NRC FORM 651
(10-2004)
10 CER 72

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	Expiration Date	Docket No.	Amendment No.	Amendment Effective	Package Identification
	(Certificate)				Date	No.
1004	1/23/95	1/23/2015	72-1004	10	8/24/09	USA/72-1004
	Renewed	Renewed		Revision No	Revision Effective Date	
	Effective Date 12/11/17	Expiration Date 1/23/2055		1	4/25/2017	
				1		

Issued To: (Name/Address)

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

Safety Analysis Report Title

Transnuclear, Inc., "Final Safety Analysis Report for the Standardized NUHOMS[®] Horizontal Modular Storage System for Irradiated Nuclear Fuel"

- CONDITIONS
- Casks authorized by this certificate are hereby approved for use by holders of 10 CFR Part 50 and 10 CFR Part 52 licenses for nuclear power 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 technical specifications.
- 2. The holder of this certificate who desires to change the certificate or technical specifications shall submit an application for amendment of the certificate or technical specifications.
- 3. CASK:
 - a. Model Nos. Standardized NUHOMS[®]-24P, -52B, -61BT, -32PT, -24PHB, -24PTH, -32PTH1 and -61BTH

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. The characters H or HB refer to designs qualified for fuel with burnup greater than 45 GWd/Mtu.

b. Description

The Standardized NUHOMS[®] System is certified as described in the final safety analysis report (FSAR) and in the NRC's safety evaluation report (SER). The Standardized NUHOMS[®] System is a horizontal canister system composed of a steel dry shielded canister (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.

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The principal component subassemblies of the DSC are the shell with integral bottom cover plate, bottom shield plug or shield plug assemblies, ram/grapple ring, top shield plug or shield plug assemblies, top cover plate, and basket assembly. The shell length is fuel-specific. The internal basket assembly for the 24P, 24PHB, and 52B DSCs is composed of guide sleeves, support rods, and spacer disks. This assembly is designed to hold 24 PWR fuel assemblies or 52 BWR assemblies.

An alternate basket assembly configuration, consisting of assemblies of stainless steel fuel compartments held in place by basket rails and a holdown ring, is designed to hold 61 BWR assemblies. The 32PT, and 32PTH1 DSC basket assembly configurations are similar, consisting of welded stainless steel plates or tubes that make up a grid of fuel compartments supported by aluminum basket rails, and are designed to accommodate 32 PWR assemblies. The 24 PTH DSC basket assembly configuration consists of stainless steel tubes supported by basket rails and is designed to accommodate 24 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 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 walls for air flow, and is designed to store DSCs with up to 24.0 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 HSM. An alternate version of the HSM-H design has been provided to allow the use of the NUHOMS[®] system in locations where higher seismic levels exist.

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). The 32PT DSC is transferred in a TC with a radial liquid neutron shield.

With the exception of the TC, fuel transfer and auxiliary equipment necessary for ISFSI operations are not included as part of the Standardized 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 NUHOMS[®] System are contained in Appendices E, K, M, N, P, T and U of the FSAR.

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, Table K.2-8 (Appendix K), Table M.2-18 (Appendix M), Table P.2-17 (Appendix P), Section T.2.3 (Appendix T) and Section U.2.3 (Appendix U) of the FSAR.

NRC FOR	RM 651 U	S. NUCLEAR REGULATOR	COMMISSION
(10-2004) 10 CFR 72	CERTIFICATE OF COMPLIANCE	Certificate No.	1004
	FOR SPENT FUEL STORAGE CASKS	Amendment No.	10, Rev. 1
	Supplemental Sheet	Renewed	Yes
		Page 3	of 4
4.	Fabrication activities shall be conducted in accordance with a Commiss program which satisfies the applicable requirements of 10 CFR Part 72 established, maintained, and executed with regard to the cask system.	ion approved quality a , Subpart G, and whicl	assurance h is
5.	Notification of fabrication schedules shall be made in accordance with t 72.232(d).	he requirements of 10	CFR
6.	HSM-H concrete shall be tested for elevated temperatures to verify that spalling or cracking and that the concrete compressive strength is great structural analysis. Tests shall be performed at or above the calculated period no less than the 40 hour duration of HSM-H blocked vent transie degrees F.	there are no significater than that assumed peak temperature and nt for components exc	nt signs of in the d for a ceeding 350
7.	The use of HSM-H thermal performance methodology is allowed for eva changes except for changes to the HSM-H cavity height, cavity width, e areas of the HSM-H air inlet/outlet vents, total outside height, length an changes exceed 8% of their nominal design values shown on the appro- drawings.	aluating HSM-H config levation and cross-sed d width of HSM-H if the ved CoC Amendment	uration ctional ese No. 8
8.	If it is necessary to engage active cooling for the OS197FC-B or the OS transfer of a loaded DSC, the appropriate NRC Division of Spent Fuel M shall be notified within 30 days, via electronic correspondence, of the o should be provided, including the date and time of the occurrence, whe the facility at which the transfer was taking place, and the current state	S200FC Transfer Cask Management Project M ccurrence. Appropriat n the active cooling wa of the DSC.	ts during lanager te detail as initiated,
9.	CONTINUED USE OF PREVIOUS VERSION OF AMENDMENT NO.10		
	A general licensee may continue to use the previous version of this cer dated August 24, 2009, until October 22, 2017. By October 2, 2017, ge Amendment No. 10, dated August 24, 2009, must have implemented the revision and completed the evaluation described below.	tificate, Amendment N eneral licensees using le changes authorized	o. 10, by this
	The general licensee shall perform written evaluations before use and be authorized by this revised certificate which establish that the cask, once the changes authorized by this revised certificate have been applied wi conditions, and specifications of this revised certificate. The results of the accordance with 10 CFR 72.212(b)(5) no later than October 22, 2017.	before applying the char loaded with spent fue ll conform to the terms nis review shall be doo	anges el or once s, cumented in
	In applying the changes authorized by this revised certificate, the gener such cask with the Nuclear Regulatory Commission no later than 30 da authorized by the revised certificate. The registration shall include the in 72.212(b)(2).	al licensee shall regis ys after applying the c nformation required by	ter each hanges ⁄ 10 CFR

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10. 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.

11. 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:

- 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;
- 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.

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 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