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ATTN: Document Control Desk  
Director, Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

File Index No.:  
Letterbook No.: ES/NRC 14-002  
January 20, 2014

**Subject: Request for authorization to ship activated metal**

Reference: 8-120B Package, Certificate No. USA/9168/B(U)-96, Docket No. 71-9168

Dear Sir or Madam:

EnergySolutions hereby submits a request for authorization to ship a limited number of packages of Zion decommissioning waste exceeding the radiological source strength limit currently specified in Revision 20 of the referenced Certificate of Compliance (CoC). Similar shipments were made in 2012 under a previous revision of the CoC, in accordance with the radiological contents specification at that time. These previous shipments exhibited a large margin between measured package dose rates and the regulatory limits specified in 10 CFR 71.47. Due to conservatism in the shielding safety analyses supporting the current CoC, the shipments would no longer be qualified. EnergySolutions will submit a license amendment request to better accommodate this type of payload. However, the current shipping delays are impacting public dose at the plant site, as well as the decommissioning schedule for this time-critical project. Therefore, to minimize these impacts, we request this authorization at the soonest possible date.

Background

The Zion decommissioning project made 2 shipments of activated metal prior to September 30, 2013, at which time CoC Revision 19 became effective and the shipping campaign was suspended because the contents could no longer be qualified. The package peak exterior dose rates were 17 mrem/hr on contact and 4 mrem/hr at 2 meters.

The shielding safety analyses for CoC Revisions 19 and 20 were generic in nature and did not take credit for the substantial shielding afforded by the waste liners used for Zion activated metal shipments (approximately 1" thick). Additional conservatism in the source characterization and the safety analyses (such as the generic treatment of the payload mass attenuation factor and the energy binning methodology) were compounding factors. The operational experience from past Zion shipments, plus the compensatory measures described below, supports our proposal for authorization of interim shipments using pre-shipment measurements of package exterior dose rates as the basis for qualifying the contents gamma source.

The most active pieces of Zion decommissioning waste to be shipped in the 8-120B are core barrel segments. These items are large and, due to ALARA considerations and the economics of load planning, they are sized to fit tightly into the waste liner along with surrounding items. For the purpose of assuring mechanical stability during shipping, the Zion shipments are planned to

either be “self-nesting”, or they are blocked using suitable cribbing. Because of the large sizes of items, their large mass, and their mechanical stability, significant movement of items during shipment is not credible; therefore pre-shipment measurements are indicative of dose rate levels during and after shipment.

Request

EnergySolutions requests authorization for up to 50 shipments of activated steel from the Zion decommissioning project to be made through December 31, 2014. All conditions of the current CoC shall apply, except that the following compensatory measures shall be taken in lieu of qualifying the radiological sources per Attachment 1 to Chapter 7 of the SAR:

- Payloads shall be either “self-nesting” or stabilized using cribbing to minimize shifting of items during shipping.
- Prior to shipment, package exterior dose rates shall be measured at all locations necessary to demonstrate compliance with 10 CFR 71.47. A 10% margin shall be applied to measured dose rates for conservatism to account for measurement and other uncertainties.

Sincerely,



Steven E. Sisley  
Cask Licensing Manager  
EnergySolutions

cc: Mr. Pierre Saverot, Division of Spent Fuel Storage and Transportation  
Mr. Dan Shrum, EnergySolutions  
Mr. Mike Wiskerchen, ZionSolutions