

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIALS PACKAGES

U.S. NUCLEAR REGULATORY COMMISSION

1. a. CERTIFICATE NUMBER 4909	b. REVISION NUMBER 15	c. PACKAGE IDENTIFICATION NUMBER USA/4909/AF	d. PAGE NUMBER 1	e. TOTAL NUMBER PAGES 3
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2. PREAMBLE

- This certificate is issued to certify that the 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."
- 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)

General Electric Company
P.O. Box 780
Wilmington, NC 28401

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

General Electric Company application dated
January 26, 1994.

c. DOCKET NUMBER
71-4909

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.: GE-21PF-1

(2) Description

Overpack for 30-inch diameter enriched uranium hexafluoride (UF_6) cylinders. The overpack is a right circular cylinder constructed of two stainless steel shells. The annular volume between the shells is filled with wood blocks and fire-resistant phenolic foam approximately 6 inches thick. The foam is in accordance with USAEC Specification SP-9, Rev. 1, and Supplement K/TL-729. A stepped and gasketed horizontal joint permits the top half of the overpack to be removed from the base. The package "halves" are secured with fourteen, 3/4-inch bolt/nut/washer assemblies. The overpack is approximately 43-5/8 inches OD by 95-1/2 inches long. Maximum gross weight of the package is 8,600 pounds.

(3) Drawings

The packaging is constructed in accordance with General Electric Company Drawing No. 769E237 - Sheet Nos. 1 and 2, Rev. 4. In addition, the length of the 8" x 2.5" tie-down support channel may be from 43 to 55 inches long and vent holes in the exterior shell may be sealed with plastic plugs.

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(b) Contents

(1) Type and form of material

Uranium hexafluoride enriched in the U-235 isotope.

(2) Maximum quantity of material per package

(i) Model No. 30A cylinder: 4,950 pounds UF_6 enriched to not more than 5 w/o in the U-235 isotope.

(ii) Model No. 30B cylinder: 5,020 pounds UF_6 enriched to not more than 5 w/o in the U-235 isotope.

(c) Transport Index for Criticality Control

Minimum transport index to be shown on
label for nuclear criticality control: 5.0

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

- (a) Prior to each shipment, the overpack gaskets must be inspected. These gaskets must be replaced if inspection shows any defects or every 12 months, whichever occurs first.
- (b) Each packaging must meet the Acceptance Tests and Maintenance Program of Sections 7.2 and 8.0 of the application.
- (c) The package shall be prepared for shipment and operated in accordance with the Operating Procedures of Section 7.1 of the application.
- (d) The loaded cylinder must be shipped without a valve protector. The valve protector must be replaced in accordance with normal handling practice when the cylinder is removed from the overpack.
- (e) Prior to each shipment, the stainless steel components of the packaging must be visually inspected. Packagings in which stainless steel components show pitting, corrosion, cracking, or pinholes are not authorized for transport.

- 7. (a) For packagings which are not seal welded, the joints between the inner and outer shells (ends) and the side (end) panel moldings must be silicone sealed. The inner and outer overpack gaskets must cover side (end) panel molding joints (unless seal welded). Except for joints covered by a glued down gasket, visually inspect all silicone sealed joints and maintain in good repair prior to each shipment or outside storage (loaded or empty).
- (b) All body seams and joints for the inner and outer shells (ends) and the side (end) panel moldings must be continuous welds. Welding must be by a fusion process in accordance with the American Welding Society Code or American Society of Mechanical Engineers' Code.

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8. The 30-inch diameter UF₆ cylinders must be fabricated, inspected, tested and maintained in accordance with American National Standard N14.1 (1990 version). Cylinders must be fabricated in accordance with Section VIII, Division I, of the ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code and be ASME Code stamped.
9. At least once every five years, each packaging must be inspected to verify the presence and condition of the insulation. The inspection shall consist of inserting a probe through each vent hole in both the lid and base to confirm the presence and rigidity of the insulation. For packagings which require drying, the inspection must be performed after drying.
10. Shackles are for lifting only. Shackles must not be used for tying down the package during transport.
11. The 30-inch diameter UF₆ cylinder valve stem and plug may be tinned with ASTM B32, alloy 50A or Sn50 solder material, or a mixture of alloy 50A or Sn50 with alloy 40A or Sn40A material, provided the mixture has a minimum tin content of 45 percent.
12. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
13. Expiration date: November 30, 1999.

REFERENCES

General Electric Company application dated January 26 1994.

Supplement dated October 26, 1994.

United States Enrichment Corporation supplement dated: April 14, 1997.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

Nancy L. O'Connell for

Cass R. Chappell, Chief
Package Certification Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Date: Apr. 15, 1997



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

APPROVAL RECORD

Model No. GE-21PF-1 Package
Certificate of Compliance No. 4909
Revision 15

By application dated April 14, 1997, United States Enrichment Corporation requested an amendment to Certificate of Compliance No. 4909. The request was to authorize use of alternative solder materials used to tin the threads on the uranium hexafluoride cylinder plug and valve. The tinning of the threads is performed to ensure the proper lubrication and sealing of the threaded closures.

The Certificate of Compliance specifies that the 30-inch diameter UF₆ cylinder must be inspected, tested, maintained, assembled, and used in accordance with American National Standards Institute (ANSI) N14.1-1990. ANSI N14.1 specifies that the solder used for tinning the plug and valve must be ASTM B32, alloy 50A. The applicant stated that, in addition to alloy 50A, cylinder valves and plugs have been tinned with ASTM B32, alloy Sn50, and that a mixture of two parts alloy 50A or alloy Sn50 and one part alloy 40A or alloy Sn40A had also been used. The minimum tin content of the mixture is 46 percent.

The applicant stated that, based on the solder composition, the materials were essentially identical. The solidus temperature for the 50A, Sn50, 40A and Sn40A solders is identical (361°F). The solidus temperature is the highest temperature at which the material is completely solid. Since the solidus temperatures are identical, and since the material composition is only slightly different, the applicant concluded that performance at high and low temperatures would be the same. In addition, the applicant stated that every cylinder is pressure tested for leakage after the valve and plug are installed. The pressure test verifies that the cylinder is properly sealed.

The Certificate of Compliance has been revised to specify that the tinning may be with ASTM B32, alloy 50A or Sn50 solder material, or a mixture of alloy 50A or Sn50 with alloy 40A or Sn40A material, provided the mixture has a minimum tin content of 45 percent. These changes do not affect the ability of the package to meet the requirements of 10 CFR Part 71.

Karen R. Chappell

Cass R. Chappell, Chief
Package Certification Section
Spent Fuel Project Office
Office of Nuclear Material Safety
and Safeguards

Date: Apr. 15, 1997