

## 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 the 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 (Certificate)	Expiration Date	Docket No.	Amendment No.	Amendment Effective Date	Package Identification No.
1025	04/10/2000	04/10/2020	72-1025	6	10/04/2010	USA/72-1025
	Renewed Effective Date	Renewed Expiration Date		Revision No.	Revision Effective Date	
	10/17/2023	4/10/2060		1	05/13/2025	

Issued To: (Name/Address)

NAC International, Inc.  
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Peachtree Corners, GA 30092

Safety Analysis Report Title

NAC International, Inc.  
Final Safety Analysis Report for the NAC Multi-Purpose Canister (MPC) System  
Docket No. 72-1025

### APPROVED SPENT FUEL STORAGE CASK

Model No.: NAC-MPC

Description:

The NAC-MPC system is described in the Final Safety Analysis Report (FSAR). The Nuclear Regulatory Commission has reviewed the FSAR as documented in the Safety Evaluation Reports for the certificate.

The principal components of the NAC-MPC system are the transportable storage canister (TSC), the vertical concrete cask (VCC), and the transfer cask.

The TSC is intended to be compatible with the NAC-STC transport cask to allow future shipment. The VCC provides radiation shielding and contains internal air flow paths that allow decay heat from the TSC spent fuel contents to be removed by natural air circulation around the canister wall. The transfer cask is used to move the loaded TSC to and from the VCC and provides radiation shielding while the TSC is being closed and sealed. The TSC is placed in the VCC by positioning the transfer cask on top of the VCC and subsequently lowering the TSC.

The TSC assembly consists of a right circular cylindrical shell with a welded bottom plate, a fuel basket, a shield lid, two penetration port covers, and a structural lid. The TSC for the MPC-LACBWR consists of a

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Description (continued):

right circular cylindrical shell with a welded bottom plate, a fuel basket, a closure lid with closure ring and two sets of redundant port cover plates. The cylindrical shell, plus the bottom plate and lid(s), constitutes the confinement boundary. The stainless steel fuel basket is a right circular cylinder configuration with up to 36 fuel tubes (for Yankee Class fuel), up to 26 fuel tubes (for Connecticut Yankee fuel) and up to 68 fuel tubes (for LACBWR fuel), including 32 oversized tubes designed to accommodate LACBWR damaged fuel cans (DFCs), laterally supported by a series of stainless steel support disks. The stainless steel support disks for all basket designs are retained by spacers on radially-located tie rods. The spent fuel assemblies are contained in stainless steel fuel tubes. The square fuel tubes are encased with Boral on all four sides for criticality control (for Connecticut Yankee and Yankee Rowe fuel tubes). The square fuel tubes for the LACBWR fuel basket may include Boral on up to four sides for criticality control. For some LACBWR fuel tubes, an 1100 aluminum plate may be used for symmetry.

For the Yankee Class MPC, an alternate fuel basket design with enlarged fuel tubes in the four corner locations is also authorized. In this alternate configuration, the Boral sheet and stainless steel cover are removed from each side of the fuel tube in the four corner locations. Aluminum heat transfer disks are spaced midway between the support disks and are the primary path for conducting heat from the spent fuel assemblies to the TSC wall.

The VCC is the storage overpack for the TSC and provides structural support, shielding, protection from environmental conditions, and natural convection cooling of the TSC during long-term storage. The VCC body is a reinforced concrete (Type II Portland cement) structure with a carbon steel inner liner. The VCC has an annular air passage to allow the natural circulation of air around the TSC. The air inlet and outlet vents take non-planar paths to the VCC cavity to minimize radiation streaming. The spent fuel decay heat is transferred from the fuel assemblies to the tubes in the fuel basket and through the heat transfer disks to the TSC wall. Heat flows by convection from the TSC wall to the circulating air, as well as by radiation from the TSC wall to the VCC inner liner. The heat flow to the circulating air from the TSC wall and the VCC liner is exhausted through the air outlet vents. The tops of the MPC-YR and CY-MPC VCC are closed by a shield plug, consisting of a carbon steel plate (gamma shielding) and solid neutron shielding material, covered by a carbon steel lid. The top of the MPC-LACBWR VCC is closed by a single shielded lid incorporating a carbon steel plate for gamma shielding and concrete for neutron shielding. The lid is bolted in place.

