



May 17, 2017

Mr. Pierre M. Saverot, Project Manager, Spent Fuel Licensing Branch  
Division of Spent Fuel Management – Office of Nuclear Material Safety and Safeguards (NMSS)  
U.S. Nuclear Regulatory Commission  
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SUBJECT: REQUEST TO AMEND CERTIFICATE OF COMPLIANCE USA/9316/B(U)-96

USNRC Reference: DOCKET NO. 71-9316

AOS Reference: FM9006.1-052017-002

Mr. Saverot:

Alpha-Omega Services, Inc. (AOS) requests an amendment to Certificate of Compliance USA/9316/B(U)-96.

We would like to clarify the definition of the containment system for shipments of Special Form material and the corresponding requirements for leak testing. We have revised our Safety Analysis Report (SAR) to specify that containment is provided by the sealed sources when the content meets the requirements for Special Form radioactive material.

We also would like to correct an error in section 2.12.12.11 of the SAR. The material listed for the AOS-100 Tie-Down Ring was Aluminum Alloy but should be Type XM-19 steel. This error occurred at SAR Revision F. During fabrication of the first AOS-100A units, AOS was considering changing the material to Aluminum. We reversed this decision, but section 2.12.12.11 was not corrected. Please note that the Certification Drawing 105E9712 has always listed the Tie-Down Ring material as XM-19 steel. The corrected analysis in section 2.12.12.11 results in a higher Margin of Safety when Type XM-19 steel is used.

In addition to the above, we have made some minor editorial changes in the SAR.

Enclosed are the revised pages of the Safety Analysis Report.



We hope that the preceding is in accordance with your understanding. If you have any questions, please feel free to contact us.

Best Regards,

A handwritten signature in black ink, appearing to read "Troy Hedger", is written over a horizontal line.

Troy Hedger, President  
Alpha-Omega Services, Inc.

Attachment:

Table of Changes – AOS Transport Packaging; AOS-025A, AOS-050A, and AOS-100; AOS FM9054, Rev. H-3 Changes (May 03, 2017) (4 pages)

Safety Analysis Report AOS-FM9054, Revision H-3 (16 pages)

**Table of Changes – AOS Transport Packaging; AOS-025A, AOS-050A, and AOS-100; AOS FM9054, Rev. H-3 Changes (May 03, 2017)**

**AOS FM9054, Rev H-3 Updates –** Tracking page number, heading level, paragraph number, line number; what it was, what it is, and justification (if needed)

*Note: No changes applied to Chapters 3, 5, 6, and 9.*

Page	Heading/Item	Para #/Item	Line #/Item	What it was (Rev H-2)	What it is (Rev H-3) <i>Justification (if needed)</i>
<b>Global</b>					
Multiple	(pages/items already being updated that are listed below)			<p>“Normal form”</p> <p>“Special form”</p> <p>“Normal conditions of transport”</p> <p>“Hypothetical Accident conditions of transport”</p> <p>“Hypothetical Accident conditions (HAC) of transport”</p>	<p>“Normal Form”</p> <p>“Special Form”</p> <p>“Normal Conditions of Transport”</p> <p>“Hypothetical Accident Conditions of Transport”</p> <p>“Hypothetical Accident Conditions (HAC) of Transport”</p>
<b>FrontMatter</b>					
i	Cover	–	–	“Rev. H-2, June 27, 2016”	“Rev. H-3, May 3, 2017” (Note to reviewer: Automatically applied to all footers. Due to software constraints, SAR page footers might/might not include a revision bar indicating this change. Additionally, the revision bar might span both lines of the footer.)
iii	Revision History	Revision H-2 entry	–	“Rev. H-2, June 27, 2015”	<Corrected year.> “Rev. H-2, June 27, 2016”
iii	Revision History	Revision H-3 entry	–	–	<Added Revision H-3, May 3, 2017 entry.> “Clarified <i>Special Form</i> material shipment requirements and applied miscellaneous corrections.”
<b>Chapter 1</b>					
1-1	1.1	1 <sup>st</sup>	5 <sup>th</sup>	“...Section .”	<Corrected editing typo.> “...Section 1.2.”
1-7	1.2.1	3 <sup>rd</sup>	5 <sup>th</sup>	“...joint. The cask lid seal...”	“...joint. When shipping <i>Normal Form</i> contents, the cask lid seal...”

