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
9279	8	71-9279	USA/9279/B(U)F-96	1	OF	5

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)*

Department of Energy
Washington, DC 20586

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

Nuclear Waste Partnership, LLC application dated December 31, 2012.

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.: HalfPACT Waste Shipping Container

(2) Description

A stainless steel and polyurethane foam insulated shipping container designed to provide single containment for shipment of contact-handled transuranic waste. The packaging consists of an unvented, 1/4-inch thick stainless steel inner containment vessel (ICV), positioned within an outer confinement assembly (OCA) consisting of an unvented 1/4-inch thick stainless steel outer confinement vessel (OCV), an approximate 8-inch thick layer of polyurethane foam, a 1/4-inch thick layer of ceramic fiber paper and a 1/4 to 3/8-inch thick outer stainless steel shell. The package is a right circular cylinder with outside dimensions of approximately 94 inches diameter and 92 inches height. The package weighs not more than 18,100 pounds when loaded with the maximum allowable contents of 7,600 pounds.

The OCA has a domed lid which is secured to the OCA body with a locking ring. Although not part of the containment boundary, the OCV confinement seal is provided by an optional butyl rubber O-ring. The OCV is equipped with a seal test port and a vent port.

The ICV is a right circular cylinder with domed ends. The outside dimensions of the ICV are approximately 74 inches diameter and 69 inches height. The ICV lid is secured to the ICV body with a locking ring. The ICV containment seal is provided by a butyl rubber O-ring. The ICV is equipped with a seal test port and vent port. Aluminum spacers are placed in the top

5.(a)(2) Description (continued)

and bottom domed ends of the ICV during shipping. The cavity available for the contents is a cylinder of approximately 73 inches diameter and 45 inches height.

5.(a)(3) Drawings

The package is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing 707-SAR, sheets 1-12, Rev. 9. The standard pipe overpack is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-001, sheets 1-3, Rev. 7. The S100 pipe overpack is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-002, sheets 1 and 2, Rev. 5. The S200 pipe overpack is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-003, sheets 1 and 2, Rev. 4. The S300 pipe overpack is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-004, sheet 1, Rev. 2. The compacted puck drum spacers needed for the purpose of maintaining subcriticality in 55-, 85-, and 100-gallon drums are constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-006, Rev. 1. The shielded container is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-008, sheets 1–6, Rev. 2. The criticality control overpack is constructed and assembled in accordance with Washington TRU Solutions, LLC, Drawing No. 163-009, sheets 1-2, Rev. 0.

(b) Contents

(1) Type and form of material

Byproduct, source, and special nuclear material in the form of dewatered, solid or solidified materials and wastes. Materials must be packaged in one of the following payload containers: a 55-gallon drum, standard waste box (SWB), 85-gallon drum, standard pipe overpack, S100 pipe overpack, S200 pipe overpack, S300 pipe overpack, 100-gallon drum, shielded container, or criticality control overpack (CCO). The payload containers are described in Section 2.9, “Payload Container/Assembly Configuration Specifications,” of the CH-TRAMPAC, Rev. 4. Explosives, corrosives (pH less than 2 or greater than 12.5), nonradioactive pyrophorics, and compressed gases are prohibited. Within a payload container radioactive pyrophorics must not exceed 1 weight percent by weight and residual liquids must not exceed 1 percent by volume. Flammable organics and methane are limited along with hydrogen to ensure the absence of flammable gas mixtures in TRU waste payloads as described in Chapter 5.0 of the CH-TRAMPAC, Rev. 4. For payloads of content code LA 154 and SQ 154, the absence of flammable gas mixtures is ensured as described in Appendix 6.12 of the CH-TRU Payload Appendices, Rev. 3. For payload configurations with unvented heat-sealed bag layers, the absence of flammable gas mixtures is ensured as described in Appendix 6.13 of the CH-TRU Payload Appendices, Rev. 3. For Analytical Category payload containers containing puck drums, the absence of flammable gas mixtures is ensured as described in Appendix 6.14 of the CH-TRU Payload Appendices, Rev. 3.

(2) Maximum quantity of material per package

The package contents are limited to 7,600 pounds, including the weight of the payload containers and any other components of the payload assembly. The maximum gross weight for a payload container not to exceed the following:

(i) 328 pounds per 6-inch standard pipe overpack,
(ii) 547 pounds per 12-inch standard pipe overpack,
(iii) 550 pounds per S100 pipe overpack,
(iv) 547 pounds per S200 pipe overpack,
(v) 547 pounds per S300 pipe overpack,
(vi) 1,000 pounds per 100-gallon drum,
(vii) 1,000 pounds per 55-gallon drum,
(viii) 1,000 pounds per 85-gallon drum,
(ix) 4,000 pounds per SWB,
(x) 2,260 pounds per shielded container, or
(xi) 350 pounds per CCO.

Maximum number of payload containers per package and authorized packaging configurations as follows:

(i) 7 55-gallon drums,
(ii) 7 standard pipe overpacks,
(iii) 7 S100 pipe overpacks,
(iv) 7 S200 pipe overpacks,
(v) 7 S300 pipe overpacks,
(vi) 4 85-gallon drums,
(vii) 3 100-gallon drums,
(viii) 1 SWB,
(ix) 3 shielded containers, or
(x) 7 CCOs.