The transfer cask provides shielding during TSC movements between work stations, the VCC, or the transport cask. It is a multi-wall (steel/lead/NS-4-FR/steel) design and has a bolted top retaining ring to prevent a loaded canister from being inadvertently removed through the top of the transfer cask. Retractable (hydraulically operated) bottom shield doors on the transfer cask are used during TSC transfer operations. To minimize contamination of the TSC, clean water is circulated in the gap between the transfer cask and the TSC during spent fuel pool loading operations.

The fuel transfer and auxiliary equipment necessary for an independent spent fuel storage installation operation are not included as part of the NAC-MPC 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.

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**CONDITIONS**

**1. OPERATING PROCEDURES**

Written operating procedures shall be prepared for cask handling, loading, unloading, 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 FSAR.

**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 9 of the FSAR.

**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 an NAC-MPC TSC, transfer cask, or VCC 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 NAC-MPC system must meet the fuel specifications in the attachments to this certificate.

**6. DESIGN FEATURES**

Features or characteristics for the site, cask, or ancillary equipment must be in accordance with the attachments to this certificate.

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**7. FSAR UPDATE FOR RENEWED COC**

The CoC holder shall submit an updated final safety analysis report (FSAR) to the Commission, in accordance with 10 CFR 72.4, within 90 days of the effective date of the CoC renewal. The updated FSAR shall reflect the changes resulting from the review and approval of the CoC renewal. The CoC holder shall continue to update the FSAR pursuant to the requirements of 10 CFR 72.248.

**8. 10 CFR 72.212 EVALUATIONS FOR RENEWED COC USE**

Any general licensee that initiates spent fuel dry storage operations with the NAC-MPC System after the effective date of the CoC renewal and any general licensee operating a NAC-MPC System as of the effective date of the CoC renewal, including those that put additional storage systems into service after that date, shall:

- a. As part of the evaluations required by 10 CFR 72.212(b)(5), include evaluations related to the terms, conditions, and specifications of this CoC amendment as modified (i.e., changed or added) as a result of the renewal of the CoC.
- b. As part of the document review required by 10 CFR 72.212(b)(6), include a review of the FSAR changes resulting from the renewal of the CoC and the NRC Safety Evaluation Report related to the renewal of the CoC.
- c. Ensure that the evaluations required by 10 CFR 72.212(b)(7) and (8) capture the evaluations and review described in (a.) and (b.) of this CoC condition.

The general licensee shall complete this Condition prior to entering the period of extended operation or no later than one year after the effective date of the CoC renewal, whichever is later.

**9. AMENDMENTS AND REVISIONS FOR RENEWED COC**

All future amendments and revisions to this CoC shall include evaluations of the impacts to aging management activities (i.e., time-limited aging analyses and aging management programs) to ensure they remain adequate for any changes to SSCs within the scope of the CoC renewal.

**10. AUTHORIZATION**

The NAC-MPC System, which is authorized by this certificate, is hereby approved for general use by holders of 10 CFR Part 50 and 10 CFR 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.

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11. CONTINUED USE OF PREVIOUS VERSION OF RENEWED AMENDMENT NO. 6

A general licensee may continue to use the previous version of this certificate, Renewed Amendment No. 6, dated October 17, 2023, until November 13, 2025. By November 13, 2025, general licensees using Renewed Amendment No. 6, 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 November 13, 2025.

FOR THE NUCLEAR REGULATORY COMMISSION

Yaira Diaz-Sanabria, Chief  
Storage and Transportation Licensing Branch  
Division of Fuel Management  
Office of Nuclear Material Safety  
and Safeguards

Attachments:

1. Appendix A - Technical Specifications
2. Appendix B - Approved Contents and Design Features

Dated: April 7, 2025