

**CERTIFICATE OF COMPLIANCE  
FOR RADIOACTIVE MATERIALS PACKAGES**

1. CERTIFICATE NUMBER 7181	2. REVISION NUMBER 5	3. PACKAGE IDENTIFICATION NUMBER USA/9181/B(U)	4. PAGE NUMBER 1	5. TOTAL NUMBER PAGES 2
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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 and Transportation of Radioactive Material."
- 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. ISSUED TO (Name and Address)  
b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION

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

Nuclear Packaging, Inc. application dated  
dated March 31, 1983, as supplemented.

c. DOCKET NUMBER 71-9181

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.: PAS-2 and PAS-2A
- (2) Description

A post accident liquid sampling container, the packaging consists of an outer overpack, inner overpack, containment vessel or optional secondary containment vessel (Model No. PAS-2A), sample shield, and a sample vial. The outer overpack is 32" OD x 48" high constructed with an outer shell of low carbon steel and an inner shell of fiberglass. The annulus between the shells is filled with foam having a density of approximately three pounds per cubic foot. The inner overpack consists of a Department of Transportation Specification 17H steel drum lined with rigid polyurethane foam cut to fit the outside dimensions of the primary containment vessel. The optional secondary containment vessel is fabricated from carbon or stainless steel (17.7" OD x 24-3/4" high) provided with a Viton O-ring and eight, 5/16" cap screws. The primary containment vessel is equipped with a test port. The sample shield consists of a lead filled steel weldment (16.5" OD x 22.75" high) provided with four shielded wall penetrations and a shielded lid (all gasketed with Viton O-rings). The 3-3/4" ID x 8-1/4" high sample shield cavity contains a valved sample vial surrounded by absorbent vermiculite and lead shot. The vial, which serves as the secondary containment vessel, may contain about 50 milliliters of liquid (reactor coolant water sample). The gross weight of the package is approximately 2,400 pounds.

(3) Drawings

The packages are constructed in accordance with Nuclear Packaging, Inc. Drawing Nos.: X-20-220SNP, Sheets 1 through 4, Rev. C and X-107-500SP, Rev. A.

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## 5. (b) Contents

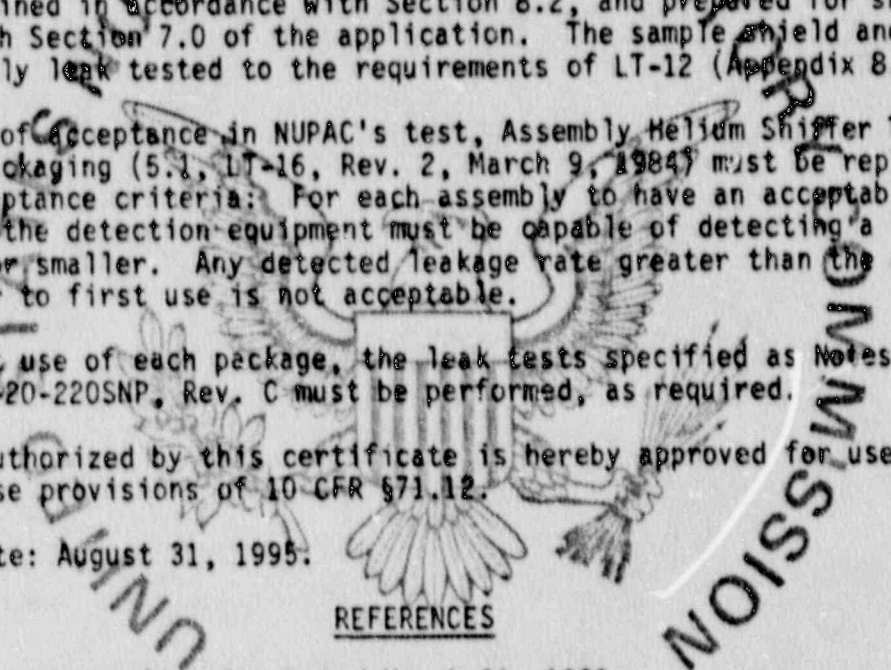
## (1) Type and form of material

Radioactive material in the form of liquid coolant sample obtained from a reactor coolant system.

## (2) Maximum quantity of material per package

50 milliliters with a thermal heat load not to exceed 3.0 watts.

