

**CERTIFICATE OF COMPLIANCE  
FOR SPENT FUEL STORAGE CASKS**

The U.S. Nuclear Regulatory Commission is issuing this certificate of compliance pursuant to Title 10 of the *Code of Federal Regulations*, Part 72, "Licensing Requirements for Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste" (10 CFR Part 72). This certificate is issued in accordance with 10 CFR 72.238, certifying that the storage design and contents described below meet the applicable safety standards set forth in 10 CFR Part 72, Subpart L, and on the basis of the Final Safety Analysis Report (FSAR) of the cask design. This certificate is conditional upon fulfilling the requirements of 10 CFR Part 72, as applicable, and the conditions specified below.

Certificate No.	Effective Date (Certificate)	Expiration Date	Docket No.	Amendment No.	Amendment Effective Date	Package Identification No.
1004	1/23/95	1/23/2015	72-1004	0	1/23/1995	USA/72-1004
	Renewed Effective Date	Renewed Expiration Date		Revision No	Revision Effective Date	
	12/11/17	1/23/2055		1	4/25/2017	

Issued To: (Name/Address)

TN Americas LLC  
7135 Minstrel Way, Suite 300  
Columbia, MD 21045

Safety Analysis Report Title

VECTRA Technologies, Inc., a.k.a. Pacific Nuclear Fuel Services Inc., Safety Analysis Report for the Standardized NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel.

**CONDITIONS**

1. Deleted
2. PREAMBLE This certificate is issued to certify that the cask and contents, described in item 5 below, meet the applicable safety standards set forth in Title 10, *Code of Federal Regulations*, Part 72, "Licensing Requirements for the Independent Storage of Spent Nuclear Fuel, High-Level Radioactive Waste, and Reactor-Related Greater Than Class C Waste."
3. THIS CERTIFICATE is issued on the basis of a safety analyses report (SAR) of the cask design, Model No. Standardized NUHOMS®-24P and NUHOMS®-52B and the determination that the cask design meets the applicable requirements of 10 CFR Part 72 as discussed in the staff's safety evaluation report (SER), "Safety Evaluation Report of Vectra Technologies, Inc. a.k.a. Pacific Nuclear Fuel Services, Inc. Safety Analysis Report for the Standardized NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel," dated December 1994.
4. CONDITIONS This certificate is conditional upon fulfilling the requirements of 10 CFR Part 72 Subpart L, as applicable, and the conditions specified below.
5. CASK:
  - a. Model Nos. Standardized NUHOMS®-24P, -52B

The two digits refer to the number of fuel assemblies stored in the dry shielded canister (DSC), the character P for pressurized water reactor (PWR) or B for boiling water reactor (BWR) is to designate the type of fuel stored.

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## b. Description

The Standardized NUHOMS® System and its analyses and operations are described in the SAR (Docket 72-1004) identified previously. The U.S. Nuclear Regulatory Commission has reviewed the SAR in the safety evaluation report (SER) identified previously.

The system which is being certified is described in Sections 1, 3, 4, 5, 6, 7 and 8 of the SAR and in the NRC's SER accompanying the SAR. (The system drawings, which reflect this description, are contained in Appendix E of the SAR.) The Standardized NUHOMS® System is a horizontal canister system composed of a steel DSC; a reinforced concrete horizontal storage module (HSM), and a transfer cask (TC). The welded DSC provides confinement and criticality control for the storage and transfer of irradiated fuel. The concrete module provides radiation shielding while allowing cooling of the DSC and fuel by natural convection during storage. The TC is used for transferring the DSC from/to the Spent Fuel Pool Building to/from the HSM. The principal component subassemblies of the DSC are the shell with integral bottom cover plate and shield plug and ram/grapple ring, top shield plug, top cover plate, and basket assembly. The shell length is fuel-specific. The internal basket assembly is composed of guide sleeves, support rods, and spacer disks. This assembly is designed to hold 24 PWR fuel assemblies or 52 BWR assemblies. It aids in the insertion of the fuel assemblies, enhances subcriticality during loading operations, and provides structural support during a hypothetical drop accident. The DSC is designed to slide from the transfer cask into the HSM and back without undue galling, scratching, gouging, or other damage to the sliding surfaces.

The HSM is a reinforced concrete unit with penetrations located at the top and bottom of the side walls for air flow. The penetrations are protected from debris intrusions by wire mesh screens during storage operation. The DSC Support Structure, a structural steel frame with rails, is installed within the HSM module to provide for sliding the DSC in and out of the HSM and to support the DSC within the HSM.

The TC is designed and fabricated as a lifting device to meet NUREG-0612 and ANSI N14.6 requirements. It is used for transfer operations within the Spent Fuel Pool Building and for transfer operations to/from the HSM. The TC is a cylindrical vessel with a bottom end closure assembly and a bolted top cover plate. Two upper lifting trunnions are located near the top of the cask for downending/uprighting and lifting of the cask in the Spent Fuel Pool Building. The lower trunnions, located near the base of the cask, serve as the axis of rotation during downending/uprighting operations and as supports during transport to/from the independent spent fuel storage installation (ISFSI).

With the exception of the TC, fuel transfer and auxiliary equipment necessary for ISFSI operations are not included as a part of the Standardized NUHOMS® System to be reviewed for a certificate of compliance under 10 CFR Part 72, Subpart L. Such equipment may include, but is not limited to, special lifting devices, the transfer trailer, and the skid positioning system.

## c. Drawings

The drawings for the dry irradiated fuel storage canister system are contained in Appendix E of the SAR.

