

**CERTIFICATE OF COMPLIANCE
FOR SPENT FUEL STORAGE CASKS**

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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, 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 (Initial Issue)	Docket No.	Amendment No.	Amendment Effective Date	Package Identification No.
1007	05/07/1993	05/07/2013	72-1007	0	05/07/1993	USA/72-1007
	Renewed Effective Date 09/20/2017	Renewed Expiration Date 05/07/2053		Revision No 0	Revision Effective Date N/A	

Issued To: (Name/Address)

EnergySolutions
2105 South Bascom Ave., Suite 230
Campbell, California 95008

Safety Analysis Report Title

Safety Analysis Report for the
Ventilated Storage Cask System

1. [DELETED]

2. PREAMBLE This certificate is issued to certify that the cask and contents, described in item 5 below, meet the applicable safety standards set forth in Title 10, 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."

3. THIS CERTIFICATE is issued on the basis of a safety analyses report (SAR) and the determination that the cask design meets the applicable requirements of 10 CFR Part 72 as discussed in the staff's Safety Evaluation Report (SER), "Safety Evaluation Report for the Pacific Sierra Nuclear Associates, Safety Analysis Report for the Ventilated Storage Cask System," dated April 1993.

4. CONDITIONS This certificate is conditional upon fulfilling the requirements of 10 CFR Part 72 Subpart L, as applicable, and the conditions specified below.

5. CASK

a. Model No.: Ventilated Storage Cask VSC-24

b. Description

The VSC-24 system and its analyses and operations are described in the Pacific Sierra Nuclear Associates, "Safety Analysis Report for the Ventilated Storage Cask System" (SAR) (Docket 72-1007) identified previously. The Nuclear Regulatory Commission has reviewed the

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SAR as documented in the "Safety Evaluation Report for the Pacific Sierra Nuclear Associates, Safety Analysis Report for the Ventilated Storage Cask System, April 1993." A brief summary is provided next.

The VSC-24 system that is certified is described in Sections 1, 3, 4, 5, 6, and 7 of the SAR and in the NRC's SER accompanying the SAR. (The system drawings, which reflect this description, are contained in Appendix 1 of the SAR.) The VSC-24 is a vertical cask system composed of a steel multi-assembly sealed basket (MSB) and a ventilated concrete cask (VCC). The welded MSB provides confinement and criticality control for the storage and transfer of irradiated fuel. The concrete cask provides radiation shielding while allowing cooling of the MSB and fuel by natural convection during storage.

The MSB consists of a steel cylindrical shell with a thick shield plug and steel cover plates welded at each end. The shell length is fuel-specific. An internal fuel basket is designed to hold 24 pressurized water reactor (PWR) fuel assemblies. The steel basket is a welded structure consisting of 24 square storage locations. Each storage location encloses one irradiated fuel assembly. Support in the horizontal direction is provided by curved supports located at each end and the center of the basket assembly. The basket aids in the insertion of the fuel assemblies, enhances subcriticality during loading operations, and provides structural support during a hypothetical drop accident. The MSB is installed vertically in the VCC. The VCC is a reinforced concrete cask in the shape of a right circular cylinder. The VCC has openings for air flow. Four air inlets are located at the bottom and four air outlets located at the top. The air inlets and outlets are protected from debris intrusion by wire mesh screens during storage operation. The internal cavity of the VCC, as well as inlets and outlets, are steel-lined. The inner and outer reinforcement cages are formed by horizontal hoop and vertical hook bars. Additional reinforcement is provided at the VCC bottom and around openings. After the MSB is inserted, a shield ring is placed over the MSB/VCC gap and the cask weather cover is installed. The MSB is shielded, supported and protected by a multi-assembly transfer cask (MTC) during fuel loading and MSB transfer operations.

The MTC is designed and fabricated as a lifting device to meet NUREG-0612 requirements. Other transfer and auxiliary equipment (vacuum drying system, trailer, and skid) are also used during canister loading, closure, and transfer operations, but not during dry storage.

The VCC, MSB, and MTC are identified in the SAR as the only components of the VSC-24 system that are important to safety.

