July 8, 2010

James M. Shuler
Manager, Packaging Certification Program
Safety Management and Operations
Office of Environmental Management
Department of Energy
Washington, DC 20585

SUBJECT: APPLICATION FOR REVISION TO CERTIFICATE OF COMPLIANCE NO. 9315 FOR THE MODEL NO. ES-3100 PACKAGE, DOCKET NO. 71-9315 – SUPPLEMENTAL INFORMATION NEEDED

Dear Mr. Shuler:

By letter dated May 10, 2010, you submitted an application for revision to Certificate of Compliance (CoC) No. 9315 for the Model No. ES-3100 transportation package. The application proposes to add a high enriched uranium (HEU) oxide loading of 15.13 kg total oxide and 12.32 kg U-235 with a CSI of 0.4 as authorized contents. This application also proposes the following administrative changes: updates to the (1) minimum weight payload, (2) inert gas purity, (3) drum weight variation, (4) stainless steel heavy can spacer information, (5) sieve options for HEU metal pieces, and (6) drum nut markings. Staff performed an acceptance review of your application to determine if the application contains sufficient technical information in scope and depth to allow the staff to complete the detailed technical review.

This letter is to advise you that based on our acceptance review, the application does not contain sufficient technical information. The information needed to continue our review is described in the enclosure to this letter as Request for Supplemental Information (RSI). Staff included observations to allow you to start earlier on items containing the potential to be asked at a later date. Responses to observations are not required for staff to begin a detailed technical review. Observations are not the result of a detailed technical review and may be resolved once staff begins a detailed review. In order to schedule our technical review, the RSI responses should be provided by July 23, 2010. If the RSI responses are not received by this date, the application may not be accepted for review. This letter confirms our phone call on July 7, 2010, with respect to the supplemental information needed and the projected date for your submittal on July 23, 2010. If you have any questions regarding this matter, please contact me at (301) 492-3339.

Sincerely,

/RA/

Kimberly J. Hardin, Senior Project Manager
Licensing Branch
Division of Spent Fuel Storage and Transportation
Office of Nuclear Material Safety
and Safeguards

Docket No. 71-9315
TAC No. L24444

Enclosure: Request for Supplemental Information and Observations

James M. Shuler
Manager, Packaging Certification Program
Safety Management and Operations
Office of Environmental Management
Department of Energy
Washington, DC 20585

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Enclosure: Request for Supplemental Information and Observations
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DEPARTMENT OF ENERGY

DOCKET NO. 71-9315

REQUEST FOR SUPPLEMENTAL INFORMATION (RSI) AND OBSERVATIONS

RELATED TO THE PROPOSED ES-3100 REVISION

Structural

RSI-1: List alternative methods for determining the minimum size for broken uranium metal and/or provide the criteria for defining acceptable alternative methods.

The amendment request seeks to allow methods other than using a 3/8" sieve to measure the minimum allowed size for broken uranium metal. However, there is no listing of what the "equivalent methods" would be. It is also noted that the intent of the sieve usage is not to measure the particle but to apply a specific surface area limit.

This information is required by the staff to verify the compliance with 10 CFR 71.33(b)(3).

Thermal

RSI-1: Provide a table that lists the temperatures of the package components that exist under NCT and HAC.

Page 3-23, Table 3.15 of the SAR provides the allowable service temperature range of the various package components. A table should be added that lists the temperatures of the components (and the time to reach the maximum temperature after the fire) that exist under NCT and HAC to confirm that the components do not reach beyond their allowable temperatures. (Note: Table 3.16 and Table 3.17 only list some of the components and do not include Cat 277-4, silicone rubber pads, Viton O-rings, stainless steel liner with an allowable temperature of 350 deg C (176.7 deg F? per Table 3-15).) This is especially relevant considering that many of the results in table form list node numbers and not specific components.

The fire analysis may be acceptable if the applicant performs the analysis at 1475°F and no multiplier is used (assuming fire emissivity equals 1.0). The applicant will need to resubmit modified SAR pages and updated fire thermal analysis files.

This information is required by the staff to verify compliance with 10 CFR 71.35 and 71.43.

