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
5768	6	USA/5768/AF	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)*:
The Babcock & Wilcox Company
609 N. Warren Avenue
Apollo, PA 15613

3.(b) Title and identification of report or application:
The Babcock & Wilcox Company application dated January 29, 1982, as supplemented.

3.(c) Docket No. 71-5768

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.: BB-250-2

(2) Description

Inner container is 11-1/2" ID, 16-gage steel cylinder, 63-1/2" long, with bolted and gasketed top flange closure and seal welded bottom plate. Inner container is centered and supported in a 22-1/2" ID by minimum 74" long 16-gage steel drum by 1/4" diameter spring steel rods and vermiculite. The outer cover is secured by either a 12-gage closure ring or six (6), 1/2" diameter bolts. Maximum weight of packaging and contents is approximately 650 pounds.

(3) Drawing

The BB-250-2 packaging is constructed in accordance with Babcock & Wilcox Drawing No. 10-F-771, Revision 5.

(b) Contents

(1) Type and form of material

(i) Uranium oxide enriched to a maximum 4.0 w/o in the U-235 isotope. Chemically-bound or physically-bound water in mixtures is permitted. Slips or slurries that exhibit a visually discernible liquid second phase are prohibited.

(ii) Bulk uranium oxide (UO_2 or U_3O_8) powder with a maximum density of 2 g U/cc and enriched to a maximum 5.0 w/o in the U-235 isotope. The maximum H/U atomic ratio, considering all sources of hydrogenous material within the inner container shall not exceed 1.13.

(iii) Uranium compounds which will not decompose at temperatures up to 750°F. Uranium may be enriched to a maximum 5.0 w/o in the U-235 isotope. The maximum H/U atomic ratio, considering all sources of hydrogenous material within the inner container shall not exceed 1.5.

(iv) Uranium oxide pellets, enriched to a maximum of 4.0 w/o in the U-235 isotope. The maximum H/U atomic ratio, considering all sources of hydrogenous material within the inner container, shall not exceed 3.0.

(2) Maximum quantity of material per package

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

Total contents not to exceed 200 pounds, with the U-235 content not to exceed 2.95 kg. The contents shall be contained within two (2), 9-3/4 inch diameter by 12 inch high sealed stainless steel cans. Empty stainless steel cans will be used to make up the remaining space within the inner container.

(ii) For the contents described in 5.(b)(1)(ii):

Total contents not to exceed 315 pounds, with the U-235 content not to exceed 6.25 kilograms. The contents shall be contained within 9-3/4 inch diameter by 12 inch high metal containers. Empty metal cans will be used to make up the remaining space within the inner container.

(iii) For the contents described in 5.(b)(1)(iii)

Total contents not to exceed 250 pounds, with the U-235 content not to exceed 5.0 kilograms. Four (4) steel drums containing not more than 1.3 kilograms U-235 each shall be packaged in the shipping insert within the inner container as shown in Westinghouse Electric Corporation Sketch SKA-252-1 and Drawing C7108D10. The steel drums shall be constructed in accordance with US Military Standard MS 24347 with a maximum ID of 8.5" and a nominal height of 15.4".

(iv) For the contents described in 5(b)(1)(iv):

Total contents not to exceed 250 pounds, with the U-235 content not to exceed 4.0 kilograms. The contents shall be transported in 9-3/4 inch diameter metal containers. Empty metal containers will be used to make up the remaining space within the inner container.

(c) Fissile Class — II and III

(1) Minimum transport index to be shown on label for Fissile Class II.

(i) For the contents described in 5(b)(1)(i): 3.6

(ii) For the contents described in 5(b)(1)(ii), 5(b)(1)(iii), 5(b)(1(iv): 0.5

(2) Maximum number of packages per shipment for Fissile Class III

(i) For the contents described in 5(b)(1)(i): 30

(ii) For the contents described in 5(b)(1)(ii), 5(b)(1)(iii), 5(b)(2)(iv): 200

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

7. Expiration date: September 30, 1987.

REFERENCES

The Babcock & Wilcox Company application dated January 29, 1982.

Supplements dated: August 6 and 20, 1982.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: SEP 07 1982

U.S. Nuclear Regulatory Commission
Transportation Certification Branch
Approval Record
Model No. BB-250-2
Docket 71-5768

By application dated January 29, 1982 and supplemented August 6 and 20, 1982, Babcock & Wilcox Company requested an amendment in conjunction with the request for renewal of Certificate of Compliance No. 5768. It was requested that all supplemental information referenced by the Certificate of Compliance be incorporated into a consolidated application.

A review of the consolidated application confirmed that all appropriate supplement information has been incorporated. The packaging drawing was reviewed and a determination made that all information important to safety is shown on the drawing.

The consolidated application contains new and additional information regarding the type, form, and maximum quantity of material to be shipped in the packaging. The application contained copies of the KENO IV Monte Carlo computer input and output sheets used to establish the subcriticality for the package under normal and accident conditions for the contents and fissile class requested. The staff has reviewed all the KENO cases submitted and found them to represent the cases intended. All single package conditions were subcritical and the arrays of packages were modeled using the KENO geometry option.

The most reactive uranium concentration in water for the inner container was established by parametric ANSIN 1-D calculations. Effective neutron cross-sections were then used for the contents for the UO_2-water bound cases. All number densities and geometric configurations and the moderation were found to be correct.

To support the renewal of the Certificate, which includes an increase in the gross weight of the package, the applicant performed a series of tests on the packaging during the calender year 1981. The packaging was tested to demonstrate compliance with the requirements of both the normal conditions of transport and the hypothetical accident conditions as specified in §§71.35 and 71.36.

The staff reviewed the testing program and the test results and concluded that the package with the increase in gross weight (575 pounds to 650 pounds) satisfies the requirements of 10 CFR Part 71.

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

Date: SEP 07 1982