

71-9791



**DEPARTMENT OF ENERGY**  
NATIONAL NUCLEAR SECURITY ADMINISTRATION  
1000 INDEPENDENCE AVENUE SW  
WASHINGTON DC 20585-1000

NR:RR:WASandman G#12-00635  
January 30, 2012

Catherine Haney  
Director, Office of Nuclear Material Safety and Safeguards  
Nuclear Regulatory Commission  
Washington, DC 20555

**NUCLEAR REGULATORY COMMISSION CERTIFICATE OF COMPLIANCE FOR THE  
PWR-2 LOWER CORE BARREL SHIPPING AND DISPOSAL CONTAINER  
[USA/9791/B(U)-85]; REQUEST FOR RENEWAL**

**Background:** The PWR-2 Lower Core Barrel Shipping and Disposal Container is used to make disposal shipments of large, irradiated reactor components, including reactor vessels, core baskets, and core barrels. The PWR-2 transportation package consists of an outer cylindrical shipping container made of HY-80 steel and an inner disposal liner, which is designed for the specific component being shipped. The outer shipping container is reused, and the inner disposal liner is a one-time use container that is buried with its contents. The Naval Reactors Program has made a total of four loaded shipments of the PWR-2 container. The container was last used in 2003 to ship the D1G prototype pressure vessel assembly from Naval Reactors' Kesselring Site in West Milton, New York, to the Savannah River Disposal Facility.

**Request for NRC Renewal:** This letter requests renewal of the Nuclear Regulatory Commission (NRC) Certificate of Compliance (CoC) for the PWR-2 Lower Core Barrel Shipping and Disposal Container, USA/9791/B(U)-85. The NRC CoC expires on July 31, 2012. Since the last renewal of the CoC, there have been no loaded shipments of the PWR-2 container, and there have been no operational experiences or container modifications that would preclude continued use of the container. Enclosure (1) to this letter provides a draft revision 7 of the DOE-NR CoC for your review. There have been no technical changes to the CoC. If you have any questions, please do not hesitate to call me at (202) 781-6166.

A handwritten signature in black ink, appearing to read "B. K. Miles", is located below the main text.

B. K. Miles  
Naval Reactors

Enclosure and copy to: See page 2

NH5501

Enclosure: (1) DOE-NR CERTIFICATE OF COMPLIANCE FOR THE PWR-2 LOWER  
CORE BARREL SHIPPING AND DISPOSAL CONTAINER,  
USA/9791/B(U)-85, REVISION 7 (DRAFT)

Copy to:

D. Weaver, Director, Spent Fuel Storage & Transportation (SFST), NMSS, NRC

M. Waters, Chief, Licensing Branch, SFST, NMSS, NRC

B. White, Senior Project Manager, Licensing Branch, SFST, NMSS, NRC

J. Rankin, Licensing Branch, SFST, NMSS, NRC

KAPL ADSARS

NRLFO-P

NRLFO-S

Manager, Shipping Containers, REO, Bettis

Manager, Shipping Containers Analysis, RSO, KAPL

Manager, Shipping Container Design & Analysis, M-290/DSP Engineering, Bettis

**ENCLOSURE (1)**

**DOE-NR CERTIFICATE OF COMPLIANCE FOR THE PWR-2 LOWER CORE  
BARREL SHIPPING AND DISPOSAL CONTAINER, USA/9791/B(U)-85, REVISION 7  
(DRAFT)**

The enclosed draft Certificate of Compliance shows additions and deletions from the current version of the certificate. Minor formatting and editorial changes are not highlighted.

Enclosure (1) to  
Ser 08G#12-00635

U. S. DEPARTMENT OF ENERGY  
**CERTIFICATE OF COMPLIANCE**  
For Radioactive Materials PackagesOMB Approval  
No. 1910-2000

1a. Certificate Number <b>USA/9791/B(U)-85 (DOE-NR)</b>	1b. Revision No. <b>67 (DRAFT)</b>	1c. Package Identification No. <b>USA/9791/B(U)-85 (DOE-NR)</b>	1d. Page No. <b>1</b>	1e. Total No. Pages <b>3</b>
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**2. PREAMBLE**

- 2a. This certificate is issued under the authority of 49CFR Part 173.7(d).
- 2b. The packaging and contents described in item 5 below, meets the safety standards set forth in subpart E, "Package Approval Standards" and subpart F, "Package, Special Form, and LSA-III Tests" Title 10, Code of Federal Regulations, Part 71.
- 2c. 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**

(1) Prepared by (Name and address):

**Bettis Atomic Power Laboratory  
P. O. Box 79, W. Mifflin, PA 15122-0079**

(2) Title and Identification of report or application:

**Safety Analysis Report for Packaging for  
the PWR-2 Lower Core Barrel Shipping  
and Disposal Container**

(3) Date

**January 1982****Safety Analysis Report for Packaging for  
the D1G Prototype Pressure Vessel  
Assembly in the PWR-2 Shipping  
Container****4. CONDITIONS**

This certificate is conditional upon the fulfilling of the applicable Operational and Quality Assurance requirements of 49CFR Parts 100-199 and 10CFR Part 71, and the conditions specified in item 5 below.

