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.
1015	11/20/2000	11/20/2020	72-1015	5	**TBD**	USA/72-1015

Issued To: (Name/Address)

NAC International Inc.
3930 East Jones Bridge Road
Norcross, GA 30092

Safety Analysis Report Title

NAC International Inc., Final Safety Analysis Report for the UMS Universal Storage System
Docket No. 72-1015

APPROVED SPENT FUEL STORAGE CASK

Model No.: NAC-UMS

Description

The NAC-UMS 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 NAC-UMS system (the cask) consists of the following components: (1) transportable storage canister (TSC), which contains the spent fuel; (2) vertical concrete cask (VCC), which contains the TSC during storage; and (3) a transfer cask, which contains the TSC during loading, unloading, and transfer operations. The cask stores up to 24 pressurized water reactor (PWR) fuel assemblies, 56 boiling water reactor (BWR) fuel assemblies, or site-specific spent fuel assemblies and/or configurations, as 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 shield lid, two penetration port covers, and a structural lid. The cylindrical shell, plus the bottom plate and lids, constitute the confinement boundary. The stainless steel fuel basket is a right circular cylinder configuration with either 24 (PWR) or 56 (BWR) stainless steel fuel tubes laterally supported by a series of stainless steel (PWR) or carbon steel (BWR) support disks. The square fuel tubes in the PWR basket include neutron absorber sheets on all four sides for criticality control. The square fuel tubes in the BWR basket may include neutron absorber sheets on up to two sides for criticality control. 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 for the PWR basket. A combination of the carbon steel support disks and aluminum heat transfer disks (in a ratio of 2.4 to 1, respectively) are the primary means of conducting heat from the spent fuel assemblies to the TSC wall for the BWR basket. There are three TSC configurations of different lengths for PWR and site-specific contents and two TSC configurations of different lengths for BWR contents. BWR spent fuel rods/assemblies must be intact. PWR and

Description (continued)

site-specific spent fuel rods/assemblies may be intact or damaged, with damaged fuel rods/assemblies placed in a fuel can. PWR fuel assemblies to be stored may include components associated with the assemblies, as specified in Appendix B.

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 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 inlets and outlets 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 outlets. The top of the VCC is closed by a shield plug, consisting of carbon steel plate (gamma shielding) and solid neutron shielding material, and a carbon steel lid. The lid is bolted in place. There are three VCC configurations of different lengths for PWR and site-specific contents and two VCC configurations of different lengths for BWR contents.

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 with retractable (hydraulically operated) bottom shield doors on the transfer cask that are used during loading and unloading operations. To minimize contamination of the TSC exterior and the transfer cask interior, clean water is circulated in the gap between the transfer cask and the TSC during loading operations. A carbon steel extension ring can be bolted to the top of the transfer cask and used to extend the operational height of a transfer cask. This height extension allows a transfer cask designed for a specific TSC length to be used with the next longer TSC.

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 8 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 9 of the SAR.

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-UMS TSC, transfer cask, or VCC must be made in accordance with the existing 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-UMS 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 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. AUTHORIZATION

The NAC-UMS 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

Eric J. Benner, Chief
Licensing Branch
Division of Spent Fuel Storage
and Transportation
Office of Nuclear Material Safety
and Safeguards

Attachments:
1. Appendix A
2. Appendix B

DRAFT

Dated: June xx, 2008