Form NRC-618
(12-73)
10 CFR 71

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
9069	3	USA/9069/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)*:

Westinghouse Electric Corporation
Box 355
Pittsburgh, Pennsylvania 15230

3.(b) Title and identification of report or application:

Westinghouse Electric Corportation application dated April 27, 1976, as supplemented.

3.(c) Docket No. 71-9069

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.: MO-1

(2) Description

Steel overpack consisting of a 12 gauge outer shell (45" x 47" x 206") and a 10 gauge inner shell (max. 37" x 37" x 186"). The volume between the shells is filled with a shock-and-thermal-insulating material consisting of rigid polyurethane foam. The upper and lower sections of the overpack are secured by 12 ratchet binders and 12 high strength 5/8" latch pins. The fuel assemblies are held in place within the overpack by a strongback and adjustable clamping assembly (shock mounted). Neutron absorber plates are located between the fuel assemblies. The package is equipped with lifting, tiedown and pressure relief devices. Gross weight of the package is 8600 pounds.

(3) Drawing

The packaging is constructed in accordance with Westinghouse Electric Corportation Drawing No. 1581F50, sheets 1 and 2, Rev. 1. Fuel rod container is constructed in accordance with Wesinghouse Electric Corporation Drawing No. C5650D55.

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5. (b) Contents

(1) Type and form and maximum quantity of material per package.

(i) Unirradiated UO_2 - PuO_2 PWR fuel assembly with the following maximum active dimensions and maximum compositions:

Cladding material	Zr
Envelope, in	7.784 x 7.784
Enrichment	
PuO_2 in PuO_2 plus UO_2, w/o	*(a)
PuO_2 fissile in PuO_2, w/o	*(b)
UO_2 fissile in UO_2, w/o	0.71
Fissile, kg	16.6
Fuel length, in	144
Decay heat load, watts/pkg	400

*For three plutonium isotopic cases:
Case 1,
the PuO_2 enrichment (a) is 6.0 w/o; fissile PuO_2(b) is 71 w/o.
Case 2,
the PuO_2 enrichment (a) is 4.4 w/o; fissile PuO_2(b) is 81 w/o.
Case 3,
the PuO_2 enrichment (a) is 3.03 w/o; fissile PuO_2(b) is 85 w/o.

(ii) Mixed PuO_2 in natural UO_2 as pressed sintered pellets fully clad in leak-tight zircaloy of minimum 0.024" thickness as fuel rods of the following specifications:

Type	
Pellet diameter (Nom), in	0.365
Rod diameter (Nom), in	0.422
Fuel length (Nom), in	120 to 144
PuO_2 in PuO_2 plus UO_2, w/o	6.0
PuO_2 fissile in PuO_2, w/o	85
UO_2 fissile in UO_2, w/o	0.71

(2) Maximum quantity of material per package.

(i) For the contents described in 5(b)(1)(i)

Two fuel assemblies.

(ii) For the content described in 5(b)(1)(ii)

Not more than 94 kilograms Pu contained within the fuel rod container described in 5(a)(3).

(c)	Fissile Class	II and III
(1)	Minimum transport index to be shown on label for Class II	1.6
(2)	Maximum number of packages per shipment for Class III	62

6. Two (2) neutron absorber plates consisting of 0.19" thick, full length, stainless steel containing 1.3 percent minimum boron or 0.19" thick OFHC copper shall be installed between the active area of the fuel assemblies.

7. Fuel rods shall be closely packed in the fuel rod container on no more than an equivalent metal-to-metal square lattice. Partially loaded fuel rod containers shall be fitted with a minimum of three, equally spaced blocks, of which the noncombustible portion of the blocks and the method by which they are secured shall assure that the rods are maintained on no more than an equivalent metal-to-metal square lattice within the fuel rod container.

8. Each fuel assembly shall be unsheathed or shall be enclosed in an unsealed, polyethylene sheath which will not extend beyond the ends of the fuel assembly. The ends of the sheath shall not be folded or taped in any manner that would prevent the flow of liquids into or out of the sheathed fuel assembly.

   Alternatively, the fuel assembly may be enclosed in an elongated plastic bag or sheath along its full length. At the bottom end of the fuel assembly, the bag will be cut off or folder back to assure that the entire cross section of the lower end of the assembly is unobstructed. When the folding is used, the portion of the sheath that is folded back will be cinched with tape near its end to hold it in place, and the length will be such that when the assembly is loaded in the packaging, the folded sheath will be clamped in place in at least two grid locations. The top end of the bag may be gathered together and taped closed. However, the top end then will be slip on all four sides. The slits will run perpendicular to the axis of the assembly and will extend the inner distance between the top nozzle pads and spring clamps (approximately 60 percent of the length of each side). The slits will be made in a plane near that formed by the top of the pads and clamps.

9. The package authorized by this certificate is hereby approved for use under the general license provisions of Paragraph 71.12(b) of 10 CFR Part 71.

10. Expiration date: October 31, 1981.

REFERENCES

Westinghouse Electric Corporation application dated April 27, 1976.

Nuclear Packaging, Inc. supplements dated: March 18, August 13, and September 21, 1976.

Westinghouse Electric Corporation supplements dated: February 11, and April 11, 1977; and January 9 and January 11, 1980.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: FEB 04 1980