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.
1008	10/04/99	10/04/19	72-1008	3	TBD	USA/72-1008

Issued To: (Name/Address)

Holtec International
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Safety Analysis Report Title

Holtec International Inc., Final Safety Analysis Report for the HI-STAR 100 Cask System
Docket No. 72-1008

APPROVED SPENT FUEL STORAGE CASK

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:

1. CASK

The HI-STAR 100 Cask System is certified as described in the Final Safety Analysis Report (FSAR) and in NRC's Safety Evaluation Report (SER) accompanying the Certificate of Compliance. It is designed for both storage and transfer of irradiated nuclear fuel.

a. Model No.: HI-STAR 100 (MPC-24, MPC-32, MPC-68, MPC-68F)

The HI-STAR 100 Cask System is comprised of the multi-purpose canister (MPC), which contains the fuel, and the overpack, which contains the MPC. The two digits after the MPC designate the number of reactor fuel assemblies for which the respective MPCs are designed. The MPC-24 is designed to contain up to 24 Pressurized Water Reactor (PWR) fuel assemblies. The MPC-32 is designed to contain up to 32 PWR fuel assemblies. The MPC-68 is designed to contain up to 68 Boiling Water Reactor (BWR) fuel assemblies. Any MPC-68 containing fuel assemblies with known or suspected defects, such as ruptured fuel rods, severed rods, loose fuel pellets, or which cannot be handled by normal means due to fuel cladding damage, is designated as MPC-68F. The MPC-24, the MPC-32, and the MPC-68 (including the MPC-68F) are identical in external dimensions and will fit into the same overpack design.

1. b. Description

The complete HI-STAR 100 Cask System for storage of spent nuclear fuel is comprised of two discrete components: the MPC and the storage/transport overpack. The HI-STAR 100 CASK System consists of interchangeable MPCs which constitute the confinement boundary for BWR or PWR spent nuclear fuel and an overpack which provides the helium retention boundary, gamma and neutron radiation shielding, and heat rejection capability. All MPCs have identical exterior dimensions which render them interchangeable. A single overpack design is provided which is capable of storing each type of MPC.

The HI-STAR 100 MPCs are welded cylindrical structures with flat ends. Each MPC is an assembly consisting of a honeycombed fuel basket, a baseplate, canister shell, a lid, and a closure ring. The outer diameter and cylindrical height of each MPC is fixed. However, the number of spent nuclear fuel storage locations in each of the MPCs depends on the fuel assembly characteristics. The MPC provides the confinement boundary for the stored fuel. The confinement boundary is a seal-welded enclosure constructed entirely of a stainless steel alloy. The inner surfaces of the HI-STAR 100 overpack form an internal cylindrical cavity for housing the MPC. The outer surface of the overpack inner shell is buttressed with intermediate shells of gamma shielding.

The fuel transfer and auxiliary equipment necessary for Independent Spent Fuel Storage Installation operation are not included as part of the HI-STAR 100 Cask System reviewed for a Certificate of Compliance under 10 CFR Part 72, Subpart L. Such equipment may include, but is not limited to, special lifting devices, transfer trailers or equipment, and vacuum drying/helium leak test equipment.

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 Chapter 8 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 9 of the SAR.

4. QUALITY ASSURANCE

Activities in the areas of design, procurement, 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.

5. HEAVY LOADS REQUIREMENTS

Each lift of a HI-STAR 100 spent fuel cask must be made in accordance with the existing heavy loads requirements and procedures of the licensed facility in which the lift is made. A plant-specific safety review (in accordance with 10 CFR 50.59 or 10 CFR 72.48, if applicable) is required to show operational compliance with existing plant-specific heavy loads requirements.

6. APPROVED CONTENTS

Contents of the HI-STAR 100 Cask System must meet the fuel specifications given in Appendix B to this certificate.

7. APPROVED DESIGN FEATURES

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

8. 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.

9. Pre-Operational Testing and Training Exercise

A dry run training exercise of the loading, closure, handling, unloading, and transfer of the HI-STAR 100 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/OVERPACK. 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 HI-STAR 100 MPC/OVERPACK into the spent fuel pool.

b. Preparation of the HI-STAR 100 Cask System for fuel loading.

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

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

d. Remote installation of the MPC lid and removal of HI-STAR 100 MPC/OVERPACK from the spent fuel pool.

e. MPC welding, NDE inspections, hydrostatic testing, draining, vacuum drying, helium backfilling, and leakage testing.

f. HI-STAR 100 OVERPACK closure, draining, vacuum drying, helium backfilling and leakage testing.

g. HI-STAR 100 OVERPACK upending/downending on the horizontal transfer trailer or other transfer device, as applicable to the site's cask handling arrangement.

9. Pre-Operational Testing and Training Exercise (continued)

   h. Placement of the HI-STAR 100 Cask System at the ISFSI.

   i. HI-STAR 100 Cask System unloading, including cooling fuel assemblies, flooding MPC cavity, removing MPC lid welds.

10. Special Requirements for First Systems in Place

    The heat transfer characteristics of the cask system will be recorded by temperature measurements for the first HI-STAR 100 spent fuel storage systems (MPC-24, and MPC-68) placed into service with a heat load equal to or greater than 10 kW. An analysis shall be performed that demonstrates the temperature measurements validate the analytic methods and predicted thermal behavior described in Chapter 4 of the FSAR.

    Validation tests shall be performed for each subsequent cask system that has a heat load that exceeds a previously validated heat load by more than 2 kW. (e.g., if the initial test was conducted at 10 kW, then no additional testing is needed until the heat load exceeds 12 kW). No additional testing is required for a system after it has been tested at a heat load equal to or greater than 16 kW.

    Letter reports summarizing the results of each validation test shall be submitted to the NRC in accordance with 10 CFR 72.4. Cask users may satisfy these requirements by referencing validation test reports submitted to the NRC by other cask users.

11. AUTHORIZATION

    The HI-STAR 100 Cask 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 and Appendix B.

FOR THE NUCLEAR REGULATORY COMMISSION

DRAFT

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Attachments:
1. Appendix A
2. Appendix B

Dated: