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.
1031	2/4/2009	2/4/2029	72-1031	6	December 21, 2016	USA/72-1031
	Renewed Effective Date	Renewed Expiration Date		Revision No.	Revision Effective Date	
	N/A	N/A		2	TBD	

Issued To: (Name/Address)

NAC International Inc.
2 Sun Court, Suite 220
Peachtree Corners, GA 30092

Safety Analysis Report Title

NAC International Inc., Final Safety Analysis Report for the MAGNASTOR® System, Docket No. 72-1031

APPROVED SPENT FUEL STORAGE CASK

Model No.: MAGNASTOR®

Description

The MAGNASTOR® system is certified as described in the safety analysis report (SAR) and in NRC's safety evaluation report (SER) accompanying the certificate of compliance (CoC).

The MAGNASTOR® system (the cask) consists of the following components: (1) transportable storage canister (TSC), which contains the spent fuel; (2) concrete cask, which contains the TSC during storage; and (3) a transfer cask, which contains the TSC during loading, transfer and unloading operations. The cask may store up to 37 pressurized water reactor (PWR) fuel assemblies or 87 boiling water reactor (BWR) fuel assemblies. Authorized PWR and BWR contents are specified in Appendix B to this Certificate.

The TSC is the confinement system for the stored fuel. The TSC assembly consists of a right circular cylindrical shell with a welded bottom plate, a fuel basket, a closure lid, a closure ring, and two sets of redundant penetration port covers. The cylindrical shell plus the bottom plate, closure lid, and welded inner port covers are stainless steel and constitute the confinement boundary. The electroless nickel-coated carbon steel fuel basket is a developed-cell circular cylinder configuration with either 37 (PWR) or 87 (BWR) fuel assembly locations. The fuel assembly locations (cells) in the PWR and BWR baskets include neutron absorber panels on up to four sides for criticality control. Each neutron absorber panel is covered by a stainless steel sheet to protect the material during fuel loading and unloading, and to maintain it in position.

The storage cask, which consists of the concrete cask body and the concrete cask lid, contains the TSC and provides structural support, shielding, protection from environmental conditions, and natural convection cooling of the TSC during long-term storage. The concrete cask body is a reinforced concrete structure with a carbon steel inner liner. The liner inner diameter incorporates standoffs to minimize impact loads on the TSC and to maintain convective heat flow paths under accident conditions.

Description (Continued)

The storage cask has an annular air passage to allow a passive convection air flow around the TSC. The air inlets and outlets are offset in elevation from the TSC to minimize radiation streaming. The spent fuel decay heat is transferred from the fuel assemblies to the TSC shell using pressurized helium circulated by convection through the fuel basket, conduction and radiation. Heat flows by convection from the TSC shell to the circulating air and by radiation from the TSC shell to the concrete cask liner. The heated air is exhausted, by convective flow, through the concrete cask air outlets. The top of the concrete cask is closed by a carbon steel lid with concrete shielding which is bolted in place.

The transfer cask provides shielding during TSC movements between work stations, the concrete cask, or the transport cask. It is a multiwall (steel/lead/NS-4-FR/steel) design with retractable (hydraulically operated) bottom shield doors that are used during loading and unloading operations.

CONDITIONS

1. 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 9 of the SAR.

2. ACCEPTANCE TESTS AND MAINTENANCE PROGRAM

   Written cask acceptance tests and a maintenance program shall be prepared consistent with the technical basis described in Chapter 10 of the SAR. Metal matrix composites (MMCs), as described in Chapter 10 of the SAR, are limited to 0.5% open porosity, as determined by qualification testing. This restriction does not apply to neutron absorbing plates constructed from Boral.

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 cask system.

4. HEAVY LOADS REQUIREMENTS

   Each lift of a MAGNASTOR® TSC, transfer cask, or concrete cask must be made in accordance with the 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 requirements, if applicable) is required to show operational compliance with existing plant-specific heavy loads requirements.

5. APPROVED CONTENTS

   Contents of the MAGNASTOR® system must meet the specifications given in Appendix B to this certificate.

6. DESIGN FEATURES

Features or characteristics for the site, cask, or ancillary equipment must be in accordance with Appendix A 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 Design Features) and Appendix B (Approved Contents), shall submit an application for amendment of the certificate.

8. AUTHORIZATION

The MAGNASTOR® system, which is authorized by this certificate, is hereby approved for general use by holders of 10 CFR Part 50 and Part 52 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.

9. CONTINUED USE OF PREVIOUS VERSION OF AMENDMENT NO. 6

A general licensee may continue to use the previous version of this certificate, Amendment No. 6, Revision 1, dated October 16, 2023, until**{insert date 6 months after effective date}**. By**{insert date 6 months after effective date}**, general licensees using Amendment No. 6, Revision 1, must have implemented the changes authorized by this revision and completed the evaluation described below.

The general licensee shall perform written evaluations before use and before applying the changes authorized by this revised certificate which establish that the cask, once loaded with spent fuel or once the changes authorized by this revised certificate have been applied will conform to the terms, conditions, and specifications of this revised certificate. The results of this review shall be documented in accordance with 10 CFR 72.212(b)(5) no later than**{insert date 6 months after effective date}**.

FOR THE NUCLEAR REGULATORY COMMISSION

DRAFT

Yoira K. Diaz-Sanabria, Chief
Storage and Transportation Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
and Safeguards
Washington, DC 20555

Attachments:
1. Appendix A
2. Appendix B

Dated: Draft