

May 19, 2011

MEMORANDUM TO: Doug Weaver, Deputy Director
Licensing and Inspection Directorate
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 3, 2011, MEETING WITH ALPHA-OMEGA
SERVICES, INC.

PURPOSE

On September 14, 2009, Alpha-Omega Services, Inc. (AOS) submitted an application for approval of the Model Nos. AOS-025, AOS-050, and AOS-100 packages. AOS responded in October 2010 to the first round of Request for Additional Information (RAI) letter dated December 24, 2009. This meeting was set up to provide AOS the opportunity to present proposed responses to the second round of RAI letter, dated March 22, 2011.

MEETING SUMMARY

Staff and AOS extensively discussed the use of the personnel barrier (PB) as a “reference surface” for performing dose rate calculations. Staff said that the AOS packages were not specified to be exclusive-use; therefore, it was not clear why a dose point was taken at the personnel barrier surface for Normal Conditions of Transport (NCT). Regulatory dose rate requirements in 10 CFR 71.47(a) and 71.51 are for the external surface of the package for non-exclusive use packages; thus, staff has to consider the PB as part of the package. Staff said that, since the structural performance of the PB has not been demonstrated, it was believed that AOS used the PB as a component with safety functions from a dose perspective while ignoring the required structural performance for such an item. Staff stated that all NCT regulations related to thermal, structural, tie-down, and dose requirements, must be met whichever surface (PB or impact limiter) is defined as the package surface.

AOS stated that, for NCT drops, they would assume that i) a straight drop for the AOS-100 package is the most damaging orientation, ii) the AOS-050 package can rotate 90° before hitting ground, and iii) the AOS-025 package can go upside down before hitting ground. Staff responded that was not clear that these assumptions would be justified in light of the regulation (10 CFR 71.71) stating that the drop position should be one “for which maximum damage is expected.” AOS responded that the packages were intended to be shipped internationally by air and that, due to lack of guidance for drop orientations, IAEA regulations would be considered for the most damaging orientation and that the PB would remain as dose point for NCT conditions. Staff said that it was not convinced about the orientations chosen by AOS for the drop analyses because IAEA guidance does not play a role in a Part 71 review.

AOS stated that the PB is not considered for a 30-ft drop, and that the PB cannot be used as a lifting or tiedown device. In order to avoid any confusion with personnel barriers as part of a conveyance, AOS will consider renaming the PB as “cage,” “overjacket,” or “transport skid” as is currently the case for the Croft package.

AOS acknowledged the errors noted by staff in some of the load combinations. AOS said it tried to follow Regulatory Guide No. 7.8 for the analysis of hot and cold conditions, and will check if “hot” initial conditions did or did not consider solar insolation.

AOS also confirmed staff’s finding that no direct integration dynamic analysis was done and that the 4-ft drop analyses were based on the energy-displacement curves developed for the 30-ft drop analyses. AOS will perform a new analysis for the entire package.

Staff questioned the adequacy of the methodology employed to model the HAC 30-ft drops, in conjunction with the constraints of the foam model which do not allow the two-sided deformations that occurred in the AOS-165 package to occur in the finite element model. AOS said it is possible that they cannot provide additional experimental data at the cask-foam interface, as requested by staff, if no data was taken at the time of the test. AOS said that they performed additional dynamic analyses and that the displacement, deformation patterns, and forces determined in the static and dynamic analyses are in “good agreement,” and informed staff that a study of the effect of the steel ribs (attached to the foam cladding) on the cask stress shows that the stress changes are highly localized within an inch of the rib location without any significant effect on cask stress.

AOS said that the analyses of the impact limiter connectors will be included in the application, and the puncture analysis will be changed to account for a maximum weight of 9,510 lbs as requested by staff. AOS will present a redesign of the AOS-100 connectors to the pallet (new “cradles”). AOS stated that the AOS-100 package does not deform in a 4-ft drop, but does deform in a 30-ft drop, and staff said that two different analyses are required – one that addresses reactions at the “cradle” supports, as well as one with the impact limiter as supports. Staff requested AOS to explain in more detail the stresses in the package, not just those in the foam.

The thermal, containment, and materials RAIs were then reviewed and AOS presented their proposed responses (see Enclosure 2.) AOS will provide additional information to support the reference seal temperature limit of 572° F. Regarding the temperatures of the contents, of the basket, and shielding liner plates that were not modeled due to the assumption of uniform decay heat to the cavity walls, AOS stated that the decay heat distribution is applied in a manner that produces maximum stress at critical locations, and that the application will limit the types of materials used in shoring to those that remain solid at 1000° F. Staff said that this response, in conjunction with the response to RAI 3-1, constitutes a “path forward.” Regarding the application of codes and standards for the design, fabrication, and testing of the package, AOS will clarify Table No. 2-8 and provide a justification for the use of a non-ASME code material for tungsten used for gamma shielding. However, staff indicated that the use of Subsection WB, instead of NB, for components of the containment group may not be adequate and that this topic, along with proposed responses to RAI Nos. 2-6, 2-8, and 2-17 will be addressed in a conference call.

AOS stated that a revised application, including all RAI responses, may be submitted by mid-August 2011, and that an extension request for their expired packages is being prepared. Fabrication of the new AOS package may take 12 weeks. The staff did not make any regulatory commitments at the meeting.

Docket No. 71-9316

TAC No. L24353

Enclosures: 1. List of Meeting Attendees
2. AOS Presentation

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Distribution: SFST r/f NMSS r/f NRC Attendees
G:/SFST/Saverot/71-9316 AOS/AOS Meeting May 3, 2011.doc.

ADAMS Package No.: ML111440046

OFC	SFST	E	SFST	C	SFST			
NAME	PSaverot		MDeBose		MWaters			
DATE	05/17/2011		05/17/2011		05/19/2011			

C=Without attachment/enclosure E=With attachment/enclosure N=No copy

**Meeting Between Alpha-Omega Services, Inc.
And The
Nuclear Regulatory Commission
May 3, 2011
Meeting Attendees**

NRC/NMSS/SFST

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JoAnn Ireland	301-492-3309
John Vera	301-492-3372
Sara DePaula	301-492-3225
Veronica Wilson	301-492-3278

AOS

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Charlie Vaughan	910-540-7618
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