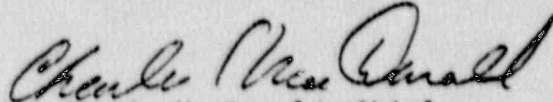
6. In addition to the requirements of Subpart G of 10 CFR Part 71, each package prior to first use must meet the acceptance tests and criteria specified in Section 8.1, must be maintained in accordance with Section 8.2, and prepared for shipment in accordance with Section 7.0 of the application. The sample shield and sample vial must be annually leak tested to the requirements of LT-12 (Appendix 8.3.2).
7. The statement of acceptance in NUPAC's test, Assembly Helium Shifter Test for the NUPAC PAS-2 Packaging (5.1, LT-16, Rev. 2, March 9, 1984) must be replaced by the following acceptance criteria: For each assembly to have an acceptably low leakage rate, the detection equipment must be capable of detecting a leak of  $10^{-4}$  scc/sec or smaller. Any detected leakage rate greater than the acceptance criteria prior to first use is not acceptable.
8. Prior to first use of each package, the leak tests specified as Notes 8 and 14 on Drawing No. X-20-220SNP, Rev. C must be performed, as required.
9. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR §71.12.
10. Expiration date: August 31, 1995.

The seal of the U.S. Nuclear Regulatory Commission is centered on the page. It features an eagle with wings spread, perched atop a shield. The shield is divided into four quadrants. Above the eagle, the words "U.S. NUCLEAR REGULATORY COMMISSION" are written in a circular arrangement. Below the eagle, the words "NUCLEAR REGULATORY COMMISSION" are written in a larger, bold, sans-serif font, also in a circular arrangement. The seal is partially overlaid by the text of the certificate conditions.  
REFERENCES

Nuclear Packaging, Inc. application dated March 31, 1983.

Supplements dated: September 9, 1983; February 17, March 9, and December 19, 1984; April 9, 1985; June 2, 1986; February 11, 1987; February 27, and October 27, 1989; and May 31, 1990.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

A handwritten signature in cursive script, reading "Charles E. MacDonald".  
Charles E. MacDonald, Chief  
Transportation Certification Branch  
Division of Fuel Cycle and  
Material Safety, NMSS

Date: AUG 14 1990



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

APPROVAL RECORD  
Model Nos. PAS-2 and PAS-2A Package  
Certificate of Compliance No. 9181  
Revision No. 5

By application dated February 27, 1989, as supplemented on October 27, 1989 and May 31, 1990, NUPAC requested renewal of Certificate of Compliance No. 9181 for the Model Nos. PAS-2 and PAS-2A package. The application also requested approval of a revised outer overpack. The package previously incorporated the Model No. N-55 overpack authorized by Certificate of Compliance No. 9071. In this application Nuclear Packaging provided drawings of a revised outer overpack for the package which is similar to the Model No. N-55 overpack.

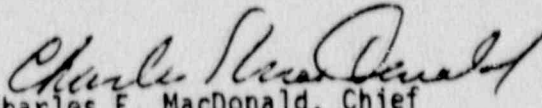
The application included a revised Safety Analysis Report (SAR) which was consolidated and reformatted to conform with Regulatory Guide 7.9. The consolidation and elimination of references to the NUPAC N-55 resulted in extensive rework and a more rigorous analysis of Section 3.0 THERMAL EVALUATION.

A combination of full scale tests and engineering analysis were performed to demonstrate that the package met the Part 71 requirements for the general standards for packages, lifting and tiedown devices, normal conditions of transport and hypothetical accident conditions. The drop test were conducted with the optional secondary container included in the package. The staff reviewed the engineering analysis and the full scale test results and concluded that the package meets the structural requirements of Part 71. The staff also determined that the removal of the optional secondary container would not alter the package's ability to meet the requirements of 10 CFR Part 71.

The applicant performed a thermal analysis of the package to determine the temperature distribution in the package during normal transport and hypothetical accident conditions and to establish the effects these temperatures have on the package. All major components were considered in the analysis including the containment system and overpack. The applicant analyzed the thermal behavior of the package using the thermal network analyser program THAN. NRC staff used the HTASI/HEATING 6.1 computer codes from the SCALE library (NUREG/CR-200). The thermal behavior predicted in the application for each case was found to be consistent with that predicted by staff evaluation. The staff concluded that the package meets the thermal requirements 10 CFR Part 71.

The applicant identified the contents of the package as a 50cc sample of reactor coolant taken from the post accident sampling system. Maximum activity of the contents is estimated to be 250 curies. The applicant calculated that the dose at six feet from the surface of the package would be 9.5 mR/hour. NRC staff used the QAD computer code and verified the applicants calculations of a surface dose under 200 mrem/hr and a dose at two meters from the surface under 10 mrem/hr. Prior to any shipment, dose reading will be taken to verify that the package meets the requirements of 10 CFR Part 71.

The staff concluded that the Nuclear Packaging, Inc. application, as supplemented, provides adequate documentation of the packaging and that based on the statements and representations in the application as supplemented, the Model Nos. PAS-2 and PAS-2A packages meet the requirements of 10 CFR Part 71.

  
Charles E. MacDonald, Chief  
Transportation Branch  
Division of Safeguards  
and Transportation, NMSS

Date: AUG 14 1990