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Page	Heading/Item	Para #/Item	Line #/Item	What it was (Rev H-2)	What it is (Rev H-3) <i>Justification (if needed)</i>
1-8	1.2.1.1	3 <sup>rd</sup>	1 <sup>st</sup> – 2 <sup>nd</sup>	“Containment for...”	“When the radioactive contents are encapsulated in <i>Special Form</i> sources, containment is provided by the sealed source. For <i>Normal Form</i> material, containment for...”
1-8	1.2.1.1	3 <sup>rd</sup>	last	“...tightness. (For...”	“...tightness. Pre-shipment leak testing is performed by way of the cask lid test port for shipments of <i>Normal</i> and <i>Special Form</i> material. (For...”
1-10	1.2.2	2 <sup>nd</sup>	3 <sup>rd</sup>	“...current certificate of compliance.”	“...current <i>Special Form</i> Competent Authority Certificate.”
1-11	Table 1-2	Note b	2 <sup>nd</sup>		
1-11a	Table 1-3	Note a	1 <sup>st</sup>		
<b>Chapter 2</b>					
2-932	2.12.12.11	3 <sup>rd</sup> – 4 <sup>th</sup>	All	“For AMS 4144F, aluminum alloy 2219T851, yield stress $F_y = 46.0$ ksi: MS = 46.0 / 41.5 - 1.0 = 0.11”	“For ASME SA-240/ASTM A240 Type XM-19 steel, yield stress $F_y = 55.0$ ksi, and ultimate strength $F_u = 100.0$ ksi: MS = 55.0 / 41.5 - 1.0 = 0.32”
<b>Chapter 4</b>					
4-1	4.1	2 <sup>nd</sup> (new)	–	–	<Added new paragraph.> “When the radioactive contents are encapsulated in <i>Special Form</i> sources, containment is provided by the sealed source. For <i>Normal Form</i> material, containment is provided by the cask’s Containment Boundary, as described in the following section.”
4-28	4.2.1	1 <sup>st</sup> (new)	–	–	<Added new paragraph.> “When the radioactive contents are encapsulated in <i>Special Form</i> sources, containment under Normal Conditions of Transport is provided by the sealed source. For <i>Normal Form</i> material, containment is provided by the cask’s containment system. The ability of the cask’s containment system to withstand Normal Conditions of Transport is presented below.”

Table of Changes – AOS Transport Packaging; AOS-025A, AOS-050A, and AOS-100; AOS FM9054, Rev. H-3 Changes (May 03, 2017)

Page	Heading/Item	Para #/Item	Line #/Item	What it was (Rev H-2)	What it is (Rev H-3) <i>Justification (if needed)</i>
4-30	4.3	1 <sup>st</sup> (new)	–	–	<Added new paragraph.> “When the radioactive contents are encapsulated in <i>Special Form</i> sources, containment under Hypothetical Accident Conditions of Transport is provided by the sealed source. For <i>Normal Form</i> material, containment is provided by the cask’s containment system. The ability of the cask’s containment system to withstand Hypothetical Accident Conditions of Transport is presented below.”
<b>Chapter 7</b>					
7-7	7.1.2.3	Note	last	“...replaced, a...”	“...replaced, prior to the shipment of <i>Normal Form</i> material, a...”
7-10 7-10a	7.1.3.3	Test A-1 and A-2 headings	1 <sup>st</sup>	“...When Re-Using Elastomeric...”	“...When Using Elastomeric...”
7-10 7-10a	7.1.3.3	Test s A-1 and A-2	Note (new)	–	<Added new note.> “ <b>Note:</b> The cask vent port and cask drain port must only be leak tested if they have been opened since they were last tested.”
7-10a	7.1.3.3	Test B heading	1 <sup>st</sup> – 2 <sup>nd</sup>	“...Seal (Tests:...”	“...Seal –or– Optionally for Elastomeric Cask Lid Seal (Tests:...”

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Page	Heading/Item	Para #/Item	Line #/Item	What it was (Rev H-2)	What it is (Rev H-3) <i>Justification (if needed)</i>
<b>Chapter 8</b>					
8-17	8.2.2	a	-	<p>“a. Pre-shipment Leak Testing (Conduct for Normal Form content only) Pre-shipment leak testing must be performed only before each shipment of <i>Normal form</i> content, after the content is loaded and the containment system is assembled. Perform the test with a thermal conductivity sensing instrument or mass spectrometer device, using the sniffer method. These types of instruments are sufficiently sensitive to detect and quantify the presence of helium within a gas stream. Pressurize the cask cavity to a pressure differential of one (1) atmosphere relative to the outside of the containment boundary. This test leakage rate need not be more sensitive than 1 x 10<sup>-3</sup> ref-cm<sup>3</sup>/sec.”</p>	<p>“a. Pre-shipment Leak Testing Pre-shipment leak testing must be performed before each shipment, after the content is loaded and the containment system is assembled. Perform the test as described in Paragraph 7.1.3.3.”</p>
8-17	8.2.2	b	Note (new)	-	<p>&lt;Added new note.&gt;  <b>Note:</b> For shipments of Special Form material, a Periodic Leak Test is not necessary after replacement of an elastomeric cask lid seal, provided that a Periodic Leak Test has been performed on the cask's containment system within the past 12 months.”</p>