

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

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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. 1029	Effective Date (Certificate) 02/05/2003	Expiration Date 02/05/2023	Docket No. 72-1029	Amendment No. 3	Amendment Effective Date 02/23/2015	Package Identification No. USA/72-1029
	Renewed Effective Date 10/27/2021	Renewed Expiration Date 02/05/2063		Revision No 0	Revision Effective Date N/A	

Issued To: (Name/Address)

TN Americas LLC
7160 Riverwood Drive, Suite 200
Columbia, MD 21046

Safety Analysis Report Title

TN Americas LLC, "Final Safety Analysis Report for the Standardized Advanced NUHOMS® Horizontal Modular Storage System for Irradiated Nuclear Fuel"

CONDITIONS

This certificate is conditioned upon fulfilling the requirements of 10 CFR Part 72, as applicable, the attached Appendix A (Technical Specifications), and the conditions specified below:

1. CASK:**a. Model No. Standardized Advanced NUHOMS®-24PT1, 24PT4, and 32PTH2**

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, and T is to designate that the DSC is intended for transportation in a 10 CFR Part 71 approved package, and the character H refers to recent designs qualified for fuel with burnup greater than 45 GWd/MTU. (Note that the 24PT4 DSC is qualified for fuel with burnup greater than 45 GWd.MTU but lacks the H designation).

b. Description

The Standardized Advanced NUHOMS® System is certified as described in the updated final safety analysis report (UFSAR) and in the U. S. Nuclear Regulatory Commission's (NRC's) safety evaluation report (SER). The Standardized Advanced NUHOMS® System is a horizontal canister system composed of a steel dry shielded canister (DSC), a reinforced concrete advanced horizontal storage module (AHSM/AHSM-HS), and a transfer cask (TC). The Standardized Advanced NUHOMS® is similar to the Standardized NUHOMS® except that it has been enhanced to withstand high seismic spectra and to reduce radiological doses. 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 AHSM/AHSM-HS.

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1.b. Description (continued)

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 for the 24PT1 and 24PT4 DSCs is composed of guide sleeves, support rods, and spacer disks. This assembly is designed to hold 24 PWR fuel assemblies. For the 32PTH2 DSC, the basket assembly consists of welded plates and tubes that make up a grid of fuel compartments supported by basket rails, designed to accommodate 32 PWR assemblies.

The basket assembly 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 AHSM/AHSM-HS and back without undue galling, scratching, gouging, or other damage to the sliding surfaces.

The AHSM/AHSM-HSs are reinforced concrete unit with penetrations for air flow, and is designed to store 24PT1 and 24PT24 DSCs with up to 24.0 kW decay heat. The AHSM-HS is an enhanced version of the AHSM, designed to store a 32PTH2 DSC with up to 37.2 kW decay heat. 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 AHSM/AHSM-HS module to provide for sliding the DSC in and out of the AHSM/AHSM-HS and to support the DSC within the AHSM/AHSM-HS. AHSMs/AHSM-HSs are arranged in arrays to minimize space and maximize self-shielding. Adjacent AHSMs/AHSM-HSs are keyed and tied to provide maximum resistance to environmental conditions including high seismic loads.

The TC is used for transfer operations within the Spent Fuel Pool Building and for transfer operations to/from the AHSM/AHSM-HS. 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 part of the Standardized Advanced NUHOMS® System referenced in this Certificate of Compliance (CoC). Such site-specific 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 Standardized Advanced NUHOMS® System are contained in Section 1 and A.1 of the UFSAR.

d. Basic Components

The basic components of the Standardized Advanced NUHOMS® System that are important to safety are the DSC, AHSM/AHSM-HS, and the TC. These components are described in Sections 2.5, A.2.5, and B.2.5, Tables 2.5-1, A.2.5-1 and B.2.5-1 of the UFSAR.

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2. OPERATING PROCEDURES

Written operating procedures shall be prepared for cask handling, loading, movement, surveillance, and maintenance. The user's site-specific written operating procedures shall be consistent with the technical basis described in Chapters 8, A.8, and B.8 of the UFSAR.

3. ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

Written cask acceptance tests and maintenance program shall be prepared consistent with the technical basis described in Chapters 9, A.9, and B.9 of the UFSAR.

Written cask acceptance tests and maintenance program shall be prepared consistent with the technical basis described in Chapters 9, A.9, and B.9 of the UFSAR.

4. If it is necessary to engage active cooling for the OS200FC Transfer Cask during transfer of a loaded 32PTH2 DSC, the appropriate NRC Division of Spent Fuel Storage and Transportation Project Manager shall be notified of the occurrence within 30 days, via electronic correspondence. Appropriate detail should be provided, including the date and time of the occurrence, when the active cooling was initiated, the facility at which the transfer was taking place, and the current state of the DSC.

5. QUALITY ASSURANCE

Activities in the areas of design, purchase, fabrication, assembly, inspection, testing, operation, maintenance, repair, modification of structures, systems and components, and decommissioning that are important to safety shall be conducted in accordance with a Commission-approved quality assurance program which satisfies the applicable requirements of 10 CFR Part 72, Subpart G, and which is established, maintained, and executed with regard to the cask system.

6. HEAVY LOADS REQUIREMENTS

Each lift of a DSC and TC must be made in accordance with the existing heavy loads requirements and procedures of the licensed facility at which the lift is made. A plant-specific safety review (under 10 CFR 50.59 or 10 CFR 72.48, if applicable) is required to show operational compliance with existing plant-specific heavy loads requirements.

7. APPROVED CONTENTS

Contents of the Standardized Advanced NUHOMS® System must meet the fuel specifications description as provided in the Appendix A to this certificate.

8. DESIGN FEATURES

Features or characteristics for the site, cask, or ancillary equipment must be in accordance with the Appendix A to this certificate.

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9. PRE-OPERATIONAL TESTING AND TRAINING EXERCISE

A dry run training exercise of the loading, closure, handling, unloading, and transfer of the Standardized Advanced NUHOMS® System shall be conducted by the licensee prior to the first use of the system to load spent fuel assemblies. The training exercise shall not be conducted with spent fuel in the canister. The dry run may be performed in an alternate step sequence from the actual procedural guidelines in Chapters 8, A.8, and B.8 of the UFSAR. The dry run shall include but not be limited to the following:

Loading Operations

- a. Fuel Loading
- b. DSC sealing, drying, and backfilling operations
- c. TC downending and transport to the ISFSI
- d. DSC transfer to the AHSM/AHSM-HS

Unloading Operations

- a. DSC retrieval from AHSM/AHSM-HS
- b. Flooding of DSC
- c. Opening of DSC

10. UFSAR UPDATE FOR RENEWED COC

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

11. 72.212 EVALUATIONS FOR RENEWED COC USE

Any general licensee that initiates spent fuel dry storage operations with the Standardized Advanced NUHOMS® Horizontal Modular Storage System after the effective date of the CoC renewal, and any general licensee operating a Standardized Advanced NUHOMS® Horizontal Modular Storage System as of the effective date of the CoC renewal, 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 CoC renewal;
- b. as part of the document review required by 10 CFR 72.212(b)(6), include a review of the UFSAR changes resulting from the CoC renewal and the NRC Safety Evaluation Report related to the CoC renewal; 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.

The general licensee shall complete Condition 11 prior to entering the period of extended operation or no later than one year after the effective date of the CoC renewal, whichever is later.

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12. 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 ensure that they remain adequate for any changes to SSCs within the scope of the CoC renewal.

13. USE OF COC 1004 TRANSFER CASK

General licensees shall not use the OS197, OS197H, and the OS200FC TCs aged 20 years or more to perform the TC functions described in the Standardized Advanced NUHOMS® System UFSAR after the PEO for CoC 1004 ends.

14. INITIAL TERM

Any Standardized Advanced NUHOMS® System loaded up to and including those loaded on February 5, 2023, shall be considered loaded during the initial term.

15. AUTHORIZATION

The Standardized Advanced NUHOMS® System, which is authorized by this certificate, is hereby approved for general use by holders of 10 CFR Part 50 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 Appendix A.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

John McKirgan, Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Attachment: A. Technical Specifications

Dated: September 28, 2021