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

July 29, 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. 435-B TRANSPORT PACKAGE – SUPPLEMENTAL INFORMATION NEEDED

Dear Mr. Al-Daouk:

By letter dated June 9, 2016, the National Nuclear Security Agency (NNSA) submitted an application for revising the Certificate of Compliance of the Model No. 435-B transport package. In summary, the applicant proposes the following revisions to the design of the Model No. 435-B:

1. Change the temper specifications for aluminum alloy 6061,
2. Delete Radon-226 from the list of authorized contents,
3. Changes to licensing drawings related to welds, excluding seal welds, to add liquid penetrant (LP) inspections;
4. Adding an optional center hole to the lower torispherical head in order to facilitate fabrication, and
5. Corrections to facilitate manufacturing and operations of the package.

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 observation. NRC staff included the observation 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. 71-9355 and CAC No. L25126 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. 71-9355
CAC No. L25126

Enclosure: Request for Supplemental
Information and Observations

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OFC:	DSFM	E	DSFM		DSFM	
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DATE:	7/27/16		7/29/16			

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NATIONAL NUCLEAR SECURITY ADMINISTRATION

DOCKET NO. 71-9355

REQUEST FOR SUPPLEMENTAL INFORMATION AND OBSERVATIONS

RELATED TO THE APPLICATION FOR THE MODEL NO. 435-B PACKAGE

Thermal Evaluation

RSI-3-1 Provide references of the thermal properties used in the thermal evaluation.

The applicant does not provide the references for the thermal properties of the materials used in the thermal evaluation of the Model No. 435-B package. The applicant included the following information in the application:

Table or Section in the Application	**References Nos. Provided in Section 3.5.1 of the Application**	**Topic Related to the Reference**
Table 3.2-2	5, 11, and 17	Thermal properties of polyurethane form, neoprene, and LyTherm paper insulation.
Table 3.2-1	15	Thermal properties of ASTM B29 copperized lead (QQ-L-171E Grade A or C).
Section 3.2.2	12 and 14	Initial decomposition and auto-ignition temperatures of neoprene (polychlorprene).
Section 3.2.1	19	Emissivity of 0.9 assumed for polyurethane form, neoprene, and LyTherm paper insulation.
	18, 19, 20 and 21	Absorptivity and emissivity of Type 304 stainless steel under different surface conditions.

The staff needs these references to start the review of the thermal evaluation for the Model No. 435-B package.

This information is required to determine compliance with 10 CFR 71.35, 71.71, and 71.73.

RSI-3-2 Provide the following information as it is used in the Thermal Desktop and SINDA/FLUINT computer programs for the HAC 30-minute fire and its post-fire cooldown:

(a) input values of emissivity and absorptivity, separately, for the package external surface during the HAC 30-minute fire and its post-fire cooldown, respectively;

(b) input values of the fire emissivity during the HAC 30-minute fire; and

(c) If Thermal Desktop and SINDA/FLUINT computer codes only allow a single input parameter, which represents the combined effect of the fire emissivity and the package external surface emissivity/absorptivity, provide this value in the application's thermal evaluation chapter and explain how this single input parameter was derived.

The applicant developed the thermal model using the Thermal Desktop and SINDA/FLUINT computer programs and presented emissivity and absorptivity of fire and package external surfaces in Sections 3.4.1 and 3.4.2 of the application. However, the applicant did not provide the values of the input parameters to the Thermal Desktop and SINDA/FLUINT programs.

This information is required to determine compliance with 10 CFR 71.35 and 71.73.

Observations

OB-3-1 Provide an estimate of the amount of hydrogen generated by the polyurethane foam in the cavity of the 435-B package during transport.

The applicant stated in Section 8.1.5.1.1 of the application that the major chemical constituents of the polyurethane foam are the following:

- carbon 50~70%,
- oxygen 24~34%,
- nitrogen 4~12%, and
- hydrogen 4%~10%.

Given that hydrogen constitutes about 4 - 10% in polyurethane foam and the hydrogen generated is limited to a molar quantity of less than 5% (by volume) in the package, the applicant needs to provide an estimate of the amount of hydrogen generated during transport and if the amount of hydrogen is maintained at safe levels in the package's cavity.

This information is required to determine compliance with 10 CFR 71.43(d).

OB-3-2 Provide the assumptions for selecting the initial conditions of the temperatures used for the HAC thermal analysis for the package components.

In Section 3.4.1 of the application, the applicant provided the initial conditions for the package prior to the HAC fire scenario. It is not clear whether the applicant obtained the initial temperatures of the package components (prior to the HAC for the fire scenario) from the NCT analysis with insolation or without insolation.

This information is required to determine compliance with 10 CFR 71.73.