introduced into the cask cavity is not from the spent fuel pool, then the dissolved boron concentration shall be independently determined by chemical analysis (two samples analyzed by two different individuals). All boron concentration measurements shall be documented.

BASIS: This specification ensures that k_{∞} is less than 0.95, and therefore, the spent fuel is subcritical during fuel loading and unloading.

3/4.3 MAXIMUM HELIUM LEAK RATE

LIMITING CONDITION FOR OPERATION

3.3.1 The standard helium leak rate for all closure seals shall not exceed 10^{-5} atm-cc/s.

APPLICABILITY: Applicable to all casks.

ACTION: With the requirements of the above specifications not satisfied, the seals shall be repaired or replaced in accordance with approved procedures and re-examined in accordance with these specifications.

SURVEILLANCE REQUIREMENT:

4.3.1 During cask loading operations, the cask seals shall be tested in accordance with ANSI N 14.5, to ensure that the seal leakage is less than or equal to 10^{-5} atm-cc/s.

BASIS: The safety analysis of the cask is based on the seals being tight to maintain a leak rate less than 10^{-5} atm-cc/s. Seal tightness at this leak rate will ensure the helium atmosphere in the storage cask is maintained for the licensed period.

3/4.4 MAXIMUM CASK REMOVABLE SURFACE CONTAMINATION

LIMITING CONDITION FOR OPERATION

3.4.1 Removable contamination on the cask exterior surfaces shall be less than 1,000 dpm/100 cm² (0.2 Bq/cm²) from beta and gamma sources, and 20 dpm/100 cm² (0.003 Bq/cm²) from alpha sources.

APPLICABILITY: Applicable to all casks.

ACTION: If the limit is exceeded, the cask external surfaces shall be decontaminated to meet the specification before movement to the ISFSI.

SURVEILLANCE REQUIREMENT:

4.4.1 Contamination surveys shall be taken on the accessible cask exterior surfaces. The contamination surveys for removable surface contamination shall be conducted after fuel loading and before moving the loaded cask to the ISFSI site.

BASIS: Compliance with this limit ensures that the offsite dose limits in 10 CFR Part 20, 10 CFR Part 50 - Appendix I, 10 CFR Part 72, and 40 CFR 190 are met.

3/4.5 MAXIMUM CASK SURFACE TEMPERATURE

LIMITING CONDITION FOR OPERATION

3.5.1. The equilibrium cask surface temperature shall not exceed 250° F (121°C).

APPLICABILITY: This temperature limit applies to all casks stored at the ISFSI.

ACTION: If a cask surface temperature greater than 250° F (121°C) is observed for any cask, then this indicates that the cask is not performing as intended, or that fuel assemblies not meeting Specification 2.1 have been loaded into the cask. If after verification, fuel assemblies meeting Specification 2.1 have been loaded into the cask and the cask surface temperature is greater than 250° F (121°C), then the cask shall be unloaded. A written report shall be submitted to the Nuclear Regulatory Commission Region III Office, with a copy to the Director, Office of Nuclear Material Safety and Safeguards, within 30 days of this incident.

SURVEILLANCE REQUIREMENT:

4.5.1. Cask surface temperatures shall be measured and recorded at least 24 hours after completing cask loading and before moving the cask to the ISFSI.

BASIS: This is to ensure that the fuel clad will be at a temperature such that it will be protected against degradation that leads to gross rupture.

3/4.6 DOSE RATES

LIMITING CONDITION FOR OPERATIONS

- 3.6.1 The gamma and neutron dose rates on the surface of the cask shall not exceed the following limits:

<u>gamma</u>	<u>neutron</u>	
60mrem/hr	10mrem/hr	at center of top protective cover,
170mrem/hr	130mrem/hr	between cask flange and side neutron shield,
50mrem/hr	25mrem/hr	at mid-height of side neutron shield, and
60mrem/hr	170mrem/hr	between cask bottom and side neutron shield.

APPLICABILITY: This specification is applicable to the accessible top and side surfaces of a loaded cask.

ACTION: If the measured dose rate exceeds the limit, correct fuel loading shall be verified. If correct fuel is loaded, specific analysis must demonstrate compliance with 10 CFR Part 20, and 10 CFR Part 72 radiation protection requirements, or appropriate action must be taken to comply with acceptable limits. If acceptable limits cannot be achieved, the cask shall not be placed in service at the ISFSI.

SURVEILLANCE REQUIREMENTS:

- 4.6.1 Cask surface gamma and neutron dose rates shall be measured before moving a cask to the ISFSI. Measurements shall be taken near the accessible top and side surfaces.
- 4.6.2 Two (2) thermoluminescent dosimeters (TLDs) shall be placed on the fence at each side of the ISFSI site (8 total) and read quarterly to determine ISFSI radiation levels.

BASIS: The gamma and neutron dose rate limits are based on calculations for a TN-40 cask that is fully loaded with design basis spent fuel and design basis fuel inserts as defined by the limits in Technical Specification 3.1.1. A measured dose rate that is in excess of these limits may be an indication of a non-conforming condition in either the cask loading or the cask radiation shielding. A cask with a measured dose rate in excess of these limits may still be utilized provided that analyses demonstrate that the incorporation of this cask into the ISFSI complies with applicable radiation protection requirements. The cask dose analysis is presented in Appendix 7A of the ISFSI Safety Analysis Report (SAR).

3/4.7 PRESSURE MONITORING

LIMITING CONDITION FOR OPERATIONS

3.7.1 The alarm board that monitors cask pressure shall be checked daily and tested annually to ensure that the helium atmosphere in the casks is maintained.

APPLICABILITY: Applicable to all casks.

