



**UNITED STATES  
NUCLEAR REGULATORY COMMISSION**  
WASHINGTON, D.C. 20555-0001

June 10, 2016

Mr. Ahmad M. Al-Daouk, Director  
Office of Packaging and Transportation  
Department of Energy  
National Nuclear Security Administration  
P.O. Box 5400  
Albuquerque, NM 87185

**SUBJECT: APPLICATION FOR THE MODEL NO. 380-B TRANSPORT PACKAGE –  
SUPPLEMENTAL INFORMATION NEEDED**

Dear Mr. Al-Daouk:

By letter dated April 6, 2016, the National Nuclear Security Agency (NNSA) submitted an application for approval of the Model No. 380-B transport package. The application proposes using the 380-B package for NNSA's Offsite Source Recovery Project mission, and to improve its source recovery capabilities. The U.S. Nuclear Regulatory Commission (NRC) staff performed an acceptance review of your application to determine whether the application contains sufficient technical information in scope and depth to allow the NRC staff to complete a 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 begin our review is described in the enclosed request for supplemental information (RSI) and observations. NRC staff included observations to allow you to start earlier on this item, which contains the potential to be asked at a later date. A response to the observation is 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 start our technical review, this information should be provided within 2 weeks from the date of this letter. Upon receiving the RSI responses, the NRC staff will evaluate the information to determine whether the supplementary information is responsive to the NRC staff's concerns.

The staff is available for a public meeting if you wish to discuss these issues in more detail prior to deciding on your course of action. Please reference Docket No. 71-9370 and CAC No. L25109 in future correspondence related to this action.

If you have any questions regarding these matters, please contact me at (301) 415-6999.

Sincerely,

**/RA/**

Norma Garcia Santos, Project Manager  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9370  
CAC No. L25109

Enclosure: Request for Supplemental  
Information and Observations

The staff is available for a public meeting if you wish to discuss these issues in more detail prior to deciding on your course of action. Please reference Docket No. 71-9370 and CAC No. L25109 in future correspondence related to this action.

If you have any questions regarding these matters, please contact me at (301) 415-6999.

Sincerely,

**/RA/**

Norma Garcia Santos, Project Manager  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9370

CAC No. L25109

Enclosure: Request for Supplemental  
Information and Observations

Distribution: DSFM r/f NMSS r/f

**ADAMS P8 Accession No.: ML16166A265**

<b>OFC:</b>	DSFM	E	DSFM		DSFM		DSFM		DSFM	
<b>NAME:</b>	NGarcia Santos		SFigueroa by e-mail		DTang by e-mail		DDunn by e-mail		ELove by e-mail	
<b>DATE:</b>	6/2/2016		6/7/2016		6/2/2016		6/2/2016		6/3/2016	
<b>OFC:</b>	DSFM		DSFM		DSFM		DSFM		DSFM	
<b>NAME:</b>	SEverard for JPiotter		ACsontos by e-mail		PSilva by e-mail		WCAllen for SRuffin			
<b>DATE:</b>	6/7/2016		6/3/2016		6/9/2016		6/10/16			

**C = COVER E = COVER & ENCLOSURE N = NO COPY OFFICIAL RECORD COPY**

NATIONAL NUCLEAR SECURITY ADMINISTRATION

DOCKET NO. 71-9370

REQUEST FOR SUPPLEMENTAL INFORMATION AND OBSERVATIONS

RELATED TO THE APPLICATION FOR THE MODEL NO. 380-B PACKAGE

**REQUEST FOR SUPPLEMENTAL INFORMATION**

**Quality Assurance**

QA-1. Provide a description of the quality assurance program that will be used for the Model No. 380-B including

- a) For a NRC-approved quality assurance program, reference the applicable docket No. of the NRC-approved quality assurance program in the application
- b) For a quality assurance program not previously approved by NRC, provide:
  - 1) a detailed description of how the applicant will ensure compliance with 10 CFR Part 71, Subpart H, "Quality Assurance."
  - 2) quality requirements for each individual component consistent with the component function and safety requirements

In Section 8.1, "Acceptance Tests," of the application, the applicant states the following:

"Deviations from requirements will be recorded and dispositioned in accordance with the cognizant quality assurance program."

The application for the Model No. 380-B does not include a description of the quality assurance program that the applicant will use to ensure that the package will be in compliance with the requirements in 10 CFR Part 71.