RSI-2: a) Provide the HAC report ORNL/NTRC-013, Volume 1. b) Provide Reference 2, page 3-146, P.A. Bales, Thermal Analyses of the ES-3100 Shipping Container for NCT and HAC (Final Design with 277-4 Neutron Absorber), DAC-PKG-801699-A002, Rev. 0, BWXT Y-12, January 31, 2005.

These reports should be provided for review.

This information is required by the staff to verify compliance with 10 CFR 71.35.

RSI-3: Include the component name in Table 3-5, 6, 7, 8 (page 3-9 to 3-13), Figure 8 on page 3-100, Table 4 on page 3-104, Table 5 on page 3-105, Table 6 on page 3-115, Table 7 on page 3-116, and Figure 13 on page 3-140.

Include the component name (such as in Table 3.4) for Table 3-5, 6, 7, 8 (page 3-9 to 3-13), Figure 8 on page 3-100, Table 4 on page 3-104, Table 5 on page 3-105, Table 6 on page 3-115, Table 7 on page 3-116, and Figure 13 on page 3-140. The node information should remain. The component name should be provided next to the node and geometry information to allow comparison of the temperature results with the allowable temperatures presented in the Material Properties section of the SAR.

This information is required by the staff to verify compliance with 10 CFR 71.35 and 71.43.

RSI-4: a) List the ABAQUS and PATRAN files used in the thermal analysis. b) Provide the input files (and/or material files, etc.) of the PATRAN and ABAQUS runs and designate the section in the files that deal with material properties and boundary conditions (temperature, insolation, heat flux, etc.).

The material properties and boundary conditions should be provided in order to perform an evaluation of the analytical runs.

This information is required by the staff to verify compliance with 10 CFR 71.35 and 71.43.

RSI-5: Provide a section that discusses the Maximum Thermal Stresses under HAC in the thermal evaluation.

A discussion of the maximum thermal stresses under HAC should be included in the thermal evaluation.

This information is required by the staff to verify compliance with 10 CFR 71.73.

RSI-6: Provide a discussion to show that the two-dimensional axisymmetric modeling approach (as opposed to three-dimensional) provides conservative results.

Page 3-45 and 3-85 of the SAR describe a two-dimensional axisymmetric model used for the thermal analysis. Since no margin of safety values are provided (page 3-24, Section 3.3.3), a discussion to show that the two-dimensional axisymmetric modeling approach provides conservative results should be provided.

This information is required by the staff to verify compliance with 10 CFR 71.35.

Observation-1: Section 3.5.4.2 of NUREG-1609 states that the thermal evaluation period should be one year. Appendix 3.6.7, page 3-168 of the SAR indicates that the time limit for shipment may be as short as five months. A discussion should be added to the appendix stating that the five month analysis does not meet the NUREG 1609 one year analysis, but that shipments must be met within the stated time limits. These time limits should then be discussed in Section 7 of the SAR.

Observation-2: Providing a brief discussion that compares the HAC experiment temperature results and those from the PATRAN and ABAQUS modeling would be helpful.

Containment

RSI-1: On 8.2.5.5, clarify the change of frequency for refurbishing the containment vessel.

Provide an explanation to support that the change in frequency for refurbishing the containment vessel is more conservative than the one previously established. Previously, the containment vessel was refurbished and checked for sealing ability after each use, and now 8.2.5.5 establishes that this vessel is to be refurbished and checked at least annually while the package is in use.

This information is necessary pursuant 10 CFR 71.35(a).

Criticality

RSI-1: Verify and discuss in the SAR that the analyses performed in the criticality analysis bound all credible scenarios regarding water in-leakage.

Section 6.1.2 contains a discussion of the impact of water in-leakage. However, it is not evident if an evaluation was performed for water at varying densities or if only for full flooding in various regions.

This information is required by the staff to verify compliance with 10 CFR 71.55 and 71.59.

Observation-1: Section 6.9.9.3 in Appendix 6.9.9 makes reference to Sections in 6.3 that are not present in the package of change pages. They state that the increase in payload limit discussed in Section 6.9.9.3 had no impact on the evaluations performed in these sections.

Shielding

Observation-1: Staff assumes that the proposed revision has no new impacts on the shielding design since there were no change pages.