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U S Nuclear Regulatory Commission  
ATTN: Document Control Desk,  
Director, Spent Fuel Project Office,  
Office of Nuclear Material Safety and Safeguards  
Washington, DC 20555-0001

Prairie Island Independent Spent Fuel Storage Installation  
Docket No. 72-10  
Materials License No. SNM-2506

Support for License Amendment Request (LAR) to Modify TN-40 Cask Design  
(Designated as TN-40HT) (TAC No. L24203)

- References:
1. Nuclear Management Company, LLC (NMC) letter to US Nuclear Regulatory Commission (NRC), "License Amendment Request (LAR) to Modify TN-40 Cask Design (Designated as TN-40HT)", dated March 28, 2008, Accession Number ML081190039.
  2. Summary of June 22, 2009, Meeting With Northern States Power Company – Minnesota Corporation (NSPM), Formerly Nuclear Management Company (NMC) And TransNuclear (TN) Regarding Amendment Request for Prairie Island ISFSI for The TN-40HT Cask Design, Accession Number ML092030403.
  3. NMC letter to NRC, "Supplement to License Amendment Request (LAR) to Modify TN-40 Cask Design (Designated as TN-40HT) (TAC No. L24203)", dated June 26, 2009, Accession Number ML090840028.

In Reference 1, NMC\* submitted an LAR to revise the Special Nuclear Materials (SNM) license and Technical Specifications (TS) for the Prairie Island Independent Spent Fuel Storage Installation (PIISFSI), to modify the TN-40 cask for storage of higher enrichment and burnup fuel. In a public meeting with the NRC (Reference 2), a question was raised whether the acceptance plans for neutron absorber plates and

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\* On September 22, 2008, NMC transferred its operating authority to Northern States Power Company, a Minnesota corporation (NSPM), doing business as Xcel Energy. By letter dated September 3, 2008, NSPM assumed responsibility for actions and commitments previously submitted by NMC.

neutron shielding materials (fabrication acceptance testing) are enforceable in the Safety Analysis Report or need to be included in the TS. NSPM previously presented the position that fabrication acceptance testing is not required in the TS. Pursuant to a phone call from the NRC staff, NSPM provides further support of this position in Enclosure 1 to this letter.

If there are any questions or if additional information is needed, please contact Mr. Dale Vincent, P.E., at 651-388-1121.

Summary of Commitments

This letter contains no new commitments and no revisions to existing commitments.



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Northern States Power Company - Minnesota

Enclosures (1)

cc: Administrator, Region III, USNRC  
NMSS Project Manager, TN-40HT LAR, USNRC  
Project Manager, Prairie Island Nuclear Generating Plant, USNRC  
Resident Inspector, Prairie Island Nuclear Generating Plant, USNRC

## Enclosure 1

At Nuclear Regulatory Commission (NRC) public meetings on May 7, 2009 and June 22, 2009, and also in response to NRC requests for additional information (RAIs) M8 and M10 submitted by letter dated June 26, 2009, Northern States Power Company, a Minnesota corporation (NSPM) presented its position that the neutron absorber plate and radial neutron shield acceptance plans (fabrication acceptance testing) are appropriately included in the Prairie Island (PI) Independent Spent Fuel Storage Installation (ISFSI) Safety Analysis Report (SAR) and should not be incorporated into the ISFSI Technical Specifications (TS). The basis for this position follows.

### **ISFSI Technical Specifications Applicability**

10 CFR 72 and NUREG 1745 "Standard Format and Content for Technical Specifications for 10 CFR Part 72 Cask Certificates of Compliance" were reviewed to determine whether or not inclusion of neutron absorber plate and radial neutron shield acceptance plans (fabrication acceptance testing) in the ISFSI Technical Specifications was required.

With regards to the neutron shield material, the design function of these shields is to lower the normal neutron dose around the cask (note that this shielding is not credited in the accident analyses). While altering or modifying this material could have a significant effect on the neutron dose around the cask, NSPM has already proposed including in T.S. 3.2.2 limits on the neutron dose rate.

The following is a review of the applicability of the above requirements to the neutron absorber plate acceptance plans (fabrication testing).

### **10 CFR 72 Review**

10 CFR 72.44(c) contains the requirements for the contents of the ISFSI TS. The regulation states that, "Technical specifications must include requirements in the following categories:"

*Functional and operating limits and monitoring instruments and limiting control settings*

*Limiting conditions*

*Surveillance requirements*

*Design features*

*Administrative controls*

*Functional and operating limits and monitoring instruments and limiting control settings* are defined as:

Functional and operating limits for an ISFSI or MRS are limits on fuel or waste handling and storage conditions that are found to be necessary to protect the integrity of the stored fuel or waste container, to protect employees against occupational exposures and to guard against the uncontrolled release of radioactive materials

**Conclusion:**

Fabrication acceptance testing is not functional and operating limits or monitoring instruments or limiting control settings, therefore this testing is not required to be in this section of the TS.

*Limiting conditions* are defined as:

Limiting conditions are the lowest functional capability or performance levels of equipment required for safe operation.

**Conclusion:**

Fabrication acceptance testing is not a functional capability or performance level of equipment operation; therefore this testing is not required to be in this section of the TS.

*Surveillance requirements* are defined as:

Inspection and monitoring of spent fuel . . . in storage; inspection, test and calibration activities to ensure that the necessary integrity of required systems and components is maintained; confirmation that operation of the ISFSI or MRS is within the required functional and operating limits; and confirmation that the limiting conditions required for safe storage are met.

