NRC FORM 618
(6-83)
10 CFR 71

U.S. NUCLEAR REGULATORY COMMISSION

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIALS PACKAGES

1.a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. PACKAGE IDENTIFICATION NUMBER	d. PAGE NUMBER	e. TOTAL NUMBER PAGES
6272	8	USA/6272/B( )	1	3

2. PREAMBLE

a. 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 of Radioactive Materials for Transport and Transportation of Radioactive Material Under Certain Conditions."

b. 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. PREPARED BY *(Name and Address)*:

U.S. Ecology
P.O. Box 7246
Louisville, KY 40207

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION:

Protective Packaging, Inc. application dated June 24, 1974, as supplemented

c. DOCKET NUMBER

71-6272

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.: 6272

(2) Description

A protective overpack having a double-walled, low-carbon steel shell (3/16" outer wall and 20-gauge inside wall) with rigid polyurethane foam (nominally 7" thick) thermal-shock insulation between the walls. The edges of the overpack are reinforced with 10-gauge steel angles welded to the outer face of the walls and internal diagonal 14 guage steel plates. Overpack lid closure is provided by three, 1" steel rods which extend the full width, welded to an end plate at one end and secured by a pin at the other end. Enclosed within the overpack is a bolted and gasketed, 12-gauge low carbon steel inner container. The gross weight of the package is about 6,100 pounds.

(3) Drawings

The overpack is constructed in accordance with Mechanics Research, Inc., Drawing No. 121347, revised to May 21, 1970. The waste M-3 steel bin (inner container) is constructed in accordance with Argonne National Laboratory's Drawing No. CS-2273.

5. (b) Contents

(1) Type and form of material

(i) Dry, solid radioactive material within the waste storage bin; or

(ii) Liquid analytical residues from the dissolution of spent reactor fuel rods, solidified in cement (see table, p. 3 of application*). The cement is contained in 1.5-gal steel can closed with a slip cover lid. The two primary cans are packed in a secondary steel can sealed with a press fit lid (see Figure 2 of application*). The secondary containment package contents are placed within a radiation shield (lid secured with six (6), 1/2"-13UNC bolts with welds in accordance with application*) centered in a DOT Specification 17-C 55-gal steel drum (see Figure 1 of application*). The drum is sealed with styrene-butadiene rubber gasket contained with a standard drum closer and loaded into a M-3 steel bin with polyurethane foam dunnage material (Instapack 200, or equivalent).

* U.S. Department of Energy letter dated April 15, 1983.

(2) Maximum quantity of material per package

The maximum weight of the contents (including dunnage) shall not exceed 3,000 pounds, and:

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

The thermal heat load shall not exceed 5 watts; or

For the contents specified in 5(b)(1)(ii):

The package is limited to 435 ci of mixed fission products and 12 g fissile material.

6. (a) For any package containing water and/or organic substances which could radiolytically generate combustible gases, determination must be made by tests and measurements or by analysis of a representative package such that the following criteria are met over a period of time that is twice the expected shipment time:

(i) The hydrogen generated must be limited to a molar quantity that would be no more than 5% by volume (or equivalent limits for other inflammable gases) of the secondary container gas void if present at STP (i.e., no more than 0.063 g-moles/ft^3 at 14.7 psia and 70°F); or

(ii) The secondary container and cask cavity must be inerted with a diluent to assure that oxygen must be limited to 5% by volume in those portions of the package which could have hydrogen greater than 5%.

6. (continued)

For any package delivered to a carrier for transport, the secondary container must be prepared for shipment in the same manner in which determination for gas generation is made. Shipment period begins when the package is prepared (sealed) and must be completed within twice the expected shipment time.

(b) For any package containing materials with radioactivity concentration not exceeding that for low specific activity material, and shipped within 10 days of preparation, or within 10 days after venting of drums or other secondary containers, the determination in (a) above need not be made, and the time restriction in (a) above does not apply.

7. Contents within the inner container must be either packed full or must be securely braced to prevent movement.

8. The cover of the inner container must be secured by at least 20 bolts (5 per side) of not less than 5/16-inch diameter.

9. Prior to each shipment the inner container lid gasket must be inspected. The gasket must be replaced if inspection shows any defects or every twelve (12) months, whichever occurs first.

10. The package authorized by this cerificate is hereby approved for use under the general license provisions of 10 CFR §71.12.

11. Expiration date: April 30, 1990.

REFERENCES

Protective Packaging, Inc. application dated June 24, 1974.

Supplement dated: January 28, 1975.

U.S. Department of Energy, Chicago Operations Office, supplement dated: April 15, 1983.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: APR 2 4 1985

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

Transportation Certification Branch
Approval Record
Combustible Gas Mixtures

Conditions were imposed on packages containing water and/or organic substances to limit the accumulation of radiolytically generated gases over the shipping period to preclude the possibility of significantly reducing the packaging effectiveness due to explosion.

Part of the conditions included "...it must be determined by tests and measurements of a representative package whether or not...."

There is no reason to believe that calculational methods could not be used as means of determining gas generation. So as not to preclude a valid analysis, part of the condition to limit the accumulation of radiolytically generated gases is revised to read "...it must be determined by tests and measurements or by analysis of a representative package whether or not...."

The analytic approach involves determining the hydrogen generated in the waste by radiolysis based on the absorbed dose of the waste over a given period of time. To satisfy the condition to preclude a combustible mixture, the period since closure and twice the shipping time must be considered. The calculation requires that the properties of the waste are known. These properties may be determined from test and measurement of representative waste forms or from data that is applicable to the waste form. The determination should be documented and retained as part of the records for the shipment.

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

Date: APR 2 4 1985