

June 7, 2012

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

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

SUBJECT: SUMMARY OF MAY 16, 2012, MEETING WITH
ENERGYSOLUTIONS REGARDING THE MODEL NO. 8-120B
PACKAGE

Background

EnergySolutions (ES) requested this meeting to present a technical approach for the remediation of a thermal issue found in both the Model Nos. 8-120B and 10-160B packages.

Discussion

As part of the RAI letter, dated March 28, 2012, staff raised questions about the impact limiter's foam properties after a puncture drop test. The dumb-bell shaped impact limiters have a central hollow portion (to access the secondary lid for waste processing without removing the impact limiter), covered by a 11-gage steel sheet metal, and ES discovered that the effect of a puncture drop test on this hollow portion had not been addressed in the application nor evaluated by staff during the review of the application.

ES performed a thorough evaluation of the lid under Hypothetical Accident Conditions (HAC) fire, using a detailed 3-dimensional finite element model which included the lid lifting lugs, and the interface between the two plates that constitutes the lid to analyze the extreme conditions of full or no-contact between the two plates. ES found out that the temperature of the secondary lid seal would be 598.6°F in a puncture drop followed by a fire event, i.e., higher than the specified and currently approved maximum temperature of 450°F. ES said that, although real temperatures could be lower than those calculated due to the assumptions made, this non-conformance to the regulations warranted the design of a thermal shield attached to the secondary lid of the package to bring the package in full compliance to requirements specified in 10 CFR 71.73.

The secondary lid thermal shield is doubly insulated, with two air-pockets and two heat-reflecting plates, made of polished stainless steel, and easy to attach to the lid with securing pins. Its effectiveness was demonstrated by a 3-d finite element analysis through the entire fire and cool-down period: the maximum temperature is now 288°F compared to 598.6°F without a thermal shield. ES also acknowledged that the same issue exists for the Model No. 10-160B package.

Staff generally agreed with the specific technical points and potential resolutions raised by the applicant to meet the requirements of 10 CFR Part 71. Staff did ask if the most damaging orientation of the package had been selected for the puncture test because, if the sheet metal is damaged, one shall assume that the "skin" of the package is gone under such a scenario. Staff also asked if the applicant had performed a sensitivity study on the conservatisms built into the finite element model. ES responded that it was unnecessary because removing conservatisms in an arbitrary manner would not dramatically change the results or the fact that a thermal shield is now required.

Staff requested to know the thermal properties of the seal, i.e., mass, density, specific heat capacity, and ES will include them in the revised application that should be submitted to staff on May 31, 2012. Although staff did not make any regulatory commitments at the meeting, staff did say that the thermal review of the solution proposed by ES was a high priority casework that will be completed in conjunction with the review of the second round of RAIs for the current amendment request. Staff indicated that a Certificate of Compliance may be issued on or around July 16, 2012.

Docket No. 71-9168

TAC No. L24514

Enclosure 1: Meeting Attendees

Enclosure 2: Presentation

Staff generally agreed with the specific technical points and potential resolutions raised by the applicant to meet the requirements of 10 CFR Part 71. Staff did ask if the most damaging orientation of the package had been selected for the puncture test because, if the sheet metal is damaged, one shall assume that the "skin" of the package is gone under such a scenario. Staff also asked if the applicant had performed a sensitivity study on the conservatisms built into the finite element model. ES responded that it was unnecessary because removing conservatisms in an arbitrary manner would not dramatically change the results or the fact that a thermal shield is now required.

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Distribution: V. Cusamano, M. Rahimi, D. Pstrak, M. Waters, D. Weaver

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**Meeting Between EnergySolutions and the
Nuclear Regulatory Commission
May 16, 2012
Meeting Attendees**

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