

NRC FORM 699
(9-2003)

U.S. NUCLEAR REGULATORY COMMISSION

DATE

09/06/2012

CONVERSATION RECORD

TIME

10:00am

NAME OF PERSON(S) CONTACTED OR IN CONTACT WITH YOU

TELEPHONE NO.

see attached list of participants

TYPE OF CONVERSATION

VISIT

CONFERENCE

TELEPHONE

INCOMING

OUTGOING

ORGANIZATION

Transnuclear

SUBJECT

Discussion/Clarification of RAI 4-7 and 9-1; re: CoC-1029

SUMMARY (Continue on Page 2)

- see attached -

Continue on Page 2

ACTION REQUIRED

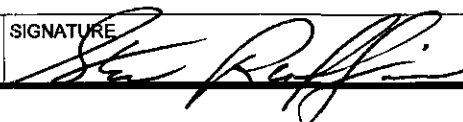
n/a

NAME OF PERSON DOCUMENTING CONVERSATION

SIGNATURE

DATE

Steve Ruffin



09/17/2012

ACTION TAKEN

TITLE OF PERSON TAKING ACTION

SIGNATURE OF PERSON TAKING ACTION

DATE

9/6/2012

CONVERSATION RECORD

Teleconference Participants:

NRC

Jorge Solis, Senior Thermal Technical Reviewer
Fon-Chieh Chang, Thermal Technical Reviewer
B. Jennifer Davis, Senior Project Manager
Steve Ruffin, Project Manager

Transnuclear

Jayant Bondre, Vice President
Peter Shih, Design Engineering Director
Kamran Tavassoli, Thermal Analysis Manager

Subject: Discussion/Clarification of RAIs 4-7 and 9-1

Reference: CoC-1029, Amendment No. 3, RAIs dated June 29, 2012

On Tuesday, September 6, 2012, Nuclear Regulatory Commission (NRC) staff held a conference call with Transnuclear, Inc. (TN). The purpose of the call was to provide the applicant an opportunity to understand the Request for Additional Information (RAIs) related to the thermal review and to maximize the chances that the RAI responses will allow for completion of the safety evaluation report and minimize the need for additional RAIs. During the teleconference TN requested clarification and NRC staff responded to questions on the following:

- 4-7 Perform a computational fluid dynamics (CFD) analysis to confirm the Flow Rate Model results described in the SAR. Verify the CFD solution by using the methods described in ASME V&V 20-2009: "Standard for Verification and Validation in Computational Fluid Dynamics and Heat Transfer."

The Flow Rate Model described in the SAR does not appear to be a reliable approach to capture the heat transfer and flow dynamics that exist for some of the design load cases described in SAR Table B.4.5-1. The CFD analysis should include an explicit representation of the TC and the DSC components (fuel zones, basket, transition rails, etc.). The solution analysis needs to be verified to determine the discretization error.

This information is necessary to demonstrate compliance with 10 CFR 72.236(f).

- 9-1 Propose an adequate test to validate the thermal design of the OS200FC TC forced cooling blowers used during the case of approaching 32PTH2 DSC transfer time limits. The transfer of the DSC in the OS200FC TC includes an analysis of Load Case T8 (Off-Normal Hot, Horizontal, Steady-State, Air Circulation) to demonstrate that the maximum component temperatures for the OS200FC TC and 32PTH2 DSC remain below the allowable limits if the air circulation as the recovery operation is initiated. The staff needs to have assurance the air circulation system will provide enough cooling, as described by the thermal design, to keep material temperatures below allowable limits.

This information is needed to demonstrate compliance with 10 CFR 72.236.

TN response input via email correspondence:

Both questions are focused on forced cooling of the TC and refer to 10 CFR 72.236, particularly subsection (f), for regulatory compliance. TN requests that the NRC SFST escalate these RAIs to a wider group for consideration, based on the following information.

10 CFR 72.236(f) requires that "the spent fuel storage cask must be designed to provide adequate heat removal capacity without active cooling systems".

CoC 1029 Amendment 3 states throughout proposed UFSAR Appendix B that the OS200FC TC details, analysis, drawings and operational features are as described in CoC 1004 UFSAR Appendix U with no modifications. The normal operating analysis of the OS200FC TC without forced cooling is a passive system as presented in Section B.4.5 of proposed UFSAR Appendix B. As such it meets the requirements of 10 CFR 72.236(f). Forced cooling is one of the OS200FC recovery options in case the time limits for the transfer operation exceed or are anticipated to exceed the Technical Specification limits.

- *Forced cooling as a recovery option was introduced, reviewed and approved by the NRC in:*
 - *CoC 1004, Amendment 8, 12/5/2005 (ML053390318), for a maximum heat load of 40.8 kW for the OS197FC TC loaded with a 24PTH DSC*
 - *CoC 1004, Amendment 10, 8/24/2009 (ML092290329), for maximum heat load of 40.8 kW for the OS200FC TC loaded with a 32PTH1 DSC*
- *The external dimensions of the 32PTH2 DSC in CoC 1029 Amendment 3 are almost identical to the 32PTH1 DSC*
- *The OS200FC TC is the same transfer cask as described in CoC 1004 Amendment 10, with no modifications*
- *Based on similarities between the 32PTH1 and 32PTH2 DSC shells, the flow pattern of forced air in the OS200FC TC is identical for both DSCs*
- *The maximum allowable heat load for the 32PTH2 DSC (37.2 kW) is bounded by the maximum allowable heat load for the 32PTH1 DSC (40.8 kW)*
- *The results of the ANSYS model used for the forced cooling evaluation in CoC 1029 Amendment 3 has been benchmarked ($\pm 9F$ for all components) to those of the SINDA/FLUINT model used in CoC 1004 Amendment 10*
 - *The comparison was made based on models of the 32PTH1 DSC in the OS200FC TC with 31.2 kW and 40.8 kW heat loads*
 - *The code comparison calculation can be provided for review, if needed*

Based on the above discussion, using the approaches utilized and approved in CoC 1004 for a heat load of 40.8 kW qualifies the forced cooling requirements in CoC 1029 Amendment 3 with a lower heat load of 37.2 kW. Providing a CFD model to confirm the model as requested in RAI 4-7 does not improve the safety.

Further, the methodologies employed to calculate the forced cooling requirements were reviewed and accepted by the NRC to provide reasonable assurance that the system is designed with a heat removal capability consistent with its importance to safety functions as documented in the SERs for CoC 1004, Amendments 8 and 10. Therefore, the intent of providing assurance as requested in RAI 9-1 has already been found to be satisfactory for compliance to the regulations for a heat load of 40.8 kW and a test of the forced cooling system for the 32PTH2 system to validate the thermal design is not required.