



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

June 18, 2012

Mr. Phil Noss  
Licensing Manager  
AREVA Federal Services LLC  
505 South 336<sup>th</sup> Street, Suite 400  
Federal Way, WA 98003

SUBJECT: REVISION NO. 7 OF CERTIFICATE OF COMPLIANCE NO. 9305 FOR THE  
MODEL NO. TRUPACT-III PACKAGE (TAC NO. L24653)

Dear Mr. Noss:

As requested by your application dated June 6, 2012, enclosed is Certificate of Compliance No. 9305, Revision No. 7, for the Model No. TRUPACT-III package. Changes made to the enclosed certificate are indicated by vertical lines in the margin. The staff's Safety Evaluation Report is also enclosed.

This approval constitutes authority to use the package for shipment of radioactive material and for the package to be shipped in accordance with the provisions of 49 CFR 173.471. Registered users of the package under the general license provisions of 10 CFR 71.17 or 49 CFR 173.471 have been provided a copy of this certificate.

If you have any questions regarding this certificate, you may contact me or Jennie Rankin of my staff at 301-492-3268.

Sincerely,

A handwritten signature in black ink that reads "Michael D. Waters".

Michael D. Waters, Chief  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Docket No. 71-9305  
TAC No. L24653

Enclosures: 1. Certificate of Compliance  
No. 9305, Rev. No. 7  
2. Safety Evaluation Report

cc w/encls: R. Boyle, Department of Transportation  
J. Shuler, Department of Energy  
Registered Users

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIAL PACKAGES**

1	a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NUMBER	PAGE	PAGES
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2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

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| a. ISSUED TO ( <i>Name and Address</i> )<br>AREVA Federal Services LLC<br>505 South 336 <sup>th</sup> Street, Suite 400<br>Federal Way, WA 98003 | b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION<br>AREVA Federal Services LLC<br>application dated June 30, 2007, as supplemented. |
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4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5.

(a) Packaging

- (1) Model No.: TRUPACT-III Package
- (2) Description

A package used to transport transuranic waste contained in a Standard Large Box 2 (SLB2) primarily by highway trucks. The packaging body is a rectangular box with an external width of 2,500 mm (98.4 inches), external height of 2,650 mm (104.3 inches), and an external length of 4,288 mm (168.8 inches). The internal cavity dimensions are 1,840 mm (72.4 inches) wide, 2,000 mm (78.7 inches) tall, and 2,790 mm (109.8 inches) long.

The TRUPACT-III packaging is comprised of the containment structural assembly (CSA) made from 8-mm inner and outer stainless steel plates with 4-mm thick V-shaped stiffeners in between. A debris shield receptacle is located all around the open end of the CSA inner cavity. The receptacle is a 26-mm x 38-mm cross section bar with a 15-mm wide by 20-mm deep groove cut along its length. The 109 - 120-mm polyurethane foam, 10-mm thick puncture resistant stainless steel plate, 60-mm balsa wood layer, and the 6-mm stainless steel skin form the integral energy-absorbing overpack structure. A 409-mm deep octagonal recess in the bottom end with 6-mm thick stainless steel plate, a 60-mm thick balsa wood layer, a 15-mm or 16-mm thick puncture-resistant stainless steel plate, and a 120-mm thick foam layer protect the bottom end of the packaging during drops or punctures.

A rectangular closure lid made from 4-mm thick V-shaped stiffeners sandwiched between an inner and an outer 12-mm thick stainless steel plate is attached to the packaging body

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5.(a) Packaging (continued)

by 44 socket head cap screws and contains two elastomer O-ring face seals. A sampling/vent port with elastomer O-ring seals is recessed into the closure lid. The inner stainless steel plates of the closure lid and the body along with the inner elastomer O-ring seal, the sampling/vent port insert, and the sampling/vent port inner elastomer O-ring seal form the single containment boundary.

An overpack cover is designed to protect the closure lid. The outer face of the overpack cover contains an octagonal recess 393 mm deep. The cover structure consists of a 6-mm thick stainless steel cover sheet plate encasing a 60-mm thick layer of balsa wood, a 15-mm or 16-mm thick puncture resistant stainless steel plate, a 120-mm thick layer of polyurethane foam, and a 6-mm thick inner stainless steel cover plate. The edges of the overpack cover consist of an inner 6-mm stainless steel plate, a 42-mm thick layer of calcium silicate insulation, a 15-mm or 16-mm thick puncture-resistant stainless steel plate, a 380-mm thickness of 0.48 kg/dm<sup>3</sup> polyurethane foam, a 6-mm thick puncture-resistant stainless steel plate, a 140-mm thick layer of 0.16 kg/dm<sup>3</sup> polyurethane foam, and an 8-mm thick external stainless steel plate.

The approximate dimensions and weights of the package are as follows:

Overall package outside dimensions	
Width	2,500 mm (98.4 inches)
Length	4,288 mm (168.8 inches)
Height	2,650 mm (104.3 inches)
Maximum content weight	5,210 kg (11,486 lbs)
Maximum package weight (Including contents)	25,000 kg (55,116 lbs)

(3) Drawings

The packaging is constructed in accordance with AREVA Federal Services LLC, Drawing No. 51199-SAR, Rev. 14, sheets 1 through 21.

(b) Contents

(1) Type and form of material

Dewatered, solid or solidified transuranic contaminated materials and wastes, any particle size, large objects, and bulky objects are directly loaded into an SLB2 to be placed in a TRUPACT-III packaging, in accordance with TRUPACT-III TRAMPAC, Revision 2.

