

September 24, 2012

MEMORANDUM TO: Doug Weaver, Deputy Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

FROM: Chris Allen, Project Manager */RA/*
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

SUBJECT: SUMMARY OF SEPTEMBER 11, 2012, MEETING WITH NORTHERN STATES POWER COMPANY TO DISCUSS THEIR AMENDMENT REQUEST REVISING MINIMUM THERMAL CONDUCTANCE REQUIREMENTS FOR TN-40HT CASK COMPONENTS (TAC NO. L24666)

Background. On September 11, 2012, a meeting was held in Rockville, Maryland, at the request of Northern States Power Company (NSPM) to discuss their license amendment application revising the thermal conductance requirements for TN-40HT cask components with the Nuclear Regulatory Commission (NRC). Regulatory decisions were neither requested nor made at the meeting. The list of meeting attendees is Enclosure 1. A detailed agenda provided by NSPM for the meeting is Enclosure 2, and presentation slides are Enclosure 3.

Discussion. The discussion followed the agenda provided in Enclosure 2. During the discussion of the background information, NSPM explained when and how it was determined that aluminum plates to be used in the fabrication of the basket for the TN-40HT cask would not meet the required Technical Specification, and elaborated on how the thickness of the aluminum plates contributed to the Technical Specification not being met. In response to NRC staff inquiries, NSPM at this point both asserted that structural evaluations were not impacted by the proposed change, and emphasized that the majority of the heat transfer occurs along the width and length of the aluminum plate. While discussing the reasons for amending their license, NSPM indicated that fabrication of the basket would be facilitated because welding operations would be easier and less machining of the aluminum plates would be required.

In discussing the thermal analysis, NSPM stated that all thermal conditions were re-analyzed for the license amendment in an attempt to minimize questions. They explained that, in addition to using a full length model for both Normal and Off-Normal conditions, a full length model was used to evaluate both Accident and Vacuum Drying conditions in lieu of a cross-section model which was used for the original analyses. They stated the reason for using the full length model for all analyses was that the full length model results in more accurate temperature predictions while the cross-section model produces higher, more conservative, temperatures. NSPM stated that a different version of the computer code utilized in the original analyses had been employed

to perform the license amendment analyses because the original version of the code was no longer supported. They identified that a heat transfer constant, which differed from that in the Safety Analysis Report (SAR), was used in the license amendment analyses because the SAR value, as documented in a previous amendment, was incorrect and resulted in conservatively high temperatures. They also identified that a more conservative boundary condition was utilized in the vacuum drying analysis.

NRC staff asked several questions of NSPM during their discussion of the thermal analyses. They inquired if the new version of the computer code had been benchmarked. Transnuclear, Inc. (TN) explained that both versions of the code had calculated identical temperatures when given the same input. Since heat transfer is a three dimensional phenomena, NRC staff also asked if heat transfer across the thickness of the plate had been taken into account because NRC staff wanted to ensure that a bias had not been unintentionally introduced into the model which would produce erroneously lower temperatures. TN responded that they would review the model and its results again. When NRC staff inquired if the effect of varying boron content on other characteristics such as thermal conductivity and criticality control had been considered, NSPM and TN replied that in addition to a minimum boron content being specified in procurement documents, thermal conductivity testing is performed to ensure requirements are satisfied.

When NSPM concluded their presentation, NRC staff encouraged NSPM and TN to provide both a clear and detailed description of both the thermal model and the assumptions used to develop it. NRC staff also encouraged NSPM and TN to review the other Technical Specifications to determine if other instances might occur which would force them to request an amendment instead of making changes via the 72.48 process. After these comments, the meeting was adjourned.

Docket No. 72-10

TAC No. L24666

Enclosures: 1. Attendees
 2. Agenda
 3. Presentation Slides

to perform the license amendment analyses because the original version of the code was no longer supported. They identified that a heat transfer constant, which differed from that in the Safety Analysis Report (SAR), was used in the license amendment analyses because the SAR value, as documented in a previous amendment, was incorrect and resulted in conservatively high temperatures. They also identified that a more conservative boundary condition was utilized in the vacuum drying analysis.

NRC staff asked several questions of NSPM during their discussion of the thermal analyses. They inquired if the new version of the computer code had been benchmarked. Transnuclear, Inc. (TN) explained that both versions of the code had calculated identical temperatures when given the same input. Since heat transfer is a three dimensional phenomena, NRC staff also asked if heat transfer across the thickness of the plate had been taken into account because NRC staff wanted to ensure that a bias had not been unintentionally introduced into the model which would produce erroneously lower temperatures. TN responded that they would review the model and its results again. When NRC staff inquired if the effect of varying boron content on other characteristics such as thermal conductivity and criticality control had been considered, NSPM and TN replied that in addition to a minimum boron content being specified in procurement documents, thermal conductivity testing is performed to ensure requirements are satisfied.

When NSPM concluded their presentation, NRC staff encouraged NSPM and TN to provide both a clear and detailed description of both the thermal model and the assumptions used to develop it. NRC staff also encouraged NSPM and TN to review the other Technical Specifications to determine if other instances might occur which would force them to request an amendment instead of making changes via the 72.48 process. After these comments, the meeting was adjourned.

Docket No. 72-10
TAC No. L24666

Enclosures: 1. Attendees
2. Agenda
3. Presentation Slides

Distribution: NRC Attendees J Vera
Filename: G:\SFST\Allen\Part 72\Prairie Island\Meeting Summary.docx

ADAMS P8 Package No.: ML12268A253 Memo No.: ML12268A271

OFC:	SFST	E	SFST		SFST	
NAME:	WAllen		WWheatley		MWaters	
DATE:	9-19-12		9/19/12		9/24/12	

C=Without attachment/enclosure E=With attachment/enclosure N=No copy

OFFICIAL RECORD COPY

MEETING ATTENDEES
Meeting Between Northern States Power Company
and the Nuclear Regulatory Commission
September 11, 2012

Chris Allen	NRC/SFST
Natreon Jordan	NRC/SFST
Joe Borowsky	NRC/SFST
Carlyn Greene via telecon	Ux Consulting
Mike Baumann	NSPM
Tim Morrison	NSPM
Oley Nelson	NSPM
Brian Zelenak	NSPM
Don Shaw	Transnuclear
Peter Shih	Transnuclear
Slava Guzeyev	Transnuclear
Venkata Venigalla	Transnuclear
Clark Vanderniet	Transnuclear
David Tang	NRC/SFST
Matthew Gordon	NRC/SFST
Michele Sampson	NRC/SFST

AGENDA

Meeting Between Northern States Power Company
and the Nuclear Regulatory Commission
September 11, 2012

- Introduction
- Purpose of Meeting
- Background
- Proposed Changes
- Reason for Amendment Request
- Thermal Analysis
- Discussion/Q&A
- Summary/Closing Remarks
- Adjourn

Northern States Power Company Meeting Slides