ACTION: If monitoring of pressure between the cask double seals indicates loss of pressure and seal leakage, return the cask to the auxiliary building and repair or replace the seals, as necessary, to return the cask to proper operation.

SURVEILLANCE REQUIREMENTS:

4.7.1 The alarm board, to which pressure monitoring devices are connected, shall be checked daily.

4.7.2 The alarm board shall be tested annually, to ensure proper functioning.

BASIS: Pressure between the cask seals must be maintained to ensure that the helium atmosphere in the cask is maintained. Periodic testing of the alarm board ensures proper functioning of the pressure monitoring and alarm system, to provide timely corrective action.

3/4.8 SAFETY STATUS SURVEILLANCE

LIMITING CONDITION FOR OPERATIONS

3.8.1 The cask shall be free of damage or debris, to maintain proper functioning of the cask.

APPLICABILITY: Applicable to all casks.

ACTION: If significant damage, deterioration, or debris accumulation occurs to the cask surfaces such that the safety functions of the cask are impaired, take appropriate corrective action to return the cask to proper operation.

SURVEILLANCE REQUIREMENT:

4.8.1 A visual surveillance of all casks at the ISFSI shall be conducted, on a quarterly basis, to determine that no significant damage nor deterioration of the exterior of the casks has occurred and that no significant accumulation of debris on cask surfaces has occurred.

BASIS: These surveillance requirements shall ensure cask maintenance.

Table 3/4-1 TN-40 CASK OPERATING LIMITS

	Operating Limit
Maximum Lifting Height with a Non-Redundant Lifting Device	18 inches (45 cm)
Maximum Cask Surface Temperature	2500F (1210C)
Maximum Removable Surface Contamination	
- Beta and Gamma	1000 dpm/100 cm ²
- Alpha	20 dpm/100 cm ²
Maximum Helium Leak Rate	10 ⁻⁵ atm-cc/s
Initial Helium Pressure (Cask Cavity)	20 ± 1 psia (1.4 bar ± 70 mbar)
Pressure During Cask Drying Test (held for 30 min.)	≤ 10 mbar
Boron Concentration in Pool and Cask	≥ 1800 ppm
Storage Capacity	≤ 40 assemblies
Fuel Assembly Characteristics	
- Initial Enrichment, U-235	≤ 3.85 wt. %
- Average Burnup	≤ 45,000 MWD/MTU
- Time after Irradiation	≥ 10 years
BPRA Fuel Insert Characteristics	
- Cask Average Burnup	≤ 30,000 MWD/MTU
- Time after Irradiation	≥ 18 years
TPD Fuel Insert Characteristics	
- Cask Average Burnup	≤ 125,000 MWD/MTU
- Time after Irradiation	≥ 9 years

Table 3/4-2 SURVEILLANCE REQUIREMENTS SUMMARY

Specification	Quantity or Item	Period
3/4.1	Fuel to be Stored at ISFSI	P, C
3/4.2	Dissolved Boron Concentration	P
3/4.3	Maximum Helium Leak Rate	L
3/4.4	Maximum Removable Surface Contamination	L
3/4.5	Maximum Cask Surface Temperature	S
3/4.6	Dose Rates	
	Cask surface or equivalent at 2 yards (2 meters)	L
	At the Fence	Q
3/4.7	Pressure Monitoring	D, A
3/4.8	Safety Status Surveillance	Q

Legend

P - Prior to cask loading.
 C - Prior to cask closure following loading.
 S - At least 24 hours after cask loading and prior to moving cask to storage pad.
 L - Prior to moving cask to the storage pad.
 Q - Quarterly -- at least once per 92 days.
 A - Annually -- at least once per 366 days.
 D - Daily.

Note: Specified time periods or frequencies may be adjusted by 25 percent to accommodate normal test schedules (see Section 1.0 Definitions, g. "Surveillance Interval.")

SECTION 5.0
DESIGN FEATURES

5.0 DESIGN FEATURES

The Prairie Island ISFSI design approval was based on use of the TN-40 storage cask and review of specific design drawings, some of which have been deemed appropriate for inclusion in the Prairie Island ISFSI Safety Evaluation Report (SER). Drawings listed in Section 1.2 of the Prairie Island ISFSI SER have been reviewed and approved by NRC. These drawings may be revised under the provisions of 10 CFR 72.48, as appropriate.

SECTION 6.0
ADMINISTRATIVE CONTROLS

6.0 ADMINISTRATIVE CONTROLS

6.1 GENERAL

The Prairie Island ISFSI is located on the Prairie Island Nuclear Generating Plant site and will be managed and operated by Nuclear Management Company, LLC, staff. The administrative controls shall be in accordance with the requirements of the Prairie Island Nuclear Generating Plant Facility Operating Licenses (DPR-42 and -60) and associated Technical Specifications, as appropriate.

6.2 ENVIRONMENTAL MONITORING PROGRAM

The licensee shall include the Prairie Island ISFSI in the environmental monitoring program for the Prairie Island Nuclear Generating Plant. An environmental monitoring program is required pursuant to 10 CFR 72.44(d)(2). The licensee shall include the ISFSI in the environmental monitoring report for the Prairie Island Nuclear Generating Plant, and a copy shall be sent to the Director, Office of Nuclear Material Safety and Safeguards.

6.3 ANNUAL ENVIRONMENTAL REPORT

An annual report, as required by 10 CFR 72.44(d)(3), shall be submitted to the NRC Region III, Office, with a copy to the Director, Office of Nuclear Material Safety and Safeguards, within 60 days after January 1 of each year. This report should specify the quantity of each of the principal radionuclides released to the environment in liquid and in gaseous effluents during the previous year of operation and such other information as may be required by the Commission to estimate maximum potential radiation dose commitment to the public resulting from effluent release.