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## d. Basic Components

The basic components of the Standardized NUHOMS® System that are important to safety are the DSC, HSM, and TC. These components are described in Section 4.2 of the SAR.

6. Fabrication activities shall be conducted in accordance with a quality assurance program as described in Section 11.0 of the SAR.
7. Notification of fabrication schedules shall be made in accordance with the requirements of 10 CFR 72.232(d).
8. Standardized NUHOMS® Systems, which are authorized by this certificate, are hereby approved for general use by holders of 10 CFR Part 50 and 10 CFR Part 52 licenses for nuclear reactors at reactor sites under the general license issued pursuant to 10 CFR 72.210, subject to the conditions specified by 10 CFR 72.212 and the attached Conditions for System Use.

## 9. Changes, tests, and experiments

The holder of this certificate of compliance may:

- (1) Make changes in the cask design described in the Safety Analysis Report,
- (2) Make changes in the procedures described in the Safety Analysis Report, or
- (3) Conduct tests or experiments not described in the Safety Analysis Report,

without prior Commission approval, unless the proposed change, test or experiment involves a change in the certificate of compliance, an unreviewed safety question, a significant increase in occupational exposure or a significant unreviewed environmental impact.

A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question:

- (1) If the probability of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the Safety Analysis Report may be increased; or
- (2) If a possibility for an accident or malfunction of a different type than any evaluated previously in the Safety Analysis Report may be created; or
- (3) If the margin of safety as defined in the basis for any technical specification or limit is reduced.

The holder of this certificate of compliance shall maintain records of changes in the cask design and of changes in procedures if the changes constitute changes in the cask design or procedures described in the Safety Analysis Report. The holder of this certificate of compliance shall also maintain records of tests and experiments it conducts that are not described in the Safety Analysis Report. These records must include a written safety evaluation that provides the bases for the determination that the change, test or experiment does not involve an unreviewed safety question. The records of changes in the cask design and of changes in procedures and records of tests or experiments must be maintained until the Commission terminates the certificate.

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The holder of this certificate of compliance shall annually furnish to the Director, Office of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, DC 20555, a report containing a brief description of changes, tests, and experiments made under this provision, including a summary of the safety evaluation of each. Any such report submitted by a holder of this certificate of compliance will be made a part of the public record pertaining to this certificate.

The holder of this certificate of compliance who desires:

- (1) To make changes in the cask design or the procedures as described in the Safety Analysis Report, or to conduct tests or experiments not described in the Safety Analysis Report, that involve an unreviewed safety question, a significant increase in occupational exposure, or a significant unreviewed environmental impact, or
- (2) To change the Certificate of Compliance

shall submit an application for amendment of the certificate.

**10. CONTINUED USE OF PREVIOUS VERSION OF AMENDMENT NO. 0**

A general licensee may continue to use the previous version of this certificate, Amendment No. 0, dated January 23, 1995, until October 22, 2017. By October 22, 2017, general licensees using Amendment No. 0, dated January 23, 1995, must have implemented the changes authorized by this revision and completed the evaluation described below.

The general licensee shall perform written evaluations before use and before applying the changes authorized by this revised certificate which establish that the cask, once loaded with spent fuel or once the changes authorized by this revised certificate have been applied will conform to the terms, conditions, and specifications of this revised certificate. The results of this review shall be documented in accordance with 10 CFR 72.212(b)(5) no later than October 22, 2017.

In applying the changes authorized by this revised certificate, the general licensee shall register each such cask with the Nuclear Regulatory Commission no later than 30 days after applying the changes authorized by the revised certificate. The registration shall include the information required by 10 CFR 72.212(b)(2).

**11. FSAR UPDATE FOR RENEWED COC**

The CoC holder shall submit an updated FSAR to the Commission, in accordance with 10 CFR 72.4, within 90 days of the effective date of the renewal. The updated FSAR shall reflect the changes and CoC holder commitments resulting from the review and approval of the renewal of the CoC. The CoC holder shall continue to update the FSAR pursuant to the requirements of 10 CFR 72.248.

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Page 5 5**12. 72.212 EVALUATIONS FOR RENEWED COC USE**

Any general licensee that initiates spent fuel dry storage operations with the Standardized NUHOMS® Horizontal Modular Storage System after the effective date of the renewal of the CoC and any general licensee operating a Standardized NUHOMS® Horizontal Modular Storage System as of the effective date of the renewal of the CoC, including those that put additional storage systems into service after that date, shall:

- a. as part of the evaluations required by 10 CFR 72.212(b)(5), include evaluations related to the terms, conditions, and specifications of this CoC amendment as modified (i.e., changed or added) as a result of the renewal of the CoC;
- b. as part of the document review required by 10 CFR 72.212(b)(6), include a review of the FSAR changes resulting from the renewal of the CoC and the NRC Safety Evaluation Report related to the renewal of the CoC; and
- c. ensure that the evaluations required by 10 CFR 72.212(b)(7) and (8) capture the evaluations and review described in (a.) and (b.) of this CoC condition.

**13. AMENDMENTS AND REVISIONS FOR RENEWED COC**

All future amendments and revisions to this CoC shall include evaluations of the impacts to aging management activities (i.e. time-limited aging analyses and aging management programs) to assure they remain adequate for any changes to SSCs within the scope of renewal.

FOR THE NUCLEAR REGULATORY COMMISSION

**/RA Meraj Rahimi Acting for/**John McKirgan, Chief  
Spent Fuel Licensing Branch  
Division of Spent Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Attachment: A. Technical Specifications

Dated: December 4, 2017