NRC FORM 616 (6-85) 10 CFR 71	CERTIFIC FOR RADIOAC	U.S. NUCLEAR REGULATORY COMMISSION CERTIFICATE OF COMPLIANCE FOR RADIOACTIVE MATERIALS PACKAGES		
1 & CERTIFICATE NUMBER	D REVISION NUMBER	C PACKAGE IDENTIFICATION	NUMBER d. PAGE NUMBE	R e. TOTAL NUMBER PAG
 PREAMBLE This certificate is issued to certify that of Federal Regulations. Part 71, "Paotic bits the certificate does not relieve the c applicable regulatory agencies, inclu inclu 	the packaging and contents of kaging and Transportation of onsignor from compliance wit ding the government of any o	lescribed in Item 5 below, meets the Radioactive Material." h any requirement of the regulation country through or into which the p	upplicable safety standards set f s of the U.S. Department of Tra ackage will be transported.	lorth in Title 10, Code
3 THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALY a ISSUED TO (Name and Address) Westinghouse Hittman Nuclear Incorporated 1256 N. Church Street Moorestown, NJ 08057		VSIB REPORT OF THE PACKAGE DESIGN OR APPLICATION b TITLE AND IDENTIFICATION OF REPORT OR APPLICATION: Westinghouse Hittman Nuclear Incorporated application dated May 26, 1987 c DOCKET NUMBER 71-9151		
4 CONDITIONS This certificate is conditional upon fulfil	ling the requirements of 10 C	FR Part 71, as applicable, and the c	onditions specified below.	
 (a) Packagin (1) Mod (2) Des Ste The by 3/8 sid 1-3 bas for out inn com wel sea pos rac com ste Neo pro Grad 	el Nos.: HN-100 Series cription el encased, lead casks are right 81-3/4 (or 81-1/2 (or 73-5/8) incl e walls consists /4-)inch lead she e is comprised of m a 4-inch thick er steel shells of er and outer stee prised of two, 2- ded together to r led by a Neoprene itive closure of het binders. The prised of two, 2- el plate stepped prene gasket, and vide positive clo de 70 or A-537, 0	Series 3, CNS 14-17 1, and NES-1. shielded casks for circular cylinders 2) inches in diamete hes high by 75-1/2 i of a 3/8-inch thick ell, and a 7/8-inch f two, 2-inch thick base which is integ of the side wall. A el shells of the sid inch thick steel pl nate with the steel e gasket located bet the lid is accompli e lid contains a cen inch thick steel pl and welded. The sh d eight, 3/4-inch st osure. The packagin Class 1, carbon steel	O Series III, LN low specific acti 81-1/2 (or 81-5/8 r. The cask cavi nches in diameter inner steel shel thick outer steel steel plates weld rally welded to t steel flange is e wall at the top ates, which are s flange. The cask ween the lid and shed by eight, 1- trally located sh ates and one, 1-i ield plug is seal uds and nuts are gs are constructed 1. The outer she	14-170 ivity materia) inches high ities are 73- . The cask 11, a 1-7/8-(0 shell. The ded together the inner and welded to the shell. The led together the inner and welded to the steel flange -3/4-inch hield plug inch thick led by a used to ed of A-516, all will have
a m Mod	el Number	OD, inche	s Lead	Tk, inches
HN- CNS LN NES	100 Series 3 14-170 Series I 14-170 Series 1 -1	11 81-3/4 81-1/2 81-3/4 81-3/4	1	1-7/8 1-3/4 1-7/8 1-7/8

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5.(a) (2) Description (continued)

Tie-down is accomplished by four tie-down lugs welded to the cask body. There are four cask lifting lugs, three lid lifting lugs, and one shield plug lifting lug. The package gross weight is approximately 53,000 pounds.

(3) Drawings

The Model No. HN-100 Series 3 packaging is fabricated in accordance with Hittman Nuclear & Development Corp. Drawing Nos.: C001-5-9138, Rev. 11; C001-5-9139, Rev. 8; C001-5-9140, Rov. 8; C001-5-9141, Rev. 3; C001-5-9142, Rev. 1; C001-5-9143, Rev. 8; and COO1-5-9144, Rev. 3. Optional stainless steel shielding insert in accordance with Drawing Nos.: STD-02-035. Rev. A; STD-02-036, Rev. A; and STD-02-037, Rev. 2.

The Model No. CNS 14-170 Series III packacing is fabricated in accordance with Chem-Nuclear Systems, Inc. Drawing Nos .: C-110-D-0016, Sheets 1 and 2, Rev. C; C-110-D-0017, Sheets 1 and 2, Rev. C; C-110-D-0018, Sheets 1 and 2, Rev. C; and C-110-D-0019, Rev. B.

The Model No. LN 14-170 Series 1 packaging is fabricated in accordance with LN Technologies Corporation Drawing Nos.: 8916 M 2001, Rev. 0; 8916 M 2002, Rev. 0; 8916 M 2003, Rev. 0; 8916 M 2004, Rev. 0; 8916 M 2005, Rev. 0; and 8916 M 2006, Rev. 0.

The Model No. NES-1 packaging is fabricated in accordance with Nuclear Energy Services Drawing Nos. 83E1903, Rev. 1; and 83E1909, Rev. 0.

(b) Contents

(1) Type and form of material

Process solids, either dewatered, solid or solidified, 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 weight of the contents, optional shield insert, and secondary containers shall not exceed 17,800 pounds. When the shield insert is not installed in the cask, the internal decay heat load shall not exceed 7 watts. When the shield insert is installed in the cask, the internal decay heat load shall not exceed 28 watts.

