

July 12, 2010

Mr. Mirza I. Baig  
Technical Services Manager  
Engineering & Licensing  
EnergySolutions  
140 Stoneridge Drive  
Columbia, SC 29210

SUBJECT: REQUEST FOR ADDITIONAL INFORMATION FOR REVIEW OF THE MODEL  
NO. 10-160B SHIPPING CASK

Dear Mr. Baig:

By letter dated April 2, 2010, and supplemented May 20, 2010, Energy Solutions, submitted an amendment request to the U.S. Nuclear Regulatory Commission for Certificate of Compliance No. 9204. Energy Solutions, requested in the letter the addition of powdered solids to the list of approved contents.

In connection with the staff's review, we need the information identified in the enclosure to this letter. We request that you provide this information by July 30, 2010. Inform us at your earliest convenience, but no later than July 20, 2010, if you are not able to provide the information by that date. To assist us in re-scheduling your review, you should include a new proposed submittal date and the reasons for the delay.

Please reference Docket No. 71-9204 and TAC No. L24435 in future correspondence related to this request. The staff is available to meet to discuss your proposed responses. If you have any questions regarding this matter, I may be contacted at (301) 492-3268.

Sincerely,

**/RA/**

Soly I. Soto, Project Manager  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9204  
TAC No. L24435

Enclosure: Request for Additional Information

Mr. Mirza I. Baig  
 Technical Services Manager  
 Engineering & Licensing  
 EnergySolutions  
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Request for Additional Information  
Energy Solutions  
Docket No. 71-9204  
Model 10-160B Shipping Cask

Chapter 1 General Information

RAI 1-1 Clarify how the powdered solids will be allocated inside the cask cavity.

Section 1.2.3.2 of the Consolidated Safety Analysis Report (SAR), Rev. 1, includes powdered solids to the list of allowable waste forms; however, no information on how the powdered solids will be accommodated in the package is provided. Staff is unable to determine whether the powdered solids will be loaded into the cask cavity inside another container or if these will be only contained by the package containment boundary.

This information is requested by the staff to determine compliance with 10 CFR 71.33.

RAI 1-2 Include a condition on the contents of the powdered materials to prevent pyrophoric situations.

The existing Certificate of Compliance (CoC) limitations does not include metals and/or chemical forms such as hydrades. Such a condition is necessary to support the shipment of powders.

This information is requested by the staff to determine compliance with 10 CFR 71.33.

Chapter 4 Containment Evaluation

RAI 4-1 Justify how the powdered solids will remain inside the containment boundary when evacuating the cask cavity for the leak testing.

The leak testing procedure described under Section 4.9, establishes an evacuation of the cask cavity of at least 90% vacuum prior to pressurizing the cavity with helium and then operating the helium mass spectrometer leak detector. Staff does not have reasonable assurance that the powdered solids will remain inside the containment boundary when performing this evacuation.

This information is requested by the staff to determine compliance with 10 CFR 71.41.

## Chapter 5 Shielding Evaluation

RAI 5-1 Provide the maximum allowable source terms loading based on satisfying the regulatory dose limits.

On page 5-2 of the Consolidated SAR, Rev. 1, the applicant states that SCALE models of the 10-160B cask were evaluated with a Co-60 source. The resulting equivalent source, approximately 13.4 Ci, gave a gamma dose rate of approximately 9.96 mrem/hr at 2m from the 8 ft wide trailer.

The staff performed confirmatory calculations using ORIGEN-ARP to calculate source terms and Mavric/Monaco as part of SCALE6 computer code for shielding analyses and found that for the <sup>60</sup>Co point source considered in the application, 13.4 Ci, resulted in a higher than allowed dose rate at 2 meters from the package. Staff also noted that MicroShield® may not provide conservative results.

This information is requested by the staff to determine compliance with 10 CFR 71.47.

RAI 5-2 Provide the maximum allowable content based on calculated values for allowable external doses.

There is no analysis described in the Consolidated SAR, Rev. 1, where the applicant explains or gives details regarding the calculated dose limits. The applicant can either provide an allowable activity limit for each isotope for NCT or HCT conditions (e.g., RH-72B transport package, CoC No. 71-9212) or use bounding values for the source terms (e.g., gammas/sec. and MeV/gammas).

Staff indicated the need for an additional parameter, which would complement the current 3000A<sub>2</sub> and 100 watts limits, to provide a boundary for higher energy gamma emitting contents in the Certificate of Compliance contents description.

This information is requested by the staff to determine compliance with 10 CFR 71.47.