July 14, 2011

MEMORANDUM TO: Doug Weaver, Deputy Director
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Kimberly Hardin, Senior Project Manager **/RA/**
Licensing Branch
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF JUNE 16, 2011, MEETING WITH TRANSNUCLEAR, INC., TO DISCUSS THE REVIEW OF A REVISION REQUEST FOR COC NO. 9302 (MODEL NO. NUHOMS-MP197) (TAC NO. L24336)

Background

A meeting was held with Transnuclear, Inc., (TN) on June 16, 2011, in Rockville, Maryland, to discuss the Model No. NUHOMS-MP107 transportation package. The purpose of the meeting was to discuss a revision request to the NUHOMS-MP197 Certificate of Compliance (CoC) No. 9302.

The meeting was noticed on June 2, 2011 (ML111530518). The meeting attendance list is provided as Enclosure No. 1.

Discussion

The discussion generally followed the agenda (Enclosure No. 2). The primary reason for the meeting was to discuss the status and path forward for the technical review of a revision request to Certificate of Compliance (CoC) No. 9302 to authorize the use of several different canister configurations with different authorized contents. The contents requested include low burnup fuel with and without burnup credit and high burnup fuel with and without burnup credit.

By letter dated April 4, 2011, TN submitted responses to staff's second round of RAIs. In staff's review of the responses, several major issues were identified that affect the technical review and schedule. In the beginning of the meeting, staff identified that the proposed path forward to complete this case was to issue the CoC by authorizing the contents of low burnup fuel with no burnup credit, which would limit the approval to the following canister types: 24PT4, 61BT/61BTH, and 69BTH. The CoC would be conditioned regarding the plans for aging management.

NRC staff stated that the applicant proposed three different approaches used to evaluate the MP197HB transport package performance during the course of the review. These approaches were:

a) In the initial application, TN proposed the use of mechanical property data for the high burnup fuel cladding. Staff believed that the data provided was not sufficient.

b) The next approach explored was moderator exclusion in order to overcome the lack of high burnup fuel cladding data.

c) In the response to round two of RAIs, TN proposed the “direct load” of the high burnup fuel from the pool to the transportation package.

TN responded that the change of approach as noted under item b was never formally submitted since NRC staff considered such a major change as a cause for reapplication. TN decided to restrict the application to “direct load” for high burnup fuel assemblies instead.

The major technical issues staff identified in its review and were discussed included:

1) Aging management plan needs to be addressed associated with fuel that has been stored for a long period of time. Staff needs to have reasonable assurance that the fuel to be shipped is in the condition required for shipment at the time of transport to satisfy the required regulations. Staff has requested that the aging management program be expanded to describe operations/testing to assure the presence of an inert environment within the canister cavity prior to transport. Also, TN needs to provide safety analyses (all disciplines) that determine the effect of these operations/testing methods. Clarifying this issue under the aging management program would facilitate NRC approval of the application for the transport of low burnup fuel from a storage site (i.e., ISFSI).

2) The temperature fluctuation of the fuel cladding for high burnup fuel has not been demonstrated to be maintained below 65°C as required by ISG-11, Rev. 3, while also above a required temperature necessary to prevent hydride reorientation during the entire transport time.

TN clarified, as shown in the response to RAI question 2-7, that the maximum fuel cladding temperature of the high burnup fuel during “direct load” increases on an ascending curve to the maximum fuel cladding temperatures evaluated either during NCT at 100°F ambient or cold conditions at -40°F ambient.

NRC staff has requested that TN reevaluate the fuel cladding temperature curve for “direct load” of high burnup fuel assemblies considering the minimum cooling time and maximum elapsed time in a transport package to demonstrate that the fluctuation of the fuel cladding temperature is limited to 65°C as specified in ISG-11, Rev. 3. It was also stated that the time allowed to complete the transport can be restricted so that the maximum fuel cladding temperature fluctuation of 65°C can be satisfied.

3) The benchmarking calculations employed as part of the depletion analysis methodology in the criticality evaluation are not fully justified for burnup credit. The concerns regarding the benchmarking of the depletion methodology were discussed in detail. NRC has recommended using the same methodology as that used for evaluation of the TN-40 transport package for the MP197HB transport package application.

NRC staff is reviewing the RAI response regarding the shielding evaluation and do not have any significant concerns affecting approval of the application at this time. However, the technical reviewer was unavailable.

In summary, providing the following supplemental information may facilitate the additional approvals requested (depending on what is officially submitted and reviewed):

1) An aging management program to demonstrate that the canister has maintained an inert atmosphere (helium) during storage prior to transport. This information would facilitate NRC approval of transport of low burnup fuel assemblies from storage sites.

2) Calculation of the fuel cladding temperature during loading operations considering the minimum cooling time in the pool and the maximum elapsed time in the transport cask to demonstrate that the fluctuation of the fuel cladding temperature is limited to 65°C. This information would facilitate NRC approval of transportation of the high burnup fuel assemblies directly from pool.

3) Revise the benchmarking of the depletion codes and use the same methodology as that used for the TN-40 transport application to allow burnup credit for PWR fuel assemblies or any other way that TN would prefer to perform an acceptable validation of the depletion code. This information would facilitate NRC approval of canisters evaluated with burnup credit.

Because submitting more information may generate additional RAIs and extend the case further, an expedited approval path needed further discussion. After TN further discusses the information exchange of this meeting internally and decides on a preferred path forward, a follow-up call will be held to agree on the path forward and schedule for closing this case.

A copy of the presentation is provided as Enclosure No. 3.

Docket No. 71-9302
TAC No. L24336

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

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3) Revise the benchmarking of the depletion codes and use the same methodology as that used for the TN-40 transport application to allow burnup credit for PWR fuel assemblies or any other way that TN would prefer to perform an acceptable validation of the depletion code. This information would facilitate NRC approval of canisters evaluated with burnup credit.

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Distribution:
NRC Attendees BWhite
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June 16, 2011, Public Meeting
Between Transnuclear, Inc. and
the Nuclear Regulatory Commission

MEETING ATTENDANCE LIST

Kim Hardin	NRC/SFST
Doug Weaver	NRC/SFST
Meraj Rahimi	NRC/SFST
Michael Waters	NRC/SFST
David Pstrak	NRC/SFST
Andrew Barto	NRC/SFST
John Vera	NRC/SFST
Bob Einziger	NRC/SFST
Daniel Forsyth	NRC/SFST
Chris Bajwa	NRC/SFST
Natreon Jordan	NRC/SFST
Kamran Tavassoli	Transnuclear, Inc.
Robert Grubb	Transnuclear, Inc.
Peter Shih	Transnuclear, Inc.
Prakash Narayanan	Transnuclear, Inc.
Steve Streutker	Transnuclear, Inc.
Raheel Haroon	Transnuclear, Inc.
Venkata Venigalla	Transnuclear, Inc.
Holger Pfeiffer	Transnuclear, Inc.

Agenda for the
NRC/TN NUHOMS-MP197 Amendment Application
Public Meeting
June 16, 2011, 11:00 – 1:00 p.m.

Purpose: Discuss status and planned next steps proposed for the technical review of the TN NUHOMS-MP197 CoC revision review. (Docket No. 71-9302)

11:00 a.m.	Introduction/Opening Remarks	NRC/TN
11:10 a.m.	Discuss the outstanding technical issues with regard to the Responses to RAIs	NRC/TN
11:30 a.m.	Materials/Structural Considerations	NRC/TN
12:00 p.m.	Shielding/Criticality Considerations	NRC/TN
12:30 p.m.	Licensing Considerations/Schedule	NRC/TN
12:40 p.m.	Questions and Answers	NRC/TN
12:50 p.m.	Public Questions/Comments	Public/NRC
12:55 p.m.	Closing Remarks	NRC/TN

Enclosure 2

Clarification in Response to RAI Question 2-7

The thermal analysis discussed in the response to RAI question 2-7, represents the loading/vacuum drying conditions for 69BTH DSC. As described in the SAR, Appendix A.7.7.9, Section A.7.7.9.1, the water drained from the DSC cavity during lifting operation will be replaced by helium at 1-3 psig pressure. In addition, Appendix A.7.7.9, Section A.7.7.9.2 of the SAR requires monitoring the cask/DSC annulus water level and replenishing as necessary to maintain cooling during drying and backfilling operations. This operation maintains the DSC shell temperature below the boiling temperature of water during the entire vacuum drying and backfilling operation.

The thermal analysis noted in the response to RAI question 2-7 starts the transient evaluation with an initial temperature of 150°C as the DSC is being loaded in the spent fuel pool. The analysis also considers that the DSC cavity is drained immediately and the water in the DSC cavity is replaced by helium. A constant temperature of 212°F is considered over the DSC surface area covered by annulus water. Adiabatic boundary conditions are considered for the other DSC surfaces. These boundary conditions conservatively envelopes the requirement of monitoring and replenishing the cask/DSC annulus as described above.

The maximum fuel cladding temperature resulting from this model is presented in Figure 2-1 in response to RAI question 2-7 with blue colored line. The conditions after draining of the annulus and backfilling the cask/DSC annulus with helium are not explicitly modeled since these conditions remain bounded by the NCT conditions as described in Note 1 to Figure 2-1 in response to RAI question 2-7.