This information is needed to determine compliance with 10, CFR 71.31(a)(3), 10 CFR 71.37 and 71.101(b).

Enclosure

## OBSERVATIONS

### Materials Evaluation

- M-1. Indicate allowable grades of ASTM B29 lead and identify which grades of ASTM B29 lead are allowable for the shielding material

Section 1.2.1.1 of the application states the following:

“All lead shielding is made from ASTM B29 lead or optionally, from lead per Federal Specification QQ-L-171E, Grade A or C. There are four grades of lead included in ASTM B29-14.”

This information is needed to determine compliance with 10 CFR 71.31(c) and 71.33(a)(5).

- M-2. Justify the allowable strength value for ASTM A351, Grade CF8A, at 800°F shown in Table 2.2-2 of the application (page 2.2-4). ASME Code, Section IID, Table 2A, pages 308-310 (2010, with 2011 addenda) indicates that the maximum temperature for CF8A is 700°F. Table 2A does not contain an allowable strength value for SA-351 CF8A at 800°F.

As necessary, revise the following sections and tables to account for 700°F maximum operating temperature for CF8A based on ASME Code, Section IID, Table 2A.

- a) Section 3.2.3 Component Specifications, Page 3.2-3: “As such, the appropriate upper temperature limit under normal conditions is 800 °F for stainless steel components that form the containment boundary or are used in the payload support.”
- b) Section 3.4.3 Maximum Temperatures, Page 3.4-3: “The next lowest thermal margin of 151 °F occurs for the closure lid which is predicted to reach a maximum temperature of 649 °F versus an allowable short term temperature limit of 800 °F.”
- c) Section 3.4.3 Maximum Temperatures, Page 3.4-3: “The minimum thermal margin for the structural components of the cask occurs for the lid with a predicted peak temperature of 649 °F, yielding a thermal margin of 151 °F, based on a conservatively low allowable temperature limit of 800 °F.”
- d) Table 3.3-1 – “NCT Temperatures for 380-B Package with Open Dunnage Support Allowable Temperatures for Bottom Forging, Top Forging, and Closure Lid.”
- e) Table 3.3-2 – “NCT Temperatures for 380-B Package with Restrictive Dunnage Support Allowable Temperatures for Bottom Forging, Top Forging, and Closure Lid.”
- f) Table 3.4-1 – “Peak HAC Temperatures for 380-B Package Allowable Temperatures and Thermal Margin values for Bottom Forging, Top Forging, and Closure Lid.”

This information is needed to determine compliance with 10 CFR 71.31(c).

- M-3. Provide a reference to an ASTM or other standard for the determination of compressive stress of the polyurethane foam in APPLICATION Section 8.1.5.1.2.3.2 or justify the testing and analysis methods if the testing and analysis is not based on a referenced standard.

This information is needed to determine compliance with 10 CFR 71.31(c).

- M-4. Provide a reference to an ASTM or other standard for the distilled or deionized test water or provide a maximum chloride concentration for the test water used to determine the leachable chlorides for the polyurethane foam in application section 8.1.5.1.2.1.1.

This information is needed to determine compliance with 10 CFR 71.31(c).

- M-5. Provide additional information to explain the methodology to determine the presence of voids greater than 5% of the nominal lead thickness using dose rate measurements using a cobalt-60 source as described in application section 8.1.6.1, "Poured Lead Shielding."

This information is needed to determine compliance with 10 CFR 71.31(c).

### **Structural Evaluation**

- St-1. With respect to Figures 2.12.5-24 through -26 on the simulated accelerations for the end, CG-over-corner, and side drops, provide comparison plots for the measured full-scale equivalent rigid body accelerations to corroborate benchmark results included in Table 2.12.5-9 of the application.

Table 2.12.5-9 of the application includes a comparison of the measured peak cask rigid body accelerations and the impact limiter deformations. The staff notes that, in addition to evaluating correlation between measured and simulated peak accelerations, the applicant should also evaluate two other acceleration response attributes, namely, pulse shape and pulse duration. The staff needs this information to confirm appropriate benchmarking of the impact limiter finite element model to demonstrate package structural performance by analysis during normal conditions of transport and hypothetical accident conditions.

This information is needed to determine compliance with 10 CFR 71.71(c)(7) and 71.73(c)(1).