NRC FORM 618
(6-83)
10 CFR 71

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIALS PACKAGES

U.S. NUCLEAR REGULATORY COMMISSION

1.a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. PACKAGE IDENTIFICATION NUMBER	d. PAGE NUMBER	e. TOTAL NUMBER PAGES
9139	5	USA/9139/A	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*):

General Electric Company
P.O. Box 460
Pleasanton, CA 94566

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION:

General Electric Company application dated March 24, 1980, as supplemented.

c. DOCKET NUMBER 71-9139

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.: 589

(2) Description

A steel encased lead shielded cask for low specific activity material. The cask is a right circular cylinder with 79-inch OD by 80-inch height, and a cavity 74-inch ID by 74-inch height. The 1.5-inch thick lead shield is supported by outer and inner carbon steel shells 0.75-inch and 0.375-inch thick, respectively. The bottom 1.56-inch thick lead shield is supported by outer and inner carbon steel plates 1.0-inch and 0.375-inch thick, respectively. The 1.5-inch thick lead lid shield is supported by outer and inner carbon steel plates 1-inch and 0.5-inch thick, respectively. The carbon steel used is SA516, Grade 70. The lid is attached to the cask with eight (26,000 lb proof load each) ratchet type load binders and sealed with a Buna N O-ring. The cask is equipped with a 3/4-inch drain line, sixteen-hole bolt-down flange (1-inch bolts) and two, 2-1/2-inch diameter lifting lugs. The cask lid seal and lifting lugs are protected by a wooden sacrificial impact limiter (about 8 x 10 inches thick). Gross weight of package and impact limiter, 50,000 lbs.

(3) Drawing

The packaging is constructed in accordance with PX Engineering Company, Inc., Drawing No. 589-L, Sheets 1 through 3, Revision No. 0.

5. (b) Contents

(1) Type and form of material

Dewatered or solidified waste material in sealed secondary containers or solid irradiated hardware, meeting the requirements for low specific activity material.

(2) Maximum quantity of material per package

Greater than Type A quantity of radioactive material with the weight of the contents, secondary containers and shoring not exceeding 20,150 pounds.

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%.

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 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. Shoring must be placed between secondary containers (or activated components) and the cask cavity to prevent movement during normal conditions of transport.

8. The lid lifting lugs must not be used for lifting the cask and must be covered in transit.

CONDITIONS *(continued)*

9. The packaging acceptance tests and maintenance program must be in accordance with Section 7.0 of the application except:

   (a) The lid O-ring seal must be replaced if inspection prior to each shipment shows any defects or every twelve (12) months, whichever occurs first.

   (b) During inactive periods, the maintenance and testing frequency may be disregarded provided that the packaging is brought into full compliance prior to the next use of the package.

10. The package authorized by this certificate must be transported on a motor vehicle, railroad car, aircraft, inland water craft, or hold or deck of a seagoing vessel assigned to sole use of the licensee.

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

12. Expiration Date: July 31, 1985.

REFERENCES

General Electric Application dated March 24, 1980.

Supplement dated: May 29, 1980.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: MAY 22 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: MAY 2 2 1985