(2) Maximum quantity of material per package

The TRUPACT-III packaging is designed to transport contact-handled transuranic (CH-TRU) waste and other authorized payloads that do not exceed 10<sup>5</sup> A<sub>2</sub> quantities. No more than

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5.(b) Contents (continued)

325 grams of Pu-239 fissile gram equivalent (FGE) is generally allowed per TRUPACT-III package. Per the TRUPACT-III TRAMPAC, Revision 2, the FGE limit per TRUPACT-III package may be increased if the payload is documented to contain Pu-240. A TRUPACT-III payload shall not contain greater than 1 percent by weight beryllium and/or beryllium oxide nor machine compacted waste. Only one SLB2 may be loaded in a TRUPACT-III package at a time.

(3) Maximum decay heat per package not to exceed 80 watts.

5.(c) Criticality Safety Index (CSI): 0

6. The package is for transport of the CH-TRU materials and other authorized payloads that are limited in form to solid or solidified material. Materials must be restricted to prohibit explosives, corrosives, nonradioactive pyrophorics, and pressurized containers. Within a payload container, radioactive pyrophorics must not exceed 1 percent by weight, and residual liquid volumes greater than 1 percent are prohibited.
7. Limits for physical, nuclear, chemical, and gas generation properties shall be as defined in the TRUPACT-III TRAMPAC, Revision 2.
8. Hydrogen must be limited to a molar quantity that would be no more than 5% by the volume of the innermost layer of confinement during transport.
9. Each payload shipping container must be assigned to a shipping category in accordance with TRUPACT-III TRAMPAC, Revision 2, Section 5.0.
10. The gas generated in the payload and released into the cavity shall be controlled to maintain the pressure within the containment vessel below the acceptable Maximum Normal Operating Pressure of 25 psig.
11. Venting and aspiration are required to the TRUPACT-III containers stored in an unvented condition prior to transport, to ensure equilibration of gases that may have accumulated in the closed container in accordance with TRUPACT-III TRAMPAC, Revision 2, Section 5.3.
12. In addition to the requirements of Subpart G of 10 CFR Part 71:
  - (a) Each package shall be operated and prepared for shipment in accordance with Chapter 7 of the application, as supplemented.
  - (b) Each package shall be acceptance tested and maintained in accordance with Chapter 8 of the application, as supplemented.

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- 13. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
- 14. Transport by air of fissile material is not authorized.
- 15. Expiration date: June 30, 2015.

REFERENCES

AREVA Federal Services LLC application dated June 30, 2007, as amended January 26, 2010, May 28, 2010, April 28, 2011, October 17, 2011, December 23, 2011, January 6 and 24, 2012, February 9 and 17, 2012, March 13, and 20, 2012, April 23 and 30, 2012, June 6, 2012.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION



Michael D. Waters, Chief  
Licensing Branch  
Division of Spent Fuel Storage and Transportation  
Office of Nuclear Material Safety  
and Safeguards

Date: June 18, 2012



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SAFETY EVALUATION REPORT  
Docket No. 71-9305  
Model No. TRUPACT-III  
Certificate of Compliance No. 9305  
Revision No. 7

## SUMMARY

By application dated June 6, 2012, AREVA Federal Services LLC (AFS) requested a revision to Certificate of Compliance No. 9305, for the Model No. TRUPACT-III package. This revision requested changes to the engineering drawings to allow for the optional use of 15-mm thick or 16-mm thick plate in boxes which enclose the calcium silicate insulation boards in the overpack cover and front cheeks, as well as the outer and inner edges of the closure lid. The remaining sections (e.g., thermal, materials, shielding, and criticality) were not affected by this revision. Based on the statements and representations in the application, the staff determined that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

## EVALUATION

AFS requested approval for the optional use of 15-mm thick plate material in areas of the Model No. TRUPACT-III where 16-mm thick plate was specified.

The applicant provided calculations that determined minimum material standards required for the 15-mm thick material such that the equivalent margins of safety would be the same or greater than if the 16-mm thick material was used. These calculations included consideration of minimum material thickness, tension, shear, and bending moment. The results showed that bending stress was the governing loading condition and that the ultimate tensile strength of the 15-mm thick material must be at least 14% greater than the ultimate tensile strength of the 16-mm thick material using ASTM minimum material properties. Based on these calculations, the applicant specified a minimum ultimate tensile strength of 744 MPa. This is 20% larger than the ASTM minimum tensile strength and greater than the calculated value of 14%.

Staff reviewed these calculations and assumptions and finds that there is reasonable assurance of safety under normal conditions of transport and hypothetical accident conditions when using 15-mm thick material with an ultimate tensile strength of 744 MPa, in areas where 16-mm thick material with the ASTM minimum ultimate tensile strength was previously specified.

## CONDITIONS

The following changes have been made to the certificate of compliance:

Condition No. 5(a)(2), "Description," has been updated to reference 15-mm or 16-mm thick plate in the description of the edges of the overpack cover. In addition, the description of the overpack cover was updated to reflect the optional use of 16-mm thick stainless steel plate instead of 15-mm thick stainless steel plate. This had previously been approved in Revision No. 5 of the CoC and was modified for consistency.

Condition No. 5(a)(3), "Drawings," has been updated to reference the updated drawings.

The References section has been updated to include this revision request.

### **CONCLUSION**

The certificate of compliance has been revised to reference the revised drawings. Based on the statements and representations contained in the application, the staff concludes that these changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Issued with Certificate of Compliance No. 9305, Revision No. 7,  
on June 18, 2014.