February 9, 2009

MEMORANDUM TO: Michael Scott, Acting Deputy Director
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

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

SUBJECT: SUMMARY OF FEBRUARY 5, 2009, MEETING WITH TRANSNUCLEAR INC., REGARDING REVISION TO CERTIFICATE OF COMPLIANCE 9302 FOR MODEL NO. NUHOMS-MP 197 TRANSPORTATION PACKAGE

Background. On February 5, 2009, a meeting was held in Rockville, Maryland, at the request of Transnuclear, Inc. (TN) to discuss a proposed revision to Certificate of Compliance (CoC) for the NUHOMS-MP 197 transportation package. No regulatory decisions were made at the meeting. The list of meeting attendees is Enclosure 1. An agenda provided by TN is Enclosure 2. Presentation slides are Enclosure 3.

Discussion. The discussion addressed the items identified in the agenda.

- Summary of Proposal. The proposed changes are complex and include: 1) authorizing eleven dry shielded storage canisters (DSCs) as payloads, including failed fuel; 2) the proposed use of burnup credit, including limited use of the proprietary French fission product data to develop code-to-code correction factors based on benchmarking TN codes with other French codes; and 3) incorporating high burnup fuel into a new inner canister. TN indicated that the proposed revision would be submitted to staff late March 2009.

- Impact Analysis. TN stated the upcoming application will provide an impact limiter analysis which uses LS-DYNA to benchmark from 1/3 scale drop tests performed for MP 197 to the revised cask presented – MP 197HB. TN presented eleven authorized payloads. Two contain failed fuel can options and three are not currently contained in accepted storage analyses. TN proposed using already performed calculations for many aspects of the application contained in accepted storage analyses and will rely on similarity as a basis for licensing.

- Structural Analysis. TN stated the upcoming application will provide structural analyses using elastic static analyses for normal conditions of transport and elastic-plastic analysis for hypothetical accident conditions. TN will provide fuel cladding structural analyses using 3D ANSYS for normal conditions and hypothetical accident conditions. TN emphasized the similarities between the certified cask, MP 197, and the new cask,

MP 197HB, such as similar materials and dimensional similarities (MP 197 contains a 197 inch cavity and the MP 197HB contains a 199.25 inch cavity). TN will rely on design similarity as a basis for licensing.

- Thermal Analysis. TN stated the currently approved maximum heat load for MP 197 is 18.3 kW. The application will propose up to 26 kW. TN will rely on accepted thermal analyses for storage for similar payloads. TN will demonstrate transportation thermal analyses will be bounded by accepted storage analyses and will rely on similarity as a basis for licensing.

- Shielding Analysis. TN will include a 4-group response function approach instead of a full18-group calculation approach. TN states all calculated dose rates meet Part 71 limits for normal conditions and hypothetical accident conditions. TN will rely on accepted storage analyses as a bounding analysis for transportation. TN will rely on similarity as a basis for licensing.

- Criticality Analysis. TN developed code-to-code correction factors based on benchmarking TN codes with other French codes for depletion and criticality. TN will propose incorporating high burnup fuel in the packaging in the upcoming application. TN does not intend to propose new evaluations for those payloads already accepted in a storage analyses. TN will rely on similarity as a basis for licensing.

- Staff Comments.
    - TN desires a CoC revision in 18 months from time NRC receives the application. Staff encouraged TN to factor complexities of amendment into schedule.
    - Staff encouraged TN to consider a new application instead of amendment since there are changes with respect to every discipline and overpack, new canisters and contents.
    - Staff encouraged TN to provide clear descriptions of each type of damaged fuel and to clarify basket design changes, since TN's presentation slides incorrectly stated basket designs will remain the same to those approved for storage - basket designs will contain cavity changes.
    - Staff stated structural analysis for the MP 197HB cask without testing may be acceptable based on the proposed benchmarking approach and similar design to MP 197.
    - Staff encouraged TN to provide clear linkage to reference storage Safety Analysis Report calculations, if TN concludes to not duplicate calculations line-for-line within the application.
    - Staff encouraged TN to provide detailed impact limiter materials analyses, not only statements that wood was modeled with hexahedron elements, to provide discussion of the moment of inertia, not just cask weight to support TN's proposed 1/3 scale benchmark using LS-DYNA analysis, and to provide discussion which resolves the discrepancy presented between drop test results and LS-DYNA analysis for the wood crush depth 20 degree slap down 2nd impact.
    - Staff suggested the application include: time history accelerations, effects of friction coefficients, and a model based on mass density changes instead of

shape changes – slide incorrectly increased length of flange to demonstrate moment of inertia changes instead of modeling changes in mass density.

- Staff encouraged TN to include structural analyses using a linear, elastic analysis, not a non-linear, plastic analysis which suggests cask deformation.
- Staff cautioned TN about the lack of mechanical properties data on high burnup fuel which is needed to demonstrate structural integrity of spent fuel assemblies under accident conditions.
- Staff suggested TN be as clear as possible in TN's upcoming application concerning the transport cask load combinations for normal and hypothetical accident conditions.
- TN is relying on the same methodology presented in Amendment 10 for NUHOMS to analyze fuel cladding structural end drop analysis. Staff stated TN will need to resolve outstanding requests for additional information concerning the use of 3D ANSYS for this type of analysis.
- Staff encouraged TN to include a resolute discussion for all cases where exceptions to computational codes exist - code exceptions should also be discussed in Chapter 8 of the Safety Analysis Report.
- Staff stressed to TN that ANSI/ANS-8.1 does not allow code-to-code benchmarking and suggested TN provides adequate resolution to TN's approach for benchmarking TN codes to French codes.
- For already loaded canisters, staff encouraged TN to explore and include a burnup measurement proposal based on a misload analysis approach to resolve measurements for burnup.

Docket No. 71-9302
TAC No. L24298

Enclosures:
1. Attendees
2. Agenda
3. Presentation Slides (Non-Proprietary)
4. Presentation Slides (Proprietary)

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DATE	2/09/2009		2/09/2009		2/09/2009	

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MEETING ATTENDEES
Meeting Between the Nuclear Regulatory Commission
and Transnuclear, Inc.
February 5, 2009

Chris Staab	NRC/SFST
Meraj Rahimi	NRC/SFST
Larry Campbell	NRC/SFST
David Tang	NRC/SFST
Jeremy Smith	NRC/SFST
Daniel Forsyth	NRC/SFST
Nathan Sanfilippo	NRC/SFST
Chris Bajwa	NRC/SFST
Michael Scott	NRC/SFST
Matthew Panicker	NRC/SFST
Jimmy Chang	NRC/SFST
Natreon Jordan	NRC/SFST
Raymond Lorson	NRC/SFST
Carl Withee	NRC/SFST
Jayant Bondre	TN
Peter Shih	TN
Marie-Anne Brudieu	TN
Steve Streutker	TN
Raheel Haroon	TN
Prakash Narayanan	TN
Slava Guzeyev	TN
Don Shaw	TN
Tammy Morin	Holtec International

Enclosure 1

AGENDA
Meeting Between the Nuclear Regulatory Commission
and Transnuclear, Inc.
February 5, 2009

8:00 to 8:15 – Introduction
8:15 to 9:00 – Overview of the Application
9:00 to 10:00 – Impact Analysis
10:00 to 11:00 – Structural Analysis
11:00 to 12:00 – Thermal Analysis
12:00 to 1:00 – Lunch
1:00 to 2:00 – Shielding Analysis
2:00 to 2:15 – Criticality Analysis (non proprietary)
2:15 to 4:30 – Criticality Analysis (proprietary)

Enclosure 2