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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PREAMBLE

2.

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)*

Department of Energy
Washington, DC 20585

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Nuclear Waste Parternship, LLC consolidated application dated December 17, 2015, 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: RH-TRU 72-B

(2) Description

A stainless steel, lead-shielded cask designed to provide up to two levels of containment for shipment of transuranic waste materials. The packaging consists of a cylindrical stainless steel and lead cask body, a separate inner stainless steel vessel, and foam-filled impact limiters at each end of the cask body.

The cask body (outer cask) consists of a 1 1/2-inch thick, 41 5/8-inch outer diameter stainless steel outer shell, and a 1-inch thick, 32 3/8-inch inside diameter stainless steel inner shell, with 1 7/8 inches of lead shielding between the two shells. The cask bottom is 5-inch thick stainless steel plate. The cask is closed by a 6-inch thick stainless steel lid, and 18, 1 1/4-inch diameter bolts. The main closure lid has a double bore-type O-ring seal. The containment seal is the inner butyl O-ring seal, which is leak testable. The cask lid has a single vent/sampling port that is sealed with leak testable butyl O-ring seals.

The separate inner vessel consists of a 3/8-inch thick, 32-inch outside diameter stainless steel shell, and a 1 1/2-inch thick stainless steel bottom plate. The inner vessel is closed by a 6 1/2-inch thick stainless steel lid, and eight, 7/8-inch diameter bolts. The inner vessel closure lid has three bore-type O-ring seals. The containment seal is the middle butyl O-ring seal, which is leak testable. The inner vessel lid has a helium backfill port and a combination vent/sampling port that are sealed with leak-testable butyl O-ring seals.

5.(a) (2) Description (Continued)

A polyurethane foam-filled stainless steel impact limiter is attached to each end of the cask body using six, 1 1/4-inch diameter bolts. The radioactive contents are packaged within a stainless or carbon steel waste canister that is placed in the inner vessel.

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

Overall package length	187 3/4 inches
Impact limiter diameter	76 inches
Cask length	141 3/4 inches
Cask outer diameter (OD)	41 5/8 inches
Inner vessel length	130 inches
Inner vessel OD	32 inches
Cask lead shield thickness	1 7/8 inches
Maximum package weight (including contents)	45,000 pounds
Maximum weight of contents (including waste canister)	8,000 pounds

(3) Drawings

The packaging is constructed and assembled in accordance with Nuclear Waste Partnership LLC, Drawing No. X-106-500-SNP, sheets 1-8, Rev. 6.

The fixed lid waste canister is constructed and assembled in accordance with Nuclear Waste Partnership LLC, Drawing No. X-106-501-SNP, Rev. 5. The removable lid waste canister is constructed and assembled in accordance with Nuclear Waste Partnership LLC, Drawing No. No. X-106-502-SNP, Rev. 3. The neutron shielded waste canister is constructed and assembled in accordance with Nuclear Waste Partnership LLC, Drawing No. X-106-503-SNP, Rev. 1.

(b) Contents

(1) Type and form of material

Byproduct, source, and special nuclear material in the form of dewatered, solid or solidified materials and waste, within the stainless or carbon steel waste canister described in Item 5(a)(3). Explosives, corrosives (pH less than 2 or greater than 12.5), and compressed gases are prohibited. Within a waste canister radioactive and non-radioactive pyrophorics must not exceed 1 weight percent. Flammable volatile organics are limited along with hydrogen to ensure the absence of flammable gas mixtures in RH-TRU waste payloads as described in RH-TRAMPAC (Rev. 3).

(2) Maximum quantity of material per package.

Not to exceed 8,000 pounds, including the weight of the waste canister.

5.(b) (2) Contents (Continued)

Fissile material not to exceed limits described in Section 3.1, “Nuclear Criticality” of RH-TRAMPAC (Rev. 3). Pu-239 equivalent is determined in accordance with RH-TRAMPAC (Rev. 3). Low enriched uranium with particle/lump size characteristic dimensions (i.e., diameter or thickness) that are all less than 0.1 cm and/or greater than 6 cm is authorized for waste containers containing material that is primarily uranium (in terms of heavy metal component) and the waste matrix material must be distributed within the canister in such a manner that the maximum enrichment does not exceed 0.96% uranium (U-235) fissile equivalent mass in any location of the waste material. Low enriched uranium without particle/lump size limits is authorized for waste containers containing material that is primarily uranium (in terms of heavy metal component) and the waste matrix material must be distributed within the canister in such a manner that the maximum enrichment neither exceeds 0.84% uranium (U-235) fissile equivalent mass in any location of the waste material, nor are there any variations in the fissile concentration that exceed 0.84% uranium (U-235) fissile equivalent mass in any location of the waste material.

Maximum decay heat per RH-TRU waste canister not to exceed 90 watts per canister in accordance with RH-TRAMPAC (Rev. 3). For payloads with densities greater than 12 pounds per cubic foot, a higher decay heat limit (up to 270 watts) is applicable depending on the payload density. Maximum decay heat per neutron shielded cansiter not to exceed 50 watts per canister in accordance with RH-TRAMPAC (Rev. 3). Radioactive material containing gamma or neutron emissions must also meet the activity limits (in particles/sec) determined by the procedure in Section 5.5.4 of the application.

(c) Criticality Safety Index: 0.0

6. Waste content codes and classification, physical form, chemical properties, chemical compatibility, gas generation, fissile content, decay heat, isotopic inventory, weight, and radiation dose rate must be determined and limited in accordance with RH-TRAMPAC (Rev. 3).

7. Each waste canister must not exceed the decay heat limits determined as specified in RH-TRAMPAC (Rev. 3), or must be tested for gas generation in accordance with RH-TRAMPAC (Rev. 3), Section 5.0, "Gas Generation Requirements."

8. A RH-TRU waste canister may be comprised of inner containers with different content codes provided that the hydrogen gas generation rate limit or decay heat limit for all of the inner containers within the payload is assumed to be the same as the content code with the lowest hydrogen gas generation rate limit or decay heat limit.

9. The waste canister and any sealed secondary containers greater than 4 liters in size overpacked in the waste canister must be vented in accordance with the minimum specifications in Section 2.4, Filter Vents, of RH-TRAMPAC (Rev. 3).

10. Shipments must not exceed the 60 or 10 day maximum shipping period requirement specified in RH-TRU Payload Appendices (Rev. 3), Sections 2.3 and 2.4, respectively.

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11. In addition to the requirements of Subpart G of 10 CFR Part 71:

    (a) Each package must be prepared for shipment and operated in accordance with the procedures described in Chapter 7.0, "Operating Procedures," of the application.

    (b) Each packaging must be tested and maintained in accordance with the procedures described in Chapter 8.0, "Acceptance Tests and Maintenance Program," of the application.

    (c) Each containment O-ring seal material formulation and each batch of containment O-ring seal material must be qualified and tested in accordance with the procedures described in Section 3.6.4 of the application.

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

13. This package may not be used for transport by aircraft.

14. Revision No. 10 of this certificate may be used until November 30, 2020.

15. Expiration date: January 31, 2025.

REFERENCES

Nuclear Waste Partnership consolidated application dated December 17, 2015.

Nuclear Waste Partnership renewal request dated November 7, 2019.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/

Daniel I. Doyle, Acting Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Date: December 2, 2019