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, High-Level Radioactive Waste, and Reactor-related Greater than Class C 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 Date	Package Identification No.
1042	TBD	TBD	72-1042	0	TBD	USA/72-1042

Issued To: (Name/Address)

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

Safety Analysis Report Title

TN Americas LLC, “Safety Analysis Report for the NUHOMS® EOS 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 Nos. NUHOMS® EOS-37PTH, and -89BTH

      The two digits refer to the maximum 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 character H refers to designs that are also qualified for fuel with burnup greater than 45 GWd/MTU.

   b. Description

      The NUHOMS® EOS System is certified as described in the safety analysis report (SAR) and in the NRC’s safety evaluation report (SER). The NUHOMS® EOS 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 area to/from the HSM and provides radiation shielding during these operations.

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 is a welded stainless or duplex steel pressure vessel with a length that is fuel-specific. The internal basket assembly for the EOS-37PTH and EOS-89BTH DSCs is composed of interlocking slotted plates to form an egg-crate like structure that forms a grid of fuel compartments to house the fuel assemblies. The grid structure is composed of one or more of the following: a steel plate, an aluminum plate and a neutron absorber plate. Basket transition rails, made of extruded aluminum, provide the interface between the rectangular basket structure and the cylindrical DSC shell. The DSC is designed to hold either 37 PWR or 89 BWR fuel assemblies.

Different DSC basket configurations are provided for the EOS-37PTH DSC, with poison plates containing a borated metal matrix composite (MMC) at differing B-10 concentrations. The EOS-89BTH DSC has basket configurations that differ in the material used for the poison plates, either borated MMC or Boral®, and the concentration of B-10 used.

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 near the top and bottom of the walls for air flow, and is designed to store DSCs with up to 50.0 kW decay heat. The HSM has variable lengths to accommodate the range of DSC lengths. The DSC Support Structure is installed within the HSM. There are multiple versions of the HSM. The HSMS is an alternate version of the HSM with a split base with the split pieces tied together.

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 area and for transfer operations to/from the HSM. The TC is a multi-walled cylindrical vessel, comprised of a gamma shield and neutron shield layers with a bottom end closure assembly and a bolted top cover plate. There are multiple versions of the TC. The EOS-TC system consists of the EOS-TC135 cask, the EOS-TC125 cask, and the EOS-TC108 cask. The EOS-TC108 is designed with a removable neutron shield for use at nuclear plant sites with space limitations and/or crane capacity limits. 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 area. The lower trunnions, located near the base of the cask, serve as the axis of rotation during downending/uprighting operations and as supports during transfer 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 NUHOMS® EOS 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 NUHOMS® EOS System are contained in Section 1.3 of the SAR.

d. Principal Components

The principal components of the NUHOMS® EOS System that are important to safety are the DSC, HSM, and TC. These components are described in Section 2.1 of the SAR.

2. OPERATING PROCEDURES

Written operating procedures shall be prepared for handling, loading, movement, surveillance and maintenance. The user's site-specific written operating procedures shall be consistent with the technical basis described in Chapter 9 of the SAR.

3. ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

Written cask acceptance tests and maintenance program shall be prepared consistent with the technical basis described in Chapter 10 of the SAR.

4. QUALITY ASSURANCE

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

5. 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 NUREG-0612 and or existing plant-specific heavy loads requirements.

If a single failure proof crane is not used, the licensee must evaluate the accidental drop of the shielding components of the TC under 10 CFR 50.59, 10 CFR 72.48, and 10 CFR 72.212, and evaluate the consequences of the accident drops.

6. APPROVED CONTENTS

Contents of the NUHOMS® EOS System must meet the fuel specifications in Appendix A (Technical Specifications).

7. DESIGN FEATURES

Features or characteristics for the site, or cask system must be in accordance with Appendix A (Technical Specifications).

8. CHANGES TO THE CERTIFICATE OF COMPLIANCE

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.

9. PRE-OPERATIONAL TESTING AND TRAINING EXERCISE

A dry run training exercise of the loading, closure, handling, unloading and transfer of the NUHOMS® EOS System shall be conducted by each licensee prior to the first use of the system to load spent nuclear fuel assemblies. The training exercise shall not be conducted with spent nuclear fuel in the canister. The dry run may be performed in an alternate step sequence from the actual procedural guidelines in Chapter 9 of the SAR. The dry run shall include, but need not be limited to the following:

Loading Operations

a. Fuel loading
b. DSC sealing, drying and backfilling operations
c. TC downending and transfer to the ISFSI
d. DSC transfer to the HSM

Unloading Operations

e. DSC retrieval from the HSM
f. Opening of the DSC
g. Flooding of the DSC

Any of the above steps can be omitted if the site has already successfully loaded a NUHOMS® EOS System or another NUHOMS® system.

10. AUTHORIZATION

The NUHOMS® EOS 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, this certificate, and the attached Appendix A.

FOR THE NUCLEAR REGULATORY COMMISSION

DRAFT

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

Attachment: Appendix A. Technical Specifications
Dated: _____