

April 6, 2011

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

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

SUBJECT: SUMMARY OF MARCH 30, 2011, PRE-APPLICATION MEETING  
WITH TRANSNUCLEAR, INC. (TN), REGARDING THEIR  
FUTURE SUBMITTAL OF THE TN-LC TRANSPORTATION  
PACKAGE

#### Background

On March 30, 2011, a meeting was held in Rockville, Maryland, at the request of Transnuclear, Inc., to discuss the future submittal of the application for the Model No. TN-LC transportation package.

The meeting was noticed on March 10, 2011 [ML110700098]. The list of meeting attendees is provided as Enclosure 1. The presentation given by TN during the meeting is provided as Enclosure 2.

#### Discussion

The primary purpose of the meeting was to discuss the future submittal of the TN-LC transportation package. Although an exact date was not specified, TN plans to submit this application within the next three months as they believe their Safety Analysis Report is nearly complete.

TN gave a general overview of the cask and throughout the meeting described each discipline in greater detail. The TN-LC is a relatively small cask as its loaded weight with impact limiters is limited to 25 metric tons. The contents will consist of both commercial fuel and research reactor fuel. The TN-LC has pocket bottom trunnions, uses lead and steel for gamma shielding, resin for neutron shielding, wood impact limiters, and elastomer seals. The TN-LC does not have a canister.

In the structural safety analysis, the methodologies used are similar to the MP197 transport cask in that the impact analysis methods using LS-DYNA code were benchmarked to the 1/3 scale drop tests. This analysis is under review by staff for the MP197 and staff highlighted supplemental analyses that should be submitted with the application. Multiple payloads were evaluated to select the appropriate bounding configuration. For commercial fuel, only one fuel assembly will be transported per cask to allow for gap adjustment of different fuel lengths. However, research reactor fuel will be shipped with multiple fuel assemblies in a cask.

The material models and properties were benchmarked where the stiff and soft properties of the materials were varied to bound the potential range of stiffness of the material and temperature effects.

The normal conditions of transport (NCT), hypothetical accident conditions (HAC), and wet and dry loading and unloading conditions have been evaluated for their thermal analyses. These evaluations have been performed with and without an ISO container, as the cask can be shipped either way. For the NCT, the bounding condition occurs within the ISO container and the maximum cask inner shell temperature is used as the boundary condition. For the HAC, the bounding case from the normal conditions of transport is used; however, evaluations are performed without the ISO container. The loading and unloading thermal evaluations have different bounding conditions. Wet loading is bounded by the normal conditions of transport, wet unloading is bounded by the maximum fuel cladding temperature for vacuum drying, and for dry loading/unloading the inner shell temperatures without the ISO container are used.

In the shielding safety analysis, one bounding source term per payload configuration is evaluated for NCT. Shielding analysis is performed for two types of payload: research reactor spent fuel and commercial LWR spent fuel. For these types of fuels, fuel qualification tables (FQTs) are generated. To address the variety of burnup, enrichment, and necessary minimum cooling times, these FQTs determine the acceptable conditions that will ensure Part 71 dose rate limits are not exceeded. As this cask will be shipped exclusive use, the dose rates will be below the limit of 10 mrem/hour at 2 meters. The models and source terms for HAC are more conservative in that axial and radial lead slump is considered and no credit is taken for the neutron shielding resin or the impact limiters wood.

In the criticality safety analysis, no burn up credit is taken and the fuel is modeled as fresh fuel both for the research reactor spent fuel assemblies and the light water reactor spent fuel assemblies. In both NCT and HAC, water in-leakage and fuel configuration is considered.

TN stressed that lessons learned from previous submittals will be taken into account for the submittal of their Safety Analysis Report. Staff members experienced in reviewing previous TN submittals provided TN with comments regarding supplements that should be added to this application to ensure an efficient licensing review.

Docket No. 71-9358

TAC No. L24456

Enclosures:

1. Meeting Attendees
2. Meeting Presentation

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DISTRIBUTION: CLOSERS TAC NO. L24523  
SFST r/f NRC Attendees

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G:\SFST\Akhavannik\TN-LC\Pre-App Meeting\Public Meeting Presentation.pdf

**ADAMS Package No.: ML111010373**

<b>OFC:</b>	SFST	E	SFST	SFST
<b>NAME:</b>	HAKhavannik	MDebose	MWaters	
<b>DATE:</b>	4/4/11	4/4/11	4/6/11	

**C = COVER E = COVER & ENCLOSURE N = NO COPY OFFICIAL RECORD COPY**

Meeting Attendees  
Transnuclear, Inc. and NRC Meeting  
March 30, 2011, 1:00 p.m. – 4:00 p.m.

NAME	AFFILIATION	PHONE NUMBER
Craig Hrabal	NRC/NMSS/SFST	301-492-3257
Prakash Narayanan	Transnuclear, Inc.	410-910-6859
Peter Shih	Transnuclear, Inc.	410-910-6890
Raheel Haroon	Transnuclear, Inc.	410-910-6861
Olivier Gandou	Transnuclear, Inc.	410-910-6854
Alexis Sotomayor	NRC/NMSS/SFST	301-492-3291
Michele Sampson	NRC/NMSS/SFST	301-492-3292
Huda Akhavannik	NRC/NMSS/SFST	301-492-3273
Lymari Sepulveda	NRC/NMSS/SFST	301-492-3327
Chris Allen	NRC/NMSS/SFST	301-492-3148
Philippe Pham	Transnuclear, Inc.	410-910-6838
Yevgehiy Terekhin	Transnuclear, Inc.	510-757-3127
Veeresh Sayagavi	Transnuclear, Inc.	410-910-6936
Kamran Tavassoli	Transnuclear, Inc.	410-910-6944
Catherine Shelton	Transnuclear, Inc.	410-910-6950
Matthew Gordon	NRC/NMSS/SFST	301-492-3331
David Tang	NRC/NMSS/SFST	301-492-3328
Chris Bajwa	NRC/NMSS/SFST	301-492-3333
Neil Day	NRC/NMSS/SFST	301-492-3335
Bob Einziger	NRC/NMSS/SFST	301-492-3283
Kimberly Hardin	NRC/NMSS/SFST	301-492-3339
Luis Hinojosa	Holtec International	856-797-0900