**From:** Garcia-Santos, Norma
**To:** Fowler, Samuel W.
**Cc:** Solis, Jorge; Call, Michel; Tang, David
**Subject:** Telephone Call - RAI 1 Responses -- NAC-STC (HBUF and WVDP HLW)
**Date:** Thursday, June 25, 2015 4:41:00 PM
**Attachments:** image001.emz
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Good afternoon Wren,
I developed a table (see table below) summarizing some comments and/or clarification questions from the staff regarding the review of the amendment request of the Model No. NAC-STC package. As discussed over the phone, this teleconference will include disciplines such as structural, criticality, and thermal evaluations and a second RAI is possible in almost all disciplines. The staff immediate availability is as follows:

- Structural Reviewer – Next week
- Criticality Reviewer – Tomorrow and next week
- Thermal Reviewer – Tomorrow and after July 10

| RAI ID | Technical Area | Brief Description | Regulatory Requirement | SUNSI | Comments |
|---|---|---|---|---|---|
| **Cr-1-2 d.** | Criticality Evaluation | Modify licensing drawing No. 423-875 - Criticality safety design - Include dimensions and tolerances of components | 10 CFR 71.55, 10 CFR 71.59 | Non-Proprietary | The RAI response does not address the tolerances on the width of the neutron absorber plates. Need calculations. |
| **Cr-1-2 e.** | Criticality Evaluation | Modify licensing drawing No. 423-878 - Criticality safety design - Include dimensions and tolerances of components | 10 CFR 71.55, 10 CFR 71.59 | Non-Proprietary | The RAI response does not address the tolerances on the width of the neutron absorber plates. Need calculations. |
| **Cr-1-2 f.** | Criticality Evaluation | Criticality safety design - Neutron absorber plates and fuel tubes - Provide dimensions and tolerances of components | 10 CFR 71.55, 10 CFR 71.59 | Non-Proprietary | The RAI response does not address the tolerances on the width of the neutron absorber plates. Need calculations. |
| **OP-CR-7-1 c.** | Criticality Evaluation | Address HBU Different Configurations-Thermal Shunts | 10 CFR 71.87(a), 10 CFR 71.87(f), 10 CFR 71.89 | Non-Proprietary | The RAI response only addresses potential removal of thermal shunts. The application should address scenarios in which a licensee using the package may need to remove thermal shunts or add thermal shunts for possible HBU configurations. |
| **ST-X-X** | Structural Evaluation | **GENERAL** | **COMMENT** | | The "updated" HLW Overpack end-drop analysis model (Figure 2.12.6.12-3), in Revision 15A of the application, is markedly departed from that depicted in Revision 13A. The lid-to-shell weld finite element analysis discretization scheme does not seem to render any reasonable approach for evaluating the weld stress. |
| **St-2-6** | Structural Evaluation | Provide mapping...for evaluating mechanical\thermal stress margins of safety | 10 CFR 71.33(a)(5) | Proprietary | Include the revised text in the application as well as a mapping section for the STC and HBU cask analyses. |
| **Th-3-1** | Thermal Evaluation | HBU-Provide validation of thermal models | 10 CFR 71.71(c)(1)-(2), 10 CFR 71.73(b), 10 CFR 71.73(c)(4) | Proprietary | The RAI response does not address the validation issue for the package. |
| **Th-3-10** | Thermal Evaluation | HBU-Provide calculations and assumptions for fire accident conditions. Revise Section 3.8 of the application. | 10 CFR 71.73(c)(4) | Proprietary | The RAI response needs to provide the thermal evaluation and analysis to demonstrate compliance with 10 CFR 71.73. |
| **Th-3-11** | Thermal Evaluation | WVDP-Provide calculations and assumptions for fire accident conditions. Revise Section 3.7 of the application. | 10 CFR 71.73(c)(4) | Proprietary | The RAI response needs to provide the thermal evaluation and analysis to demonstrate compliance with 10 CFR 71.73. |
| **Th-3-2** | Thermal Evaluation | HBU-Perform thermal analyses and revise Section 3.8. | 10 CFR 71.71(c)(1)-(2) | Proprietary | Issue of calculating realistic maximum and minimum temperatures, which are used to determine the temperature variation. (For example, NUREG-2152 include a method to calculate the numerical uncertainty. This NUREG is also applicable to finite element methods.) Also, even though the heat transfer |

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| | | | | | due to convection is small, it should be included because neglecting its contribution results in non-conservative minimum temperatures. |
| **Th-3-5** | Thermal Evaluation | HBU-Explain and justify thermal model assumptions | 10 CFR 71.71(c)(1)-(2), 10 CFR 71.73(b), 10 CFR 71.73(c)(4) | Proprietary | The RAI response needs to provide realistic temperatures. The applicant needs to provide calculation of numerical uncertainty. |
| **Th-3-6 b.** | Thermal Evaluation | HBU- b. Provide the effective thermal conductivities | 10 CFR 71.71(c)(1)-(2), 10 CFR 71.73(b), 10 CFR 71.73(c)(4) | Proprietary | The RAI response is partially acceptable. The use of lower fuel conductivity can result in conservative maximum temperatures, but the approach underestimates minimum temperatures. |
| **Th-3-7** | Thermal Evaluation | HBU-Obtain the analysis discretization error for the bounding case | 10 CFR 71.71(c)(1)-(2) | Proprietary | The RAI response does not include numerical uncertainty using proposed methods. These methods are applicable to finite element as well. Also, the applicant needs to include internal convection for obtaining realistic temperatures. |
| **Th-3-8** | Thermal Evaluation | Proprietary | 10 CFR 2.390(b)(3) | Proprietary | The applicant needs to demonstrate, by analysis, that internal convection is negligible. |

Please let me know the dates and time that work for you and your staff and I will coordinate with the NRC staff. Feel free to contact me if you have questions. (I am working from home tomorrow and on Monday and you can contact me by e-mail or the NRC operator (301-415-7000).)
Have a nice rest of the day.

*Norma Garcia Santos*
Project Manager
Division of Spent Fuel
Management
Office of Nuclear Material
Safety and Safeguards
Washington, DC 0020555
E-mail: Norma.Garcia-Santos@nrc.gov
Phone No.: (301)-415-6999