**5. Description of Packaging and Authorized Contents, Model Number, Criticality Safety Index, Other Conditions, and References:****PWR-2 Lower Core Barrel Shipping and Disposal Container****a. Description of Packaging**

The PWR-2 Lower Core Barrel Shipping and Disposal Container consists of an inner container and an outer container. The inner container, loaded with the irradiated contents, is disposed of while the outer container may be reused. The weight of a loaded PWR-2 Lower Core Barrel Shipping and Disposal Container is approximately 400,000 pounds. A detailed description of the inner and outer containers is given below with approximate dimensions.

**Inner (Burial) Liner (D1G Prototype Pressure Vessel Assembly)**

The inner liner is comprised of upper and lower cylinders joined by a 6-inch-thick transition ring that is welded to the cylinders with full penetration welds and a minimum 1-inch-thick fillet weld. At the top of the upper cylinder is an 11-inch-thick flange. A bottom plate is welded to the lower cylinder. A 10-inch-thick cover is welded to the burial liner at the inside diameter (ID) of the flange. The maximum outside diameter (OD) of the container is 117.9 inches at the upper cylinder flange. The overall length of the inner container is 184.5 inches. The upper cylinder has a 102-inch ID with a 3-inch wall thickness. The

6a. Date of Issuance: **June 11, 2007**6b. Expiration Date: **July 31, 2017****FOR THE U.S. DEPARTMENT OF ENERGY**

7a. Address (of DOE Issuing Office)

**Naval Reactors  
U. S. Department of Energy  
Washington, D. C. 20585**

7b. Signature, Name and Title (of DOE Approving Official)

**S. J. Trautman  
Deputy Director, Naval Reactors**

5. (Continued)

lower cylinder has a 90-inch ID with a 4-inch wall thickness. The bottom plate is also supported by 12 4.5-inch-thick gussets welded to the lower cylinder and the bottom plate with partial penetration welds. The overall height of the bottom plate is 10.5 inches with a thickness that varies from 6 to 2.4 inches. The cover is attached to the container with a 3.25-inch-thick closure weld. All penetrations in the cover have been plugged and welded. The outside diameters of the bottom plate and top flange of the burial liner establish a relatively close fit with the outer container to limit radial movement during shipment. The entire container is made of HY-80 steel.

Outer (Shipping) Container (PWR-2 Shipping Container)

The outer container is a 4-inch-thick steel circular cylinder 127 inches in outer diameter by 212 inches in overall length, with 6-inch-thick bottom and top cover plates. The bottom plate is attached to the container cylinder by a full penetration weld, while the top cover plate is attached to the outer container with 107 2-inch fasteners. A 2.5-inch-thick by 10-inch-long impact limiting ring is welded circumferentially to each end of the container cylinder. In addition, two concentric impact limiting rings are welded to the exterior of each cover plate. Upper and lower aluminum honeycomb crush blocks are placed inside the outer container, above and below the inner container. These crush blocks would act as energy absorbers for the inner container during a drop accident and provide axial support for the inner container during shipment. Except for the aluminum crush blocks, the outer container is manufactured from HY-80 steel.

Following loading of the outer container and attachment of the top cover plate, the shipping and disposal container assembly is rotated to a horizontal position for shipment on a 300-ton railcar. The outer container is supported in this position by two gusset support assemblies, each of which are welded to the side of the outer container and bolted to the top flange of an I-beam. The bottom flange of the I-beam is bolted to the railcar.

b. Authorized Contents

Type and Form of Materials (D1G Prototype Pressure Vessel Assembly)

An irradiated D1G prototype pressure vessel assembly (pressure vessel, core barrel, thermal shields, and two surveillance train assemblies) with a maximum of 119 gallons of residual liquid, surface contamination in the form of activated corrosion products, and activated displaced metal from reactor vessel nozzle cutting operations.

c. Criticality Safety Index

Not applicable.

d. Other Conditions (Restrictions)

The irradiated D1G prototype pressure vessel assembly must have a minimum decay time of 3 years. Shipment is exclusive use and shall be made when the historical average daily temperature is a minimum of 20°F.

e. References

None.

5. (Continued)

f. Additional Information

Nuclear Regulatory Commission concurrence that the shipment of the D1G prototype pressure vessel assembly in the PWR-2 Lower Core Barrel Outer Container and D1G Pressure Vessel Assembly Burial Liner complies with the requirements of 10CFR71 is contained in their memorandum Docket No. 71-9791 dated July 30, 1998.