

CERTIFICATE OF COMPLIANCE FOR RADIOACTIVE MATERIAL PACKAGES

1. a. CERTIFICATE NUMBER	b. REVISION NUMBER	c. DOCKET NUMBER	d. PACKAGE IDENTIFICATION NIIMRFR	PAGE	PAGES
9378	0	71-9378	USA/9378/B(U)F-96	1	OF 4

2. PREAMBLE

- a. This certificate is issued to certify that the package (packaging and contents) described in Item 5 below meets the applicable safety standards set forth in Title 10, Code of Federal Regulations, Part 71, "Packaging and Transportation of Radioactive Material."
- b. This certificate does not relieve the consignor from compliance with any requirement of the regulations of the U.S. Department of Transportation or other applicable regulatory agencies, including the government of any country through or into which the package will be transported.

3. THIS CERTIFICATE IS ISSUED ON THE BASIS OF A SAFETY ANALYSIS REPORT OF THE PACKAGE DESIGN OR APPLICATION

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| <p>a. ISSUED TO (<i>Name and Address</i>)</p> <p>Holtec International
Krishna P. Singh Technology Campus
1 Holtec Blvd
Camden, NJ 08104</p> | <p>b. TITLE AND IDENTIFICATION OF REPORT OR APPLICATION</p> <p>Holtec International Report No. HI-2188080. <i>Safety Analysis Report on the HI-STAR 100MB Package</i>
Revision TBD, dated TBD.</p> |
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4. CONDITIONS

This certificate is conditional upon fulfilling the requirements of 10 CFR Part 71, as applicable, and the conditions specified below.

5

(a) Packaging

- (1) Model No.: HI-STAR 100MB
- (2) Description

The HI-STAR 100MB Packaging consists of four major components: the overpack, the fuel package (multi-purpose canister (MPC) or bare basket), the impact limiters, and personnel barriers. The system is a universal transport package, designed to transport High Burnup Fuel (HBF) and Moderate Burnup Fuel (MBF) in either an MPC or a bare basket transport configuration.

Overpack

The overpack is a circular cylinder featuring a containment vessel formed by a nickel steel shell welded to a nickel steel [AMI]bottom flange and to a nickel steel top flange. The top flange has bolted closure lid(s) with machined concentric grooves for elastomeric seals. The overpack provides the containment boundary, the helium retention boundary, gamma and neutron radiation shielding, and heat rejection capability of the package. The overpack also features collapsible trunnions. The overpack containment system consists of the overpack inner shell, bottom flange, top flange, top closure lid(s), closure lid(s) inner O-ring seal, vent and drain port cover and inner seals, and bolts for closure lids and port covers. The outer surface of the overpack inner shell is buttressed with a layered combination of lead, steel and neutron shielding material.

5(a)(2) Description (Continued)

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	9378	0	71-9378	USA/9378/B(U)F-96	2 OF	4

Overpack (Continued)

The overpack has two limiting cavity lengths, termed Type XL (Extra-Long) and Type SL (Short Length) to accommodate the variety of lengths of commercial spent nuclear fuel (SNF). The Type XL and SL overpacks are approximately 210 and 196 inches long respectively. The cavity lengths are approximately 166 inches (SL) and 192 inches (XL). Both versions of the overpack have an inside diameter of approximately 69 inches, and an outer diameter of approximately 100 inches without impact limiters and 124 inches with impact limiters.

The maximum packaging weights of the SL and XL versions are approximately 256,572 pounds and 258,189 pounds respectively. The maximum gross weight for transportation (including the overpack, the MPC, the contents, and the impact limiters) is nominally 299,050 pounds for the SL version and 305,300 pounds for the XL version.

Transport Configuration 1 (Bare Basket)

In the bare basket transport configuration the fuel basket and SNF are loaded directly into the cavity of the overpack without an MPC. Two closure lids are employed in the bare basket configuration. This configuration is only applicable to the Type SL package.

Transport Configuration 2 (MPC)

In the MPC transport configuration the fuel basket and SNF are loaded into the MPC, and the MPC subsequently loaded into the overpack for transport. One closure lid is employed in the MPC configuration. Fuel spacers may be employed within the MPC to control (minimize) the assembly-to-MPC lid gap generated by the difference in length between the fuel assembly and MPC cavity. This configuration is only applicable to the Type XL package.

Fuel Basket

A metal matrix composite of aluminum and boron carbide, Metamic-HT, is the principal constituent material of the fuel basket, both as structural material and neutron absorber material. The bare basket configuration employs the F-24M and F-32M fuel baskets, while the 32M basket is used with the MPC configuration. The principal difference between the 24 and 32 baskets is the use of flux traps in the 24 basket.

MPC

There is one MPC model, designated the MPC-32M, for use with the overpack. The MPC is a welded cylindrical structure with flat ends. The MPC consists of a honeycombed fuel basket made from panels of Metamic-HT, a baseplate,

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	9378	0	71-9378	USA/9378/B(U)F-96	3 OF	4

- 5(a)(2) canister shell, lid, and closure ring.
Description (Continued)

Impact Limiters

Two identical impact limiters, fabricated of aluminum honeycomb crush material completely enclosed by an all-welded stainless steel skin, are attached to the top and bottom of the overpack with 16 bolts each.

Personnel barrier

The personnel barrier, placed over the package lying in a horizontal orientation during transport, is a packaging component when in use. It provides a physical barrier to prevent access to hot areas of the package.

(3) Drawings

- (a) HI-STAR 100MB Cask Drawing 11070, Sheets 1-7, Rev. 0
- (b) MPC-32M Basket Drawing 11084, Sheet 1, Rev. 0
- (c) F-32M Basket Drawing 11082, Sheet 1, Rev. 0
- (d) F-24M Basket Drawing 11083, Sheet 1, Rev. 0
- (e) MPC Enclosure Vessel Drawing 3923, Sheets 1-9, Rev. 36
- (f) HI-STAR 100MB Impact Limiter Drawing 11101, Sheets 1-4, Rev. 0

5.(b) Contents

(1) Type, Form, and Quantity of Material

- (a) PWR fuel assemblies with the characteristics listed in Tables 7.7.1 and 7.7.2 of the application.

(2) Maximum Quantity of Material Per Package

24 or 32 Pressurized Water Reactor (PWR) fuel assemblies in the F-24M or F-32M basket, respectively

32 PWR fuel assemblies in the MPC-32M.

6. The Criticality Safety Index (CSI) is 0.0

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7. In addition to the requirements of Subpart G of 10 CFR Part 71:
- (a) The package shall be prepared for shipment and operated in accordance with the Operating Procedures in Chapter 7 of the application; and
 - (b) The package must meet the Acceptance Tests and Maintenance Program of Chapter 8 of the application.
8. The personnel barrier shall be installed and remain installed during transport, if necessary to meet package surface temperature and/or package dose rates requirements.
9. Transport of fissile material by air is not authorized.
10. The package authorized by this certificate is hereby approved for use under the general license provisions of 10 CFR 71.17.
11. Expiration Date: TBD

REFERENCES:

Holtec International Report No. HI-2188080, *Safety Analysis Report on the HI-STAR 100MB Package*, Revision 0, dated TBD.

FOR THE U.S. NUCLEAR REGULATORY
COMMISSION

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

Date: TBD