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
6581	10	USA/6581/B( )F	1	6

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*):

EXXON Nuclear Company, Inc.
2101 Horn Rapids Road
Richland, WA 99352

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

EXXON Nuclear Company, Inc. application dated October 14, 1971, as supplemented.

3.(c) Docket No. 71-6581

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) Models Nos.: 51032-1 and 51032-1a

(2) Description

A steel shipping container for fuel bundles, consisting of a strongback and fuel bundle clamping assembly, shock mounted to a steel outer container. Minimum 3/8" thick wall, 6" x 8" x 8-1/2" long steel separators are bolted between fuel bundles. Outer container is approximately 43" diameter by 216" long. The maximum weight of the package is approximately 7,400 pounds for the Model No. 51032-1 and 8,300 pounds for the Model No. 51032-1a.

(3) Drawings

The Model No. 51032-1 is constructed in accordance with Applied Design Company Drawings No. :

51032-1-001, Sheet 1, Rev.
51032-1-001, Sheet 2, Rev. F
51032-1-001, Sheet 3, Rev. F
51032-1-001, Sheet 4, Rev. F
51032-1-001, Sheet 5, Rev. H
51032-1-001, Sheet 6, Rev. F
51032-1-001, Sheet 7, Rev. H

784006

090

7908230 ~~195~~

(3) Drawings (continued)

51032-1-002, 2 Sheets, Rev. B
51032-1-003, Rev. 0
51032-1-004, Rev. B

and

Jersey Nuclear Company Drawings Nos..

JN-600, 841, Sheet 1, Rev. 2
JN-600, 843, Sheet 1, Rev. 3
JN-600, 844, Sheet 1, Rev. 2

The Model No. 51032-1a is constructed in accordance with Exxon Nuclear Company, Inc. Drawings Nos.:

XN-NF-303,354, Sheet 1, Rev. 0
XN-NF-303,354, Sheet 2, Rev. 0
XN-NF-303,355, Sheet 1, Rev. 0
XN-NF-303,356, Sheet 1, Rev. 0
XN-NF-303,357, Sheet 1, Rev. 0
XN-NF-303,357, Sheet 2, Rev. 0
XN-NF-303,358, Sheet 1, Rev. 0
XN-NF-303,359, Sheet 1, Rev. 0
XN-NF-303,360, Sheet 1, Rev. 0
XN-NF-303,364, Sheet 1, Rev. 0
XN-NF-302,231, Sheet 1, Rev. 4

(b) Contents

Type, form, and maximum quantity of material per package shall be as follows:

(1) Sintered oxide pellets (UO_2 or PuO_2-UO_2) as fuel rods. The fuel rods are assembled into fuel assemblies by upper and lower tie plates and intermediate spacers. The EXXON Nuclear type identification, radioactive material, fissile constituents, and maximum number of assemblies per package is as follows:

(5)(b) Contents (continued)

XN I.D.	Radioactive Material I.D.	Max. Total Quantity (kg/Package)	Fissile Constituents I.D.	Maximum Quantity (kg/Package)	Maximum No. of Assemblies per Package
TYPE I[a]	U	247	U-235	6.1	2
	Pu	3.0	Pu_f	2.5	
TYPE II[a]	U	368	U-235	9.8	2
TYPE III[b]	U	236	U-235	5.3	4
	Pu	1.7	Pu_f	1.4	
TYPE IV[c]	U	414	U-235	17.0	2
TYPE V[c]	U	375	U-235	6.0	2
TYPE VI[c]	U	375	U-235	10.0	2
TYPE VII[c]	U	362	U-235	8.0	2
	Pu	2.5	Pu_f	2.0	
TYPE VIII[c]	U	510	U-235	16.0	4
	Pu	6.0	Pu_f	5.0	
TYPE IX[c]	U	142	U-235	4.0	2
TYPE X[c]	U	238	U-235	6.0	2
TYPE XI[d]	U	750	U-235	26	2
TYPE XII[d]	U	810	U-235	23	2
TYPE XIII[e]	U	400	U-235	10	2
TYPE XIV[e]	U	510	U-235	23	4
	Pu	6.3	Pu_f	5.0	
TYPE XV[e]	U	550	U-235	22	4

(a) See Tables, application dated November 9, 1971.
(b) See Tables, application dated September 11, 1972.
(c) See Tables, 2.4 through 2.11, application dated November 15, 1972.
(d) See Tables, 2.4-III and 2.11, application dated July 17, 1973.
(e) See Tables 2.4-IV, 2.5-IV, and 2.6-IV, application dated December 18, 1973.

(5) (b) Contents (continued)

XN I.D.	Radioactive Material I.D.	Max. Total Quantity (kg/Package)	Fissile Constituents I.D.	Maximum Quantity (kg/Package)	Maximum No. of Assemblies per Package
TYPE XVI(f)	U	900	U-235	28	2
TYPE XVII(f)	U	240	U-235	5.0	2
	Pu	1.8	Pu_f	1.4	
TYPE XVIII(f)	U	840	U-235	26	2
TYPE XIX(g)	U	230	U-235	8.4	2
TYPE XX(g)	U	480	U-235	20.0	2
TYPE XXI(h)	U	250	U-235	9.8	2
TYPE XXII(i)	U	789.6	U-235	18.5	2
TYPE XXIII(i)	U	195	U-235	4.5	2
TYPE XXIV(j)	U	300	U-235	7.5	2
*TYPE AA(k)	U	1080	U-235	35.65	2
TYPE XXV(l)	U	766	U-235	25	2
TYPE XXVI(l)	U	766	U-235	26.5	2
TYPE XXVII(l)	U	874	U-235	27.1	2
TYPE XXVIII(l)	U	352	U-235	10	2

(f) See Tables 2.4-V, 2.5-V, and 2.6-V, application dated June 28, 1974.
(g) See Tables 2.4-VI and 2.5-VI, application dated April 15, 1975.
(h) See Tables, applications dated January 20, 1976 and January 26,1976.
(i) See Tables, application dated June 22, 1976.
(j) See Table, application dated September 14, 1976.
(k) See Table, application dated December 22, 1977.
(l) See Table, application dated December 13, 1978.

*Authorized for the Model No. 51032-1a only.

(b) Contents (continued)

(2) Sintered oxide pellets (UO_2 or PuO_2-UO_2) as Zr clad fuel rods packaged within the inner wooden container described by Exxon Nuclear Drawing No. XN-301, 901, Rev. 0. The package may contain up to nine (9) fuel rods having a maximum enrichment of 5.0 wt% fissile elements (^{235}U, ^{239}Pu, and ^{241}Pu; where the isotope ^{241}Pu is to be limited to less than 10 w/o of the total Pu) with a maximum pellet diameter of 0.5 inches. Inert Zr rods may be additionally included.

(3) Sintered mixed oxide pellets (PuO_2-UO_2) as Zr clad fuel rods packaged within the inner wooden containers described by Nuclear Fuel Services Drawing No. RMG-650 B. The package may contain up to twenty-two (22) rods having a maximum enrichment of 5.0 wt% fissile elements (^{235}U, ^{239}Pu, and ^{241}Pu; where the isotope ^{241}Pu to be limited to less than 10 w/o of the total Pu) with a maximum pellet diameter of 0.5 inches.

(c) Fissile Class — I and III

(1) Class I — Type IV through X, XIII, and XVI through XXVIII and Type AA assemblies described and limited in 5(b)(1).

(2) Maximum No. of Packages per Shipment as Class III

(i) Type I, XI, and XII, assemblies described and limited in 5(b)(1):

One (1) Package

(ii) Type II assemblies described and limited in 5(b)(1):

Two (2) packages

(iii) Type III assemblies described and limited in 5(b)(1):

Five (5) packages

(iv) For the contents described and limited in 5(b)(2) and (3)

One (1) package

(v) Type XIV and XV assemblies described and limited in 5(b)(1):

Eight (8) packages

6. Each fuel assembly shall be enclosed in an unsealed polyethylene sheath which will not extend beyond the ends of the fuel assemblies. The ends of the sheaths shall not be folded or taped in any manner that would prevent the flow of liquids into or out of the sheathed fuel assemblies. Polyethylene shims and ethafoam pads may be used in the packaging of all fuel assemblies as described in the December 18, 1973 application except for Types IV and V.

7. The package may contain an additional Zr clad fuel rod. The rod shall be limited to 4.0 kg of uranium enriched in the U-235 isotope to not more than 3.0% by weight. The rod shall be packaged as shown in EXXON Nuclear Company, Inc. Drawing No. XN-601, 825, Rev. 0.

8. 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.

9. Expiration date: January 31, 1980.

REFERENCES

EXXON Nuclear Company, Inc. application dated October 14, 1971.

Supplements dated: November 9 and December 8, 1971; September 11 and 21, 1972; March 2, July 17, November 20, and December 18, 1973; June 28, 1974; February 8, and April 15, 1975; January 20 and 26, June 22, and September 14, 1976; and December 13, 1978.

For the contents described in 5(b)(3): Nuclear Fuel Services application dated July 8, 1977.

In addition for the Model No. 51032-1a, Exxon Nuclear Company, Inc., application dated December 22, 1977 as supplemented March 1, May 2, and May 26, 1978.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: AUG 13 1979

784011