NRC FORM 651
(10-2004)
10 CFR 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 Date	Package Identification No.
1040	TBD	TBD	72-1040	3		USA/72-1040

Issued To: (Name/Address)

Holtec International
Holtec Center
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Marlton, NJ 08053

Safety Analysis Report Title

Holtec International
Final Safety Analysis Report for the
HI-STORM UMAX Canister Storage System

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

APPROVED SPENT FUEL STORAGE CASK

Model No.: HI-STORM UMAX Canister Storage System

DESCRIPTION:

The HI-STORM UMAX Canister Storage System consists of the following components: (1) interchangeable canisters, which contain the fuel; (2) underground Vertical Ventilated Modules (VVMs), which contains the canisters during storage; and (3) a transfer cask (HI-TRAC VW), which contains the canister during loading, unloading and transfer operations. The multi-purpose canister (MPC) stores up to 37 pressurized water reactor fuel assemblies or up to 89 boiling water reactor fuel assemblies. The HI-STORM UMAX may also store a dry shielded canister (DSC) which contains up to 24 pressurized water reactor fuel assemblies.

The HI-STORM UMAX Canister Storage System is certified as described in the" UMAX" Final Safety Analysis Report (FSAR) supplemented by the information on the analyzed canisters and transfer cask, and in the U. S. Nuclear Regulatory Commission's (NRC) Safety Evaluation Report (SER) accompanying the Certificate of Compliance (CoC).

The MPC is the confinement system for the stored fuel. It is a welded, cylindrical canister with a honeycombed fuel basket, a baseplate, a lid, a closure ring, and the canister shell. All MPC components that may come into contact with spent fuel pool water or the ambient environment are made entirely of stainless steel or passivated aluminum/aluminum alloys. The canister shell, baseplate, lid, vent and drain port cover plates, and closure ring are the main confinement boundary components. All confinement boundary components are made entirely of stainless steel. The honeycombed basket provides criticality control.

Similarly, the welded DSC provides confinement and criticality control for the storage and transfer of irradiated fuel. The principle component subassemblies of the DSC are the shell with integral bottom cover plate and shield plug, top shield plug, top cover plate, and basket assembly. The DSC confinement boundary consists of stainless steel cylindrical shell and the top and bottom cover plate assemblies. The shell length is fuel specific. The internal basket assembly for the 24PT1 is composed of guide sleeves, support rods, and spacer disks.

DESCRIPTION (continued)

The DSC basket assembly aids in the insertion of the fuel assemblies, enhances subcriticality during loading operations, and provides structural support.

There are two types of MPCs permitted for storage in HI-STORM UMAX VVM: the MPC-37 and MPC-89. The number suffix indicates the maximum number of fuel assemblies permitted to be loaded in the MPC. Both MPC models have the same external diameter. The DSC type permitted for storage in the HI-STORM UMAX is the DSC-24PT1.

The HI-TRAC VW transfer cask provides shielding and structural protection of the canister during loading, unloading, and movement of the canister from the cask loading area to the VVM. The transfer cask is a multi-walled (carbon steel/lead/carbon steel) cylindrical vessel with a neutron shield jacket attached to the exterior and a retractable bottom lid used during transfer operations. The HI-TRAC VW is also used for transfer of the DSC-24PT1.

The HI-STORM UMAX VVM utilizes a storage design identified as an air-cooled vault or caisson. The HI-STORM UMAX VVM relies on vertical ventilation instead of conduction through the fill material around the VVM, as it is essentially a below-grade storage cavity. Air inlets and an air outlet allow air to circulate naturally through the cavity to cool the canister inside. The subterranean steel structure is seal welded to prevent ingress of any groundwater in the canister storage cavity from the surrounding subgrade, and it is mounted on a stiff foundation. The surrounding subgrade and a top surface pad provide significant radiation shielding. A loaded canister is stored within the HI-STORM UMAX VVM in a vertical orientation.

HI-STORM UMAX Version MSE is a structurally strengthened embodiment of the VVM engineered for deployment at sites with its Design Basis Earthquake with ZPA in excess of 2.12Gs (resultant horizontal) and up to 1.0G (vertical).

CONDITIONS

1. 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 and canister specific Chapter 9 supplements of the FSAR.

2. ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

   Written acceptance tests and a maintenance program shall be prepared consistent with the technical basis described in Chapter 10 and canister specific Chapter 10 supplements of the FSAR.

