

April 25, 2011

MEMORANDUM TO: Doug Weaver, Deputy Director  
Licensing and Inspection Directorate  
Division of Spent Fuel Storage and Transportation, NMSS

FROM: Pierre Saverot, Project Manager */RA/*  
Licensing Branch  
Division of Spent Fuel Storage and Transportation, NMSS

SUBJECT: SUMMARY OF MARCH 31, 2011, MEETING WITH  
ENERGYSOLUTIONS REGARDING THE 8-120B PACKAGE

### Background

By letter dated January 28, 2011, EnergySolutions (ES) submitted an amendment request for approval of the Model No. 8-120B package as a “-96” package. By letter dated March 22, 2011, the NRC staff transmitted a Request for Supplemental Information (RSI) to the applicant that included over 40 RSIs and 24 Observations. ES requested this meeting to present its proposed responses to some of the key RSIs and also provide comments on the Certificate of Compliance (CoC) No. 9204 issued on February 28, 2011, for the Model No. 10-160B package.

### Discussion

Regarding the Model No. 10-160B package, ES argued that ISG-20, “Transportation Package Design Changes Authorized Under 10 CFR Part 71 Without Prior NRC Approval,” should have been used for this application’s review and that staff should not have required a different and more extensive shielding analysis than what was already provided in the application. ES cited the criteria presented in ISG-20 Appendix B, i.e., “the radiation analysis should show that a reasonable rearrangement of contents under accident conditions would result in a dose rate less than the accident conditions limit,” as a basis for their argument. Staff responded that (i) there was no radiation analysis included in the application, (ii) ISG-20 does require an analysis as a basis for safety, and not only measurements as provided in ES’ submittal, and (iii) ISG-20 does in fact justify staff’s position during this review. Staff also said that it was concerned by the need to account for a non-uniform distribution of the contents and that approval of a package design shall not rely on pre-shipment measurements. Staff stated that, while containment clearly refers to  $A_2$  values, contents cannot be defined by an  $A_2$  value as was the case in the application. ES brought to staff’s attention the example of Am-241 with a potential 220,000  $A_2$  limit for shipment, versus a requested 3000  $A_2$  limit in the previous CoC No. 9204, because the only limit for such contents would be the decay heat. Staff said it will look back at the certificate and potentially include a generic content limit that may be needed in conjunction with prescribed leakage test rates to ensure containment safety.

ES proposed a change, acceptable to staff, in the language of Condition 5(b) of the CoC No. 9204 to specify that the 13.4 Ci activity limit was for a Co-60 “point source.” Regarding ES’

request to reinstate the previous inerting condition in the CoC, staff stated that, because ES did not provide any demonstration in the application that the inerting process would prevent the development of flammable gas mixtures in any confined area of the package, inerting could not be approved. Also, ES did not define the leak path between the secondary container and the package. Staff said that (i) it will perform a confirmatory review of the definitions of "LSA contents" that have shifted over the years and, (ii) the non-inerting condition will stay as written until ES provides the necessary justifications and demonstrations as outlined in detail in the SER.

ES disagreed with staff's write up of Section 5.4 of the Model No. 10-160B SER, and said that this issue also impacts the current review of the Model No. 8-120B application. ES said that it is incorrect to set a limit less than the calculated activity for a uniformly distributed source since it would not be the "maximum allowable content" for that source. Further, ES said that the most common waste being shipped is ion exchange resin, i.e., a uniformly distributed waste form. Staff responded that ES was in fact asking to make a package "less conservative" while staff considers that a package needs also to be designed for non-homogeneous waste, i.e., staff always considers the most reactive plausible conditions for calculations in a shielding analysis.

Staff disagreed with ES on the Z values because ORNL stated that Z=3 is the most conservative value while ES had kept a value of Z=7 in its calculations. ES explained that it was unreasonable to use such a number and that theoretical density "does not really matter." Staff responded that it is always looking at activities based on the material properties of the contents to know if self-shielding is present or not, and that one cannot expect a correct answer to a question that is physically impossible, i.e., going beyond the real density of the material.

ES presented its proposed responses to some RSIs on the Model No. 8-120B application. ES said that it will perform a shielding analysis, using SCALE 5-1, similar to the one for the Model No. 10-160B application, and look at the lead slump evaluation as well as at the package's puncture evaluation. ES explained that they had to change the design of the Model No. 8-120B package because of staff's requirement to leak-test the full containment boundary (in reference to the Model No. 3-60B package), and that they now have to fabricate the entire containment boundary before pouring lead. As a consequence, and as noted by staff, drawings have to be redrawn since welds have changed. ES also explained that the term "critical components" listed on the drawings, which has no regulatory meaning, really meant "fracture critical components." ES acknowledged the need for the safety classification of components and will do so in accordance with its QA program.

Staff indicated that (i) ES needs to capture in the application the fact that there is no significant neutron source to be shipped in the package, because neutron sources have not been evaluated, and (ii) the current evaluation does not constitute a representative loading for the contents, as stated in ISG-20. Staff did also say that an A2 value does not define contents and that shielding evaluations must account for all radionuclides proposed to be shipped and also address different source configurations. ES replied that they believed that, at the end of the day, they will still have an A2 value for the contents because of containment calculations. In a clarification to RSI-13, staff said that this RSI is related to elastomers, and indicated to ES that ASTM D-2000 could be a standard to consider because it covers a wide range of specifications.

D. Weaver

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Since ES will not be in a position to respond to the RSIs by the due date, the review of the Model No. 8-120B package is likely to be suspended. ES indicated to staff that a future amendment request for the Model No. 10-160B package will include a shielded canister design. A pre-application meeting will be planned for that purpose.

The staff did not make any regulatory commitments at the meeting.

Docket No. 71-9168

TAC No. L24514

Enclosure: Meeting Attendees

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Distribution: NRC Attendees: Michel Call, Craig Hrabal, Matt Gordon, Michele Sampson, Michael Waters **ADAMS Accession No.: ML111160396**

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<b>NAME</b>	PSaverot		MDeBose		MWaters			
<b>DATE</b>	04/06/2011		4/13/11		4/25/11			

C=Without attachment/enclosure E=With attachment/enclosure N=No copy **OFFICIAL RECORD COPY**

**Meeting Between EnergySolutions and the  
Nuclear Regulatory Commission  
March 31, 2011  
Meeting Attendees**

**NRC/NMSS/SFST**

Meraj Rahimi  
Michael Waters  
Matthew Gordon  
Craig Hrabal  
Michel Call  
Pierre Saverot  
Michele Sampson

**ENERGYSOLUTIONS**

Mark Whittaker  
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