

CERTIFICATE OF COMPLIANCE
FOR RADIOACTIVE MATERIALS PACKAGES

U.S. NUCLEAR REGULATORY COMMISSION

1. a. CERTIFICATE NUMBER 6722	b. REVISION NUMBER 8	c. PACKAGE IDENTIFICATION NUMBER USA/6722/A	d. PAGE NUMBER 1	e. TOTAL NUMBER PAGES 3
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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):

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION:

Tennessee Valley Authority
400 Chestnut Street, Tower II
Chattanooga, TN 37401

Tennessee Valley Authority application dated
July 9, 1975, as supplemented.

71-6722

c. DOCKET NUMBER

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.: BS-33-180

(2) Description

The shipping cask is a cylindrical steel weldment with overall dimensions of 84 inches in diameter and 97-1/4 inches in length. The effective cavity is 76-1/2 inches in diameter by 79-1/4 inches long. The outer shell is fabricated of concentric layers consisting of three, one-inch thick and 1/2-inch thick carbon steel plates. The inner half-inch thick shell is separated from the one-inch thick shells by a 1/4-inch thick asbestos sheet. The flange is three inches thick, with 36 tapped holes and a groove to accommodate a silicone O-ring. The top cover is secured to the flange ring by 36, ASTM-A-320, Grade L7 1-1/2-inch bolts. A 10-inch deep steel impact limiter is mounted to the top cover to act as a shock absorber. The cask is mounted to a tie-down frame by sixteen, 1-1/4-inch high strength steel bolts. Other cask features include a drain line, access port to the inner container(s) and a reinforcing steel shell to protect the cask seal. Threaded access plugs are installed on the top of the liner. A bottom side drain is also provided. Maximum gross weight is approximately 51,100 pounds.

(3) Drawings

The packaging is constructed in accordance with the following ATCOR Inc. Drawing Nos.: 0568-C-0024, Rev. E; 0568-D-0022, Rev. E; 0568-D-0023, Rev. D; 0568-C-0026, Rev. B; 0568-A-0013, Rev. B; and 0568-D-0002, Rev. K.

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5. (b) Contents

(1) Type and form of material

Solids or solidified waste, 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 (including containers and shoring) limited to 18,000 pounds and 20 thermal watts.

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/ft³ 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. Dunnage must be provided in the shipping cask cavity sufficient to prevent significant movement of the inner container(s) relative to the outer packaging under normal conditions of transport.

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8. Operating procedures must assure that:

- (i) All threaded pipe plugs in the cask are sealed using an appropriate sealant.
- (ii) The space between the inner container(s) and cask cavity must be dry prior to delivery to a carrier for transport.

- 9. Prior to each shipment, the package lid seal must be inspected. The seal must be replaced with a new silicone O-ring if inspection shows any defects or every twelve (12) months, whichever occurs first.
- 10. All eight (8) lifting shackles must be shrouded by the appropriate covers prior to transport to prevent its use as tie-down devices.
- 11. 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 for the sole use of the licensee.
- 12. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
- 13. Expiration date: November 30, 1985.

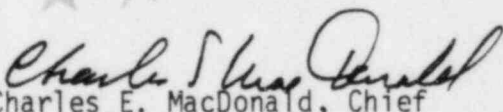
REFERENCES

Tennessee Valley Authority application dated July 9, 1975.

Supplement dated: February 10, 1977.

ATCOR supplements dated: October 29 and November 5, 1975.

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
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Transportation Certification Branch
Division of Fuel Cycle and
Material Safety, NMSS

Date: MAY 22 1985