   For the MPCs, at completion of welding the MPC shell to baseplate, an MPC confinement weld helium leak test shall be performed using a helium mass spectrometer. This test shall include the base metals of the MPC shell and baseplate. A helium leakage test shall also be performed on the base metal of the fabricated MPC lid. The confinement boundary welds leakage rate test shall be performed in accordance with ANSI N14.5 to "leaktight" criterion. If a leakage rate exceeding the acceptance criteria is detected, then the area of leakage shall be determined and the area repaired per ASME Code Section III, Subsection NB, Article NB-4450 requirements. Re-testing shall be performed until the leakage rate acceptance criterion is met.

3. 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 storage system

4. HEAVY LOADS REQUIREMENTS

Each lift of an MPC , DSC, or a HI-TRAC VW transfer cask must be made in accordance to the existing heavy loads requirements and procedures of the licensed facility at which the lift is made. A plant-specific review of the heavy load handling procedures (under 10 CFR 50.59 or 10 CFR 72.48, as applicable) is required to show operational compliance with existing plant specific heavy loads requirements. Lifting operations outside of structures governed by 10 CFR Part 50 must be in accordance with Section 5.2 of Appendix A or Appendix C as applicable.

5. APPROVED CONTENTS

Contents of the HI-STORM UMAX Canister Storage System must meet the fuel specifications for each canister in the appendices to this certificate as follows:

Canister	Approved Contents Appendix
MPC-37	Appendix B
MPC-89	Appendix B
DSC-24PT1	Appendix D

6. DESIGN FEATURES

Features or characteristics for the site or system must be in accordance with the applicable appendix to this certificate, identified in item 5.

7. CHANGES TO THE CERTIFICATE OF COMPLIANCE

The holder of this certificate who desires to make changes to the certificate, which includes all the appendices (A through D), shall submit an application for amendment of the certificate.

8. PRE-OPERATIONAL TESTING AND TRAINING EXERCISE – MPCs only

A dry run training exercise of the loading, closure, handling, unloading, and transfer of the HI-STORM UMAX Canister Storage 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 MPC. The dry run may be performed in an alternate step sequence from the actual procedures, but all steps must be performed. The dry run shall include, but is not limited to the following:

a. Moving the MPC and the transfer cask into the spent fuel pool or cask loading pool.

b. Preparation of the HI-STORM UMAX Canister Storage System for fuel loading.

c. Selection and verification of specific fuel assemblies to ensure type conformance.

d. Loading specific assemblies and placing assemblies into the MPC (using a dummy fuel assembly), including appropriate independent verification.

e. Remote installation of the MPC lid and removal of the MPC and transfer cask from the spent fuel pool or cask loading pool.

f. MPC welding, NDE inspections, pressure testing, draining, moisture removal (by vacuum drying or forced helium dehydration, as applicable), and helium backfilling. (A mockup may be used for this dry-run exercise.)

g. Transfer of the MPC from the transfer cask to the VVM.

h. HI-STORM UMAX Canister Storage System unloading, including flooding MPC cavity and removing MPC lid welds. (A mockup may be used for this dry-run exercise.)

Any of the above steps can be omitted if the site has already successfully loaded a Holtec MPC System.

PRE-OPERATIONAL TESTING AND TRAINING EXERCISE – DSCs only

A dry run training exercise of the handling and transfer of the DSC in the HI-STORM UMAX Canister Storage System shall be conducted by the licensee prior to the first movement of a loaded DSC into a HI-STORM UMAX VVM. The training exercise shall not be conducted with spent fuel in the DSC. The dry run may be performed in an alternate step sequence from the actual procedures, but all steps must be performed. The dry run shall include, but is not limited to the following:

a. Transfer of the DSC from the NUHOMS storage module to the HI-TRAC VW.

b. Transfer of the DSC from the HI-TRAC VW to the VVM

9. AUTHORIZATION

The HI-STORM UMAX Canister Storage 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 Appendices A through D. The HI-STORM UMAX Canister Storage System may be fabricated and used in accordance with any approved amendment to CoC No. 1040 listed in 10 CFR 72.214. Each of the licensed HI-STORM UMAX Canister Storage System components (i.e., the canister, overpack, and transfer cask), if fabricated in accordance with any of the approved CoC Amendments, may be used with one another provided an assessment is performed by the CoC holder that demonstrates design compatibility. .

FOR THE U. S. NUCLEAR REGULATORY COMMISSION

DRAFT

Dated TBD

Attachments:
1. Appendix A
2. Appendix B
3. Appendix C
4. Appendix D