**Conclusion:**

Surveillance tests apply to activities following placement of equipment into service or operation. Since fabrication acceptance testing is performed during the fabrication of the casks, it is not a surveillance requirement and, therefore this testing is not required to be in this section of the TS.

With respect to *Design Features*, 10 CFR 72.44(c)(4) states that:

Design features include items that would have a significant effect on safety if altered or modified, such as materials of construction and geometric arrangements.

The areal density of boron-10 in the neutron absorber material within the basket has a significant effect on the criticality safety of the cask if altered

or modified. Therefore the minimum areal density has been included as a design feature in the proposed TS Section 4.3. The neutron absorber acceptance plans described in response to RAI question M8 which include the general description of the materials, the visual inspections of the materials, the neutron transmission testing of the neutron absorbers, and qualification testing of a metal matrix composite, do not alter or modify the boron-10 areal density and thus do not have a significant effect on criticality safety.

**Conclusion:**

The neutron absorber acceptance plan does not have a significant effect on the criticality safety and therefore does not require inclusion into the Design Features section of the TS.

*Administrative controls* are defined as:

. . . the organization and management procedures, recordkeeping, review and audit, and reporting requirements necessary to assure that the operations involved in the storage of spent fuel . . . are performed in a safe manner.

**Conclusion:**

Fabrication acceptance testing is not related to cask operations and is not an administrative control, as defined above. Therefore, this testing is not required to be in this section of the TS.

The review of these categories, as described in 10 CFR 72.44(c), concluded that the regulation does not require fabrication acceptance testing, described in the SAR, to be included in the TS.

**NUREG 1745 Review**

The abstract for NUREG-1745 states the following:

The standard Technical Specifications (STS) for dry cask storage are intended to be used by potential 10 CFR Part 72 Certificate Holders in developing a set of clear and consistent technical specifications for their dry cask storage applications.

The NRC believes that these Dry Cask STS in this NUREG will assure the overall safety goals for dry cask storage are met, including maintaining subcriticality, control radiation dose to the workers and the public, assuring fuel retrievability, and maintaining the confinement barriers. This effort has removed the unnecessary detail from the technical specifications,

moved the less significant requirements to administrative programs, made the requirements less prescriptive and maintained consistency with the site specific requirements contained in 10 CFR 72.44. Although these STS were developed for Certificate Holders, the format and level of detail presented in this set of STS can easily be translated to technical specifications for site-specific licensees. (emphasis added)

STS 4.1.1 of NUREG-1745 calls for the minimum Boron-10 areal density to be included in the TS for criticality control. As discussed above, altering or modifying the boron-10 areal density would have a significant effect on the criticality safety of the cask and thus the boron-10 areal density does meet the standard called for in 10 CFR 72.44(c)(4) for inclusion into TS. Also stated above, the minimum boron-10 areal for the TN-40HT cask design is included in the proposed TS 4.3.

Note that STS 4.1.1 of NUREG-1745 does not call for the inclusion of other tests and inspections of the neutron absorber material in TS, such as the visual inspections of the materials, the neutron transmission testing of the neutron absorbers, and qualification testing of a metal matrix composite. This is appropriate because these tests occur during cask fabrication. The purpose of these tests is to assure that the material contains the specified minimum areal density. Thus these tests are additional details and less significant requirements and per NUREG-1745 abstract, belong in other administrative programs or documents such as the SAR.

Therefore, other than for the boron-10 areal density, NUREG-1745 does not call for the neutron absorber acceptance plans described in the SAR to be incorporated into TS.

### **Enforceability of SAR**

During an NRC public meeting on June 22, 2009, ML092030403, and during a subsequent phone call with the NRC Staff, the NRC stated that a reason for including the acceptance plans in the TS is because the SAR is not enforceable. It should be noted that the NRC proposed including this view in Section 8.4 of the Dry Cask Standard Review Plan, NUREG-1536, (see proposed Revision 1A line 7318).

NSPM agrees with the NRC that the SAR is not enforceable. The ISFSI must be designed and operated in accordance with the SAR at all times. Procedures control ISFSI operation and changes to ISFSI design. If NSPM wishes to operate the ISFSI in a manner other than as described in the SAR, the changes must be reviewed in accordance with the requirements of 10 CFR 72.48. The intent of this review is to determine whether or not NRC review is necessary prior to implementing the specific change. If this review is not performed, or if it is not properly performed and the ISFSI subsequently operates in a manner other than

as described in the SAR, the facility would be in non-compliance with regulation 10CFR 72.48. Compliance with regulations is directly enforceable.

Additionally, as discussed below, the SAR is invoked by the ISFSI license, therefore non-compliance with the SAR may be a violation of the ISFSI license.

Paragraph 9 of the PI ISFSI site specific license, SNM-2506, states:

Authorized Use is: 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 ...” (emphasis added)

The SAR supplements provided by this LAR will be added to the list of supplements in the PI ISFSI license. Thus, failure to comply with the SAR may be cited as a violation of the PI ISFSI license.

**Conclusion:**

NSPM concludes that the fabrication acceptance testing and inspection requirements in the SAR are enforceable through either the ISFSI license or regulation 10 CFR 72.48; and therefore, the fabrication acceptance testing and inspection requirements should not be required to be included in the TS.