NRC FORM 618 (8-2000) 10 CFR 71			U.S. NUCLEAR REGULATORY COMMISSION		
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

a. ISSUED TO *(Name and Address)*

U.S. Department of Energy
Washington, D.C. 20585

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

PAT-2 (Plutonium Air-Transportable Model 2) Safety Analysis Report, SAND81-0001, printed July 1981, as supplemented.

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.: PAT-2

(2) Description

A superalloy primary containment vessel (TB-2) surrounded by a protective overpack (AQ-2). The contents which may be in canisters are contained within a capsule (C-1) within the TB-2.

The AQ-2 overpack is a right circular cylinder, approximately 356 mm (14 inches) high and 381 mm (15 inches) in diameter with protruding handles attached to the cylinder outer walls. The outer shell is a double walled stainless steel structure with rounded end caps, riveted on the bottom and bolted at the top. An inner grain oriented maple wood protective case house the TB-2; it is surrounded by a titanium load spreader which is further surrounded by a grain oriented redwood protective case.

The TB-2 containment vessel consists of (2) iron-base superalloy sections, bolted together with (20) bolts, forming an 88 mm (3.46 inch) diameter sphere. A copper gasket held between knife-edge sealing beads on the matting hemispherical surfaces of the TB-2 provides a seal.

The C-1 capsule is a stainless steel cylinder with a nominal 44 mm (1.80 inch) diameter and a nominal 70 mm (2.76 inch) length; it has a screw top lid which is sealed with teflon tape.

Brass or aluminum canisters may be used in the C-1 capsule to hold various radioactive contents. The canisters may have quartz or glass liners.

The package gross weight is approximately 73 pounds (33 kg).

5.(a) (3) Drawing and Specifications

The packaging is constructed in accordance with specifications and drawings, as listed by document number, issue, and title in the List of Data LD-T67000-000, page 1, issue D and page 2, issue D (Chapter 9 of Safety Analysis Report, SAND81-0001, printed July 1981).

(b) Contents

(1) Type an form of material
Plutonium, uranium, or mixtures of plutonium-uranium in various isotopic compositions in solid form as:

(i) oxide powder, sintered oxide pellets, and metal;

(ii) plutonium sulfate tetrahydrate, $Pu(SO_4)_2$ $4H_2O$ and plutonium nitrate dihydrate, $Pu(NO_3)_4$ $2H_2O$.

(2) Maximum quantity of material per package

(i) For the contents described in 5(b)(1)(i):

Not to exceed 15 grams fissile material, 120 grams mass, 2 watts decay heat, or 0.5 gram water.

(ii) For the contents described in 5(b)(1)(ii):

Not to exceed 3 grams or 0.5 grams water in addition to the water of hydration.

6. Up to 9 grams of polyvinylcholride (PVC), 18 grams of quartz (SiO_2) or glass, 50 grams of brass, and 16 grams of aluminum may be used within the C-1 capsule for packaging of contents. Up to 0.3 gram of polytetra-fluoroethylene (PTFE) tape may be used to seal the C-1 capsule.

7. The C-1 capsule need not be leak tested when the activity of plutonium contents does not exceed 20 ci per package.

8. A maximum of 2.0 grams of aluminum foil may be used to shim the C-1 within the TB-2 to avoid relative movement between the two.

9. Prior to first use, each package must meet the criteria for the acceptance tests specified in section 8.1 of Chapter 8 of the Safety Analysis Report (SAND81-0001, printed July 1981).

10. Prior to each shipment, the package must meet the criteria for inspections and tests specified in section 8.2 of Chapter 8 of the Safety Analysis Report (SAND81-0001, printed July 1981).

11. Periodic testing and maintenance of the package must be in accordance with section 8.3 of Chapter 8 of the Safety Analysis Report (SAND81-0001, printed July 1981).

12. Operating procedures must be in accordance with Chapter 7 of the Safety Analysis Report (SAND81-0001, printed July 1981).

13. Through special arrangement with the carrier, the shipper shall ensure observance of the following operational controls for each shipment of plutonium by air:

    (a) The package(s) must be stowed aboard aircraft on the main deck in the aft-most location that is possible for cargo of its size and weight. No other type of cargo may be stowed aft of the package(s).

    (b) As an alternative to (a), packages must be stowed in the aft-most lower cargo compartment. No other type of cargo may be stowed aft of the package(s).

    (c) Package(s) must be secured and restrained to prevent shifting under normal transport.

    (d) Cargo which bears the “EXPLOSIVE A” label maybe not be transported aboard an aircraft carrying a PAT-2 package(s).

14. The package authorized for use by this certificate is hereby approved for use under the general license provision of 10 CFR 71.17.

15. The package authorized by this certificate is hereby approved for transportation of plutonium by air.

16. Revision 6 of this Certificate may be used until September 30, 2007.

17. Expiration date: September 30, 2011.

REFERENCES

PAT-2 (Plutonium Air-Transportable Model 2) Safety Analysis Report, SANDIA Report No. SAND81-0001, July 1981.

DOE application dated April 19, 1983. Supplements dated August 3, 1983; July 15, 1986; July 16, 1991; May 29, 1996; May 24, 2001; and June 1, 2006.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Robert A. Nelson, Chief
Licensing Branch
Division of Spent Fuel Storage
and Transportation
Office of Nuclear Material Safety
and Safeguards

Date: 10/10/06