# 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. |
|---|---|---|---|---|---|---|
| 1032 | June 13, 2011 | June 12, 2031 | 72-1032 | 6 | | USA/72-1032 |

Issued To: (Name/Address)

Holtec International
Holtec Technology Campus
One Holtec Blvd.
Camden, NJ 08104

Safety Analysis Report Title

Holtec International
Final Safety Analysis Report for the HI-STORM FW MPC 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 FW MPC Storage System

DESCRIPTION:

The HI-STORM FW MPC Storage System consists of the following components: (1) interchangeable multipurpose canisters (MPCs), which contain the fuel; (2) a storage overpack (HI-STORM FW), which contains the MPC during storage; and (3) a transfer cask (HI-TRAC VW), which contains the MPC during loading, unloading and transfer operations. The MPC stores up to 37 pressurized water reactor fuel assemblies or up to 89 boiling water reactor fuel assemblies.

The HI-STORM FW MPC Storage System is certified as described in the Final Safety Analysis Report (FSAR) 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.

DESCRIPTION (continued)

There are three types of MPCs: the MPC-32ML, MPC-37, and MPC-89. The number suffix indicates the maximum number of fuel assemblies permitted to be loaded in the MPC. All MPC models have the same external diameter.

The HI-TRAC VW transfer cask provides shielding and structural protection of the MPC during loading, unloading, and movement of the MPC from the cask loading area to the storage overpack. The transfer cask is a multi-walled (carbon steel/lead/carbon steel) cylindrical vessel with a neutron shield jacket or neutron shield cylinder attached to the exterior and a retractable bottom lid used during transfer operations.

The HI-STORM FW storage overpack provides shielding and structural protection of the MPC during storage. The overpack is a heavy-walled steel and concrete, cylindrical vessel. Its side wall consists of plain (unreinforced) concrete that is enclosed between inner and outer carbon steel shells. The overpack has air inlets at the bottom and air outlets at the top to allow air to circulate naturally through the cavity to cool the stored MPC. The inner shell has supports attached to its interior surface to guide the MPC during insertion and removal and provide a means to protect the MPC confinement boundary against impactive or impulsive loadings. A loaded MPC is stored within the HI-STORM FW storage overpack in a vertical orientation. The HI-STORM FW storage overpack can be arrayed in a free-standing or anchored configuration (required when the seismic event for an ISFSI site exceeds the threshold limit for the free-standing configuration). If the seismic loads for a given ISFSI site exceed the threshold limit for a free-standing configuration of the HI-STORM FW set forth in the CoC, then the cask must be installed in an anchored configuration.

**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 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 of the FSAR. At completion of welding the MPC shell to baseplate, an MPC confinement weld helium leak test shall be performed using a helium mass spectrometer. 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, a HI-TRAC VW transfer cask, or any HI-STORM FW overpack 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.

5. APPROVED CONTENTS

Contents of the HI-STORM FW MPC Storage System must meet the fuel specifications given in Appendix B to this certificate.

6. DESIGN FEATURES

Features or characteristics for the site or system must be in accordance with Appendix B to this certificate.

7. CHANGES TO THE CERTIFICATE OF COMPLIANCE

The holder of this certificate who desires to make changes to the certificate, which includes Appendix A (Technical Specifications) and Appendix B (Approved Contents and Design Features), shall submit an application for amendment of the certificate.

8. SPECIAL REQUIREMENTS FOR FIRST SYSTEMS IN PLACE

For the storage configuration, each user of a HI-STORM FW MPC Storage System with a heat load equal to or greater than 30 kW shall perform a thermal validation test in which the user measures the total air mass flow rate through the cask system using direct measurements of air velocity in the inlet vents. The user shall then perform an analysis of the cask system with the taken measurements to demonstrate that the measurements validate the analytic methods described in Chapter 4 of the FSAR. The thermal validation test and analysis results shall be submitted in a letter report to the NRC pursuant to 10 CFR 72.4 within 180 days of the user's loading of the first cask with a heat load equal to or greater than 30 kW. To satisfy condition 8 for casks of the same system type (i.e., HI-STORM FW casks), in lieu of additional submittals pursuant to 10 CFR 72.4, users may document in their 72.212 report a previously performed test and analysis submitted by letter report to the NRC that demonstrates validation of the analytic methods described in Chapter 4 of the FSAR.

9. PRE-OPERATIONAL TESTING AND TRAINING EXERCISE

A dry run training exercise of the loading, closure, handling, unloading, and transfer of the HI-STORM FW MPC 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 FW MPC 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 overpack.

h. Placement of the HI-STORM FW MPC Storage System at the ISFSI.

i. HI-STORM FW MPC 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 they have already been successfully carried out at a site to load a HI-STORM 100 System (USNRC Docket 72-1014).

10. AUTHORIZATION

The HI-STORM FW MPC 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 and B. The HI-STORM FW MPC Storage System may be fabricated and used in accordance with any approved amendment to CoC No. 1032 listed in 10 CFR 72.214. Each of the licensed HI-STORM FW MPC Storage System components (i.e., the MPC, 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. The HI-STORM FW MPC Storage System may be installed on an ISFSI pad with the HI-STORM 100 Cask System (USNRC Docket 72-1014) provided an assessment is performed by the CoC holder that demonstrates design compatibility.

FOR THE NUCLEAR REGULATORY COMMISSION

Yoira K. Diaz Sanabria, Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards

Attachments:
1. Appendix A
2. Appendix B

Dated: _____