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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 contaiger 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.

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- (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. In addition to the requirements of Subpart G of 10 CFR Part 71:
 - (a) Prior to each shipment, the packaging lid seals, if opened (or if security seal is broken), must be inspected. The seals must be replaced with new seals if inspection shows any defects or every 12 months, whichever occurs first.
 - (b) Each package must meet the Acceptance Tests and Maintenance Program of:

Model No. HN-100 Series 3

Section 7.0 of the application. Gamma scan for the shielding acceptance may be based on lead equivalence for lead and steel with all readings within 2.3 inches $\pm 10\%$ on a 4-inch grid.

Model No. CNS 14-170 Series III

Section 4.0 of Chem-Nuclear Systems, Inc. Document No. CNSI 9151-S1, Rev. 2.

Model No. LN 14-170 Series I

LN Technologies Corporation Procedures WM-011, Rev. G; WM-012, Rev. H; and WM-013, Rev. F.

Model No. NES-1

NES Procedures 83A1902, Rev. 0 and 83A1907, Rev. 0, except that secondary lid gasket dimensions must be in accordance with the packaging drawings.

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7. (c) The package shall be prepared for shipment and operated in accordance with the Operating Procedures of:

Model No. HN-100 Series 3

Section 6.0 of the application.

Model No. CNS 14-170 Series III

Section 3.0 of the application.

Model No. LN 14-170- Series I

LN Technologies Corporation Procedure WM-014, Rev. L.

Model No. NES-1

NES Procedure 83A1908 Rev. 2.

- 8. Torque requirements for closure fasteners:
 - (a) Primary lid ratachet binders must be torqued to 175-200 ft-lbs.
 - (b) Secondary lid bolts must be torqued to 120 ± 10 ft-lbs.
- 9. Seals which show any visual defects (cracking, gouging, tearing, etc.) must be repaired in accordance with:

Model Nos. HN-100 Series 3 and CNS 14-170 Series III

Note No. 3 on Hittman Drawing No. COO1-5-9138, Rev. 11; or, replaced with a new seal.

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Model No. LN 14-170 Series 1

LN Technologies Corporation Procedure WM-012, Rev. H, Section 7.1 (joint angle must be approximately 45°); or, replaced with a new seal.

Model No. NES-1

NES Procedure 83A1907, Rev. 0, Section 4, except that secondary lid gasket dimensions must be in accordance with the packaging drawings; or, replaced with a new seal.

- 10. 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.
- 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, 1992.

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REFERENCES

Westinghouse Hittman Nuclear Incorporated application dated May 26, 1987.

Chem-Nuclear Systems, Inc. supplements dated: November 16, 1982; and June 9, September 5, and November 19, 1986.

Nuclear Energy Services supplements dated: February 26 and May 12, 1986; and July, 10, 1987.

LN Technologies Corporation supplement dated: April 28, May 5, and July 7, 1987.

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

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

Date:

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UNITED STATES NUCLEAR REGULATORY COMMISSION WASHINGTON, D. C. 20655

Model Nos. HN-100 Series 3, CNS 14-170 Series III, LN 14-170 Series 1, and NES 1 Packages Docket No. 71-9151 Revision No. 11

By application dated May 26, 1987, Westinghouse Hittman Nuclear Incorporated requested renewal of Certificate of Compliance No. 9151 for the Model No. HN-100 Series 3 package. In support of the request for renewal the applicant submitted a consolidated application which incorporated the January 9, 1986 application and all pertinent Westinghouse Hittman Nuclear supplement information referenced by the certificate of compliance. The safety analysis report was revised to remove typographical errors and to provide consistency between the report and the packaging drawings in the area of gasket design.

A review of the consolidated application confirmed that all appropriate supplement information has been incorporated into the application. No changes have been requested or made to the package by the applicant since approval of the latest Westinghouse Hittman Nuclear Incorporated supplement dated July 22, 1986.

By application dated April 28, 1987, as supplemented, LN Technologies, in conjunction with the certificate renewal, submitted a consolidated application for the Model No. LN 14-170 Series 1 package. The application included the information contained in the LN Technologies Corporation application dated November 20, 1986 along with relevant information from the NUS Process Service Corporation supplements referenced by the certificate. NUS Process Service Corporation and London Nuclear Services merged to form LN Technologies Corporation as discussed in the November 20, 1986 application.

A review of the consolidated application confirmed that all appropriate supplement information has been incorporated into the application. No changes have been requested or made to the package by the applicant since approval of the LN Technologies Corporation supplement dated November 20, 1986.

By application dated June 30, 1987, Chem-Nuclear Systems, Inc. requested renewal of the Certificate of Compliance No. 9151 for the Model No. CNS 14-17J Series III package. No changes have been requested or made to the package by the applicant since approval of the latest Chem-Nuclear Systems, Inc. supplement dated November 19, 1986.

By application dated July 10, 1987, Nuclear Energy Services requested renewal of Certificate of Compliance No. 9151 for the Model No. NES-1 package. In conjunction with the request for renewal a revised Operating Procedure, 83A1908, Rev. 2, was submitted. The operating procedures have been updated to comply with the certificate of compliance conditions pertaining to the operation of the packages. No changes have been requested or made to the package by the applicant since approval of the latest Nuclear Energy Systems supplement dated May 12, 1986. The certificate of compliance has been conditioned to require the packages to be prepared for shipment and operated in accordance with their respective operating procedures. This condition effectively incorporates the specific operating requirements previously cited in Conditions 7, and 8 of the certificate.

The certificate of compliance has been renewed until July 31, 1992.

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

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