

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
9089	8	USA/9089/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):

b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION:

Westinghouse Hittman Nuclear  
Corporation Inc.  
9151 Rumsey Road  
Columbia, MD 21045

Westinghouse Hittman Nuclear Inc.  
Application dated March 13, 1984,  
as supplemented.

c. DOCKET NUMBER

71-9089

## 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.: HN-100S

## (2) Description

The cask is a steel annulus 84-1/4 inches high by 81-5/8 inches in diameter. The cavity is 75-1/2 inches high by 75-5/8 inches in diameter. The side walls consist of two plies of 1-1/2-inch steel. The 3-inch steel base is integrally welded to the cylinder. The lid is a 3-inch steel plate, stepped to mate with the upper flange of the cylinder. A centrally located shield plug is similarly constructed. The lid and plug are attached with stud-bolts and nuts and sealed with Buna N O-ring gaskets. A plugged drain line and/or optional vent/test in the secondary lid connection is provided. Four skewed lugs welded to the outer shell are used for tie down. There are three cask lifting lugs, three lid lifting lugs, and one shield plug lifting lug. The package gross weight is approximately 43,000 pounds.

## (3) Drawings

The packaging is fabricated in accordance with Hittman Nuclear & Development Corporation Drawing Nos.: C001-5-9128, Rev. 4 and C001-5-9129, Rev. 3.

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5. (b) Contents

(1) Type and form of material.

Process solids, either dewatered, solid or solidified, meeting the requirements for low specific activity material.

(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 weight of the contents, secondary containers, and shoring must not exceed 17,000 pounds and the internal decay heat load must not exceed 2 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/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. Except for close fitting contents, shoring must be placed between the secondary containers and cask cavity to minimize movement during normal conditions of transport.
- 8. The lid and shield plug lifting lugs must not be used for lifting the cask, and shall be covered in transit.
- 9. Packagings without a drain line must be provided within the operational vent/test connection in the cask secondary lid.
- 10. The drain line and optional vent/test connection must be appropriately plugged and sealed prior to transport.

CONDITIONS (continued)

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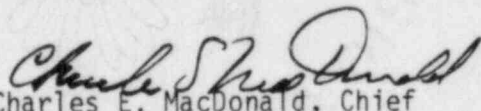
11. Prior to each shipment, the packaging lid seals, if opened (or if the security seal is broken), must be inspected. The seals must be replaced with new seals if inspection shows any defects or every twelve months, whichever occurs first.
12. By September 1, 1984, the packaging must be leak tested at least once every twelve months in accordance with Leak Test Procedure STD-P-02-002, Rev. 0, dated February 2, 1984. Each cask which has been damaged or repaired in the area of a seal must also be tested prior to subsequent use; normal gasket maintenance does not require a subsequent test.
13. Packagings fabricated after November 30, 1983, must be constructed of A-516, Grade 70 carbon steel.
14. The package authorized by this certificate must 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.
15. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
16. Expiration date: November 30, 1988.

REFERENCES

Westinghouse Hittman Nuclear Incorporated application dated March 13, 1984.

Supplement dated: April 19, 1985.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date: MAY 06 1985



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

Transportation Certification Branch

Approval Record

Model No. HN-100S Package

Docket No. 71-9089

By application dated April 19, 1985, Westinghouse Hittman Nuclear Incorporated requested an amendment to the Model No. HN-100S package. The amendment provides for an alternate method of installing the optional drain plug to the package. The change has no significant impact on the ability of the package design to meet the requirements of 10 CFR Part 71.

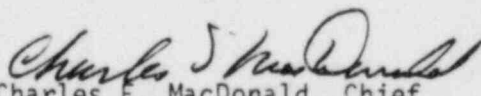
COMBUSTIBLE GAS MIXTURES

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, NRC

Date: MAY 06 1985