

CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIALS PACKAGES

U.S. NUCLEAR REGULATORY COMMISSION

1. a. CERTIFICATE NUMBER 9178	b. REVISION NUMBER 3	c. PACKAGE IDENTIFICATION NUMBER USA/9178/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:

Nuclear Packaging, Inc.  
1010 South 336th Street  
Federal Way, WA 98003

NUPAC application dated October 29, 1982,  
as supplemented.

c. DOCKET NUMBER

71-9178

## 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.: NUPAC 7/100

(2) Description

Steel encased lead shielded cask for low specific activity material. The cask is a right circular cylinder with a 75.5-inch ID by 40.75-inch IH cavity. The walls of the cask contain a lead thickness of 3.00 inches encased in 0.38-inch thick inner steel shell and 0.88-inch thick outer steel shell. The top cover and cask bottom are made up of two steel plates ranging in thickness from 2.0 to 3.5 inches. The primary cask lid is secured to the cylindrical cask body by eight, 1-1/4-inch ratchet binders. An optional secondary lid is centered in the primary lid and is secured to the primary lid with eight, 3/4-inch studs and nuts. Each lid is provided with a Neoprene gasket seal. The cask may be provided with an optional 12 gauge stainless steel liner (seal welded along all edges), an optional lid vent line with pipe plug, and an optional 3/4-inch drain line and pipe plug. The cask is provided with four equally spaced lifting/tie-down devices. The primary lid is provided with three lifting lugs and the optional secondary lid is provided with one lifting lug. The cask has a gross weight of 48,900 pounds.

## (b) Drawing

The package is fabricated in accordance with Nuclear Packaging, Inc. Drawing No. X-20-204D, Sheets 1 and 2, Revision No. D.

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5. (b) Contents

(1) Type and form of material

- (i) Dewatered, solids, or solidified waste, meeting the requirements for low specific activity material, in secondary containers; or
- (ii) Activated solid components meeting the requirements for low specific activity material, in secondary containers.

(2) Maximum quantity of material per package

Greater than Type A quantity of radioactive material which may contain fissile material provided the fissile material does not exceed the limits in 10 CFR §71.53. The decay heat load is limited to 17 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/ft<sup>3</sup> 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. Maximum gross weight of the contents, secondary containers, and shoring is limited to 13,000 pounds.

8. Except for close fitting contents, shoring shall be placed between secondary containers and the cask cavity to minimize movement during normal conditions of transport.

9. The lid and shield plug lifting lugs shall not be used for lifting the cask, and shall be covered in transit.

10. The cask shall be provided with either (or both) a drain line or a lid vent line as shown in the drawing in order to provide a method to leak test the package.

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11. In addition to the requirements of Subpart G of 10 CFR Part 71:
- (i) Prior to each shipment, the packaging Neoprene lid seals must be inspected. The seals must be replaced with new seals if inspection shows any defects or every twelve (12) months, whichever occurs first. Cavity drain and vent lines shall be sealed with appropriate sealant applied to the pipe plug threads.
  - (ii) The cask must meet the Acceptance Tests and Maintenance Program of Section 8.0 of the application. In addition, the cask shall be leak tested at least every twelve (12) months in accordance with Appendix 8.4 of the application.
12. The cask body and each cask lid shall be marked in accordance with 10 CFR §71.85(c).
13. The package authorized by this certificate shall be transported on a motor vehicle, railroad car, aircraft, inland watercraft, or hold or deck of a seagoing vessel assigned for the sole use of the licensee.
14. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
15. Expiration date: March 31, 1988.

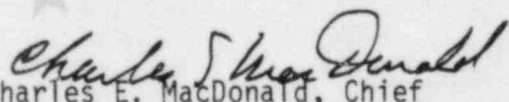
REFERENCES

Nuclear Packaging, Inc. application dated October 29, 1982\*.

Supplements dated: February 18 and March 24, 1983\*.

\* See Docket File No. 71-9159

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

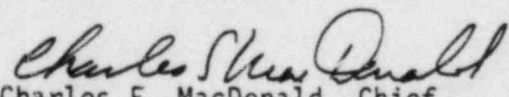
Transportation Certification Branch  
Approval Record  
Combustible Gas Mixtures

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  
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Date: MAY 22 1985