MEETING AGENDA

Meeting with Transnuclear, Inc. (TN)

August 29, 2005

1:00 p.m.	Introductory comments	NRC/TN
1:05 p.m.	Background of structural issue for TN NUHOMS® Horizontal Modular Storage System and current status of the review	NRC
1:30 p.m.	Description of TN's long-term structural analysis corrective actions	TN
2:15 p.m.	Public comment period	
2:30 p.m.	Closing remarks	

Meeting with Transnuclear, Inc. to Discuss Structural Issues Associated with the NUHOMS® HD Review

August 29, 2005

Spent Fuel Project Office

Nuclear Regulatory Commission

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NUHOMS® HD Structural Issues

- Background for NUHOMS® HD application
- Description of Structural Issue
- Path Forward/Options

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Background for NUHOMS® HD Review

- May 5, 2004, TN submitted application for Certificate of Compliance for NUHOMS® HD design
- July 8, 2004, NRC issued acceptance review letter
- TN provided supplements to application in letters dated July 6, 2004, and October 28, 2004
- Requests for additional information (RAI) sent December 13, 2004, and April 21, 2005
- TN responded to RAIs in letters dated February 18, 2005, and May 20, 2005.

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Description of Structural Issue

- NRC requested that TN justify the fuel rod moment of inertia used for the side drop fuel rod structural analysis to demonstrate cladding integrity (RAI, 12/13/04)
- NRC identified errors related to the assumptions on fuel/cladding behavior in RAI response (2/18/05)
- TN supplemented structural analysis on March 25, 2005

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Description of Structural Issue

- NRC identified additional errors in supplemental response
- Response to side drop question led NRC to further investigate end drop analysis
- Based on staff concerns second round of RAIs issued (4/21/05)
- Structural questions focused on:
  - the side drop analysis
  - the assumptions regarding fuel rod bending stiffness in the end drop analysis

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Description of Structural Issue

- TN responded to second round RAIs (5/20/04)
- Side drop issues resolved through TN's more detailed structural analysis
- Structural analysis issues remain for end drop analysis
  - TN 75g end drop analysis showed cladding buckling occurring at 88g
  - Confirmatory calculation by NRC using same simplified assumptions that TN used showed cladding buckling failure at 12g
  - NRC reviewed TN's ANSYS analysis which showed first mode buckling occurring at 12g
  - The 88g result corresponded to third mode buckling
- Structural end drop analysis remained open item

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Path Forward/Options

- Because of open structural issue NRC decided to stop review of the application
- July 8, 2005, NRC provided TN with three options
  - Withdraw the application in its entirety
  - Withdraw the 75g end drop analysis from the safety analysis report
  - NRC terminate the review
- TN chose to withdraw the 75g end drop analysis for the cladding from the SAR

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Path Forward/Options

- NRC reviewing TN revised submittal dated August 16, 2005
- Because of fundamental nature of structural analysis issue NRC interested in TN's perspective and corrective actions

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Transnuclear Corrective Actions in Response to Fuel Cladding Structural Evaluation Error

NRC Meeting August 29, 2005

Issue Description

- *Fuel cladding evaluation during 80 inch end drop performed in response to the NUHOMS HD RAI #2 used a quasi-static ANSYS analysis. Output file showed total collapse at about 88 g's in buckling mode 2. First mode buckling had occurred at about 11 g's, but TN did not identify it.*

Safety Significance

- *No actual safety significance attributable to the issue has been identified, so no compensatory safety actions are required.*

Timeline

- *RAI 1 issued December 18, 2004*
  - *Included a question regarding the side drop analysis of the fuel assembly*
- *RAI 1 responses submitted February 16, 2005*
- *RAI 2 issued April 21, 2005*
  - *Included a follow-on question regarding the fuel cladding in the side drop*
  - *Included a question on the fuel cladding during the end drop*
- *RAI 2 responses submitted May 20, 2005*
  - *Side drop evaluation accepted by the staff.*
  - *TN submitted quasi-static analysis rather than dynamic analysis which indicated much higher collapse load than hand calculations.*

Preliminary Findings

- *Overconfidence that end results of analysis would be acceptable*
- *Time Pressure*
  - *Inadequate support from organization*

Immediate Corrective Actions Performed

- *Initiated Corrective Action Report (CAR 2005-093) and Root Cause Evaluation.*
  - *Results and recommended actions from the root cause evaluation will be shared with the NRC when it has been completed.*
  - *Planned completion by September 30, 2005.*
- *TN withdrew the end drop evaluation from the NUHOMS HD SAR.*
- *Completed additional training for all technical staff to emphasize roles and responsibilities in the design process.*
- *Reaffirmed management expectations that compliance and correctness prevail over expediency.*
- *Reorganized engineering on functional rather than geographical basis, increasing available pool of resources, and provided written roles and responsibilities.*

Short and long term corrective action

- Short term activities in progress
  - Performing calculations to show that the fuel cladding can withstand the end drop event using dynamic analysis.
  - Initiated external third party review of our calculations. Extent of review will be dependent on what is found and outcome of Root Cause Evaluation
  - Review of CARs and SAR correspondence to determine extent of condition
  - Implementing enhanced technical review of all NRC submittals
- Long term corrective actions will be based on outcome of root cause evaluation

Summary

- *TN is taking this issue seriously.*
- *There is no safety significance to the error.*
- *Root Cause Evaluation is in progress.*
- *Implementing short term and long term corrective action.*
- *We have a strong corrective action program and will use it to resolve this issue to the satisfaction of the NRC and all stakeholders.*