

U.S. NUCLEAR REGULATORY COMMISSION
CERTIFICATE OF COMPLIANCE
For Radioactive Materials Packages

1.(a) Certificate Number	1.(b) Revision No.	1.(c) Package Identification No.	1.(d) Pages No.	1.(e) Total No. Pages
9132	0	USA/9132/B()F	1	4

2. PREAMBLE

- 2.(a) This certificate is issued to satisfy Sections 173.393a, 173.394, 173.395, and 173.396 of the Department of Transportation Hazardous Materials Regulations (49 CFR 170-189 and 14 CFR 103) and Sections 146-19-10a and 146-19-100 of the Department of Transportation Dangerous Cargoes Regulations (46 CFR 146-149), as amended.
- 2.(b) The packaging and contents described in item 5 below, meets the safety standards set forth in Subpart C of Title 10, Code of Federal Regulations, Part 71, "Packaging of Radioactive Materials for Transport and Transportation of Radioactive Material Under Certain Conditions."
- 2.(c) 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—

3.(a) Prepared by (Name and address):
Nuclear Packaging, Inc.
815 So. 28th Street
Tacoma, WA 98409

3.(b) Title and identification of report or application:
Nu Pac application dated October 20, 1978,
as supplemented.

3.(c) Docket No. 71-9132

4. CONDITIONS

This certificate is conditional upon the fulfilling of the requirements of Subpart D of 10 CFR 71, as applicable, and the conditions specified in item 5 below.

5. Description of Packaging and Authorized Contents, Model Number, Fissile Class, Other Conditions, and References:

(a) Packaging

- (1) Model No: T-3
- (2) Description

A stainless steel and lead shielded irradiated fuel shipping package (cask). The cask is a right circular cylinder with upper and lower steel encase rigid polyurethane foam (20 lb/ft³) impact limiters. The overall dimensions are 213.2 inches in length and 52 inches in diameter. The cask without the impact limiters measures 177.2 inches in length and 26.44 inches in diameter.

The outer cask shell is comprised of a one (1) inch thick stainless steel shell overlaid with a ten (10) gauge stainless steel cover. Between these two materials is a 0.08 inch diameter wire wrap, providing an air gap for additional thermal protection.

The inner shell (containment vessel) is a standard seamless stainless steel Schedule 40 pipe having an outside diameter of 8.625 inches with a nominal wall thickness of 0.322 inches. The annular space between the inner and outer shells is filled with lead having a thickness of approximately eight (8) inches.

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Both the inner and outer shells are welded at each end to heavy steel closure plates with conical surfaces to assist in positioning and sealing. The containment vessel measures 147 inches in length by 7.981 inches in diameter.

The containment vessel is sealed at the bottom end with a 12.375-inch thick stainless steel plug with two (2) Viton O-ring seals. The top end of the containment vessel is sealed with a 11.625-inch thick stainless steel plug with two (2) Viton O-ring seals. The bottom plug is retained by a closure plate secured by eight (8), 1/2-13UNC x 2-1/4-inch ASTM A320, Grade L7 socket head cap screws. The top plug is secured in place utilizing sixteen (16), 1/2 - 13 UNC x 1-3/4-inch ASTM A320, Grade L7 hex flange screws.

No drain or vents penetrate directly into the containment vessel. A drain/vent line opens directly into the area between the two (2) O-ring seals at each end of the cask (end plugs). During shipment, the lines are sealed with Viton O-ring sealed threaded fasteners.

The cask is provided with six (6) trunions, four (4) spaced 90 degrees apart at the top end and two spaced at 180 degrees apart at the bottom end of the cask. The cask is tied down at the forward and aft ends by means of a cradle and yoke assembly. The gross weight of the cask and contents is 38,000 pounds.

(3) Drawing

The packaging is constructed in accordance with Westinghouse Hanford Company Drawing No. H4-61289, Sheets 1 thru 3, Revision No. 3.

(b) Contents

(1) Type and form of material

The minimum cooling time of each fuel assembly and rod shall be 90 days; and

- (i) FTR driver pins prior to irradiation containing 25 w/o PuO₂ and 75 w/o U (natural) O₂, 0.23" diameter by 36" active fuel length.
- (ii) FTR carbide pins prior to irradiation containing 20 w/o PuC and 80 w/o U (natural) C, 0.37" diameter by 36" active fuel length.
- (iii) EBR-II carbide pins prior to irradiation containing 25 w/o Pu C and 75 w/o U (95) C, 0.315" diameter by 13.5" active fuel length.

- (iv) Standard driver pins (Item 5(b)(1)(i) above) plus experimental oxide pins prior to irradiation containing 25 w/o PuO₂ and 75 w/o U(98) O₂, 0.23" diameter by 36" active fuel length.

(2) Maximum quantity of material per package

Not to exceed a decay heat generation of 600 watts; and

- (i) Item 5(b)(1)(i) above

4.4 kg U-235 plus Pu-239 contained within inner container
Ident 69, Figure 3.1.5-1.

- (ii) Item 5(b)(1)(ii) above

4.1 kg U-235 plus Pu-239 contained within inner container
Ident 69, Figure 3.1.5-1.

- (iii) Item 5(b)(1)(iii) above

5.0 kg U-235 plus Pu-239 contained within inner container
Ident 1578, Figure 3.1.5-3.

- (iv) Item 5(b)(1)(iv) above.

4.7 kg U-235 plus Pu-239 contained within inner container
Ident 1578, Figure 3.1.5-3.

(c) Fissile Class

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6. The cask shall be shipped dry (no water coolant in cask cavity).
7. In addition to the requirements of Subpart D of 10 CFR Part 71, each cask prior to first use shall meet the acceptance tests and criteria specified in Section 7.1 of the application. The leak test to satisfy ANSI N 14.5 and Regulatory Guide 7.4 in Section 7.1.3 of the application shall be a test having sufficient sensitivity to detect a leak rate (air at standard temperature and pressure leaking to 10⁻² atm) of 10⁻⁷ atm cc/sec. The results of these tests shall be documented and retained for the life of the cask.
8. In addition to the requirements of Subpart D of 10 CFR Part 71, each cask shall be maintained in accordance with Section 7.2 of the application.
9. The cask authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12(b).
10. Expiration date: May 31, 1985.

REFERENCES

Nuclear Packaging, Inc. application dated October 20, 1978.

Supplement dated: May 18 and September 12, 1979; and January 25, 1980.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Charles E. MacDonald

Charles E. MacDonald, Chief
Transportation Certification Branch
Division of Fuel Cycle and
Material Safety, NMSS

Date: MAY 21 1980