Fissile material not to exceed the limits specified in CH-TRAMPAC, Rev. 4, Section 3.1, "Nuclear Criticality." Fissile material in the CCCs shall not be machine compacted and shall not exceed 380 fissile gram equivalent of Pu-239 containing less than or equal to 1% by weight Be/BeO.

All payloads shall meet the activity limits specified in CH-TRAMPAC, Rev. 4, Section 3.3, "Activity Limits." The payload is limited to 10^5 A_2 quantities.

Maximum decay heat per package not to exceed 30 watts. Decay heat per payload container not to exceed the values in Table 5.2-1 of the CH-TRAMPAC, Rev. 4, "List of Approved Alphanumeric Shipping Categories, Maximum Allowable Hydrogen Gas Generation Rates, and Maximum Allowable Wattages," or calculated for approved shipping categories in accordance with the methodology specified in Section 5.2.3 of the CH-

5.(b)(2) Maximum quantity of material per package (continued)

TRAMPAC, Rev. 4. For content code LA 154 and SQ 154 payloads, decay heat per payload container not to exceed the values determined as specified in Appendix 6.12 of CH-TRU Payload Appendices, Rev. 3.

5.(c) Criticality Safety Index: 0.0

6. Physical form, chemical properties, chemical compatibility, configuration of waste containers and contents, isotopic inventory, fissile content, decay heat, weight and center of gravity; and radiation dose rate must be determined and limited in accordance with CH-TRAMPAC, Rev. 4.

7. Each payload container must be assigned to a shipping category in accordance with Section 5.1, "Payload Shipping Category" of CH-TRAMPAC, Rev. 4. Each payload container and payload assembly must not exceed the allowable wattage in accordance with Section 5.2.3, "Hydrogen Gas Generation Rate and Decay Heat Limits for Analytical Category," or must be tested for gas generation in accordance with Section 5.2.5, "Unified Flammable Gas Test Procedure," of CH-TRAMPAC, Rev. 4. For a payload made up of payload containers with different (nonequivalent) shipping categories, the flammability index of each payload container must not exceed 50,000 in accordance with CH-TRAMPAC, Rev. 4, Section 6.2.4, “Mixing of Shipping Categories,” and Appendix 2.4 of the CH-TRU Payload Appendices, “Mixing of Shipping Categories and Determination of the Flammability Index.” For Analytical Category payload drums containing puck drums, the absence of flammable gas mixtures is ensured as described in Appendix 6.14 of the CH-TRU Payload Appendices, Rev. 3. Each content code LA 154 and SQ 154 payload container must be assigned to a shipping category in accordance with Appendix 6.12 of CH-TRU Payload Appendices. Content code LA 154 and SQ 154 payload containers may only be assembled with other payload containers belonging to content code LA 154 and SQ 154, respectively, or dunnage in accordance with Appendix 6.12 of CH-TRU Payload Appendices. For a payload of content code LA 154 or SQ 154 containers with different shipping categories, the flammability index of each payload container must not exceed 50,000 in accordance with Appendix 6.12 of CH-TRU Payload Appendices.

8. Payload containers within a package shall be selected in accordance with Section 6.0, "Payload Assembly Requirements," of CH-TRAMPAC, Rev. 4. Payload containers of content code LA 154 and SQ 154 shall be assembled in accordance with Appendix 6.12 of CH-TRU Payload Appendices, Rev. 3.

9. Each payload container must be vented in accordance with Section 2.5, "Filter Vents," of CH-TRAMPAC, Rev. 4. Payload containers which were not equipped with filtered vents during storage must be aspirated in accordance with Section 5.3, "Venting and Aspiration," of CH-TRAMPAC, Rev. 4.

10. For close-proximity and controlled shipments meeting the conditions specified in Appendices 3.5 and 3.6, respectively, of CH-TRU Payload Appendices, shipping periods of 20 days and 10 days

10. (continued)

may be applicable. The shipping period for any mode of transport is not to exceed 60 days. The content code LA 154 and SQ 154 shipments, the shipping period as defined in Appendix 6.12 of the CH-TRU Payload Appendices is not to exceed 5 and 10 days, respectively.

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, as supplemented. For content code LA 154 and SQ 154 payloads, each package must be prepared for shipment and operated in accordance with the procedures described in Chapter 7.0 of the application, as modified by Appendix 6.12 of CH-TRU Payload Appendices.

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

(c) All free standing water must be removed from the inner containment vessel cavity and the outer confinement vessel cavity before shipment.

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

13. Revision No. 7 of this certificate may be used until November 30, 2016.

14. Expiration date: November 30, 2020.

REFERENCES

Nuclear Waste Partnership, LLC, application dated December 31, 2012.

As supplemented: March 27, 2013 and September 8, 2015.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

/RA/ B.H. White acting for

Michele Sampson, Chief
Spent Fuel Licensing Branch
Division of Spent Fuel Management
Office of Nuclear Material Safety
and Safeguards

Date: November 4, 2015