Fuel assemblies are stored in the VSC-24 system according to the following sequence of operations: (1) a transfer cask containing an empty MSB is positioned in the spent fuel pool; (2) fuel assemblies are loaded in the MSB; (3) a shielding ring is placed on the MSB and the MTC is used to remove the MSB from the spent fuel pool; (4) the MSB is drained, dried, sealed, and refilled with helium; (5) the MSB, in the MTC, is transferred and placed vertically into the VCC; (6) the VCC is then transferred to the storage location via a truck trailer, and is positioned at the storage pad via a hydraulic roller skid, for normal operation storage.

c. Drawings

The drawings for the VSC-24 dry irradiated fuel storage cask system are contained in Appendix 1 of the SAR.

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d. Basic Components

The basic components of the VSC-24 system, that are important to safety, are the MSB, VCC, and MTC. These components are described in Section 1.2 of the SAR.

e. Renewal

i. AUTHORIZATION UNDER RENEWED COC

No new VSC-24 storage system structures, systems and components (SSCs) may be constructed or put into service under this amendment to the CoC after the effective date of the renewal of the CoC. However, for VSC-24 systems that have been put into service and are in operation under this amendment as of the effective date of the renewal of the CoC, cask operations, including performance of maintenance and repairs of SSCs, may continue in accordance with the conditions of this CoC.

ii. 72.212 EVALUATIONS FOR RENEWED COC USE

Any general licensee operating VSC-24 storage systems as of the effective date of the renewal of the CoC 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; and,
- 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.

iii. FSAR UPDATE FOR RENEWED COC

The CoC holder shall submit an updated FSAR to the Commission, in accordance with 10 CFR 72.4, within 90 days after the renewal of the CoC has been approved by the Commission. The updated FSAR shall reflect the changes and CoC holder commitments resulting from the review and approval of the renewal of the CoC. The CoC holder shall continue to update the FSAR pursuant to the requirements of 10 CFR 72.248.

iv. OPERATING PROCEDURES FOR SYSTEMS IN SERVICE LONGER THAN 20 YEARS

The general licensee (i.e., the user) that operates VSC-24 storage system SSCs for more than 20 years shall establish, implement, and maintain written procedures for each aging management program (AMP), including the lead cask inspection program, described in Section 9.3.3, "Aging Management Program" of the FSAR. The procedures shall be consistent with the AMP descriptions in the FSAR and shall include provisions for changing AMP elements as necessary and within the limitations specified in other CoC conditions and technical specifications to address new information on aging effects that is derived from the results of AMP inspections and/or industry operating experience. Each procedure shall contain a reference to the specific aspect of the AMP element implemented by that procedure, and that reference shall be maintained even if the procedure is modified.

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The general licensee shall establish and implement these written procedures within 300 days of the effective date of the renewal of the CoC or 300 days of the 20th anniversary of the loading of the first cask at its site, whichever is later. The general licensee shall maintain these written procedures for as long as the general licensee continues to operate VSC-24 storage system SSCs that have been in service for longer than 20 years.

v. AMENDMENTS FOR RENEWED COC

All future amendments to this CoC shall also include evaluations of the impacts of the changes in the amendment on aging management activities for the VSC-24 storage system, modifying the TLAAs and AMPs, including the lead cask inspection program, accordingly.

vi. PERIODIC TOLLGATE ASSESSMENTS

The general licensee shall perform and maintain records of periodic tollgate assessments as part of the 'Operating Experience' element of each AMP, including the lead cask inspection program, that are consistent with the general description of the assessment elements and report contents in Section 9.3.5, "Periodic Tollgate Assessments" of the FSAR.

vii. ADDITIONAL DESIGN CONDITIONS FOR RENEWED COC

As of the effective date of the renewal of the CoC, the following conditions apply to the VSC-24 design feature alternatives:

- a. The galvanized steel grate described in Note 6 of FSAR Drawing No. VCC-24-002 may not be used on any currently in service VSC-24 VCCs.
- b. The fiberglass screen material for the air outlet screens listed in Note 4 of FSAR Drawing No. VCC-24-004 may not be used on any currently in service VSC-24 VCCs after the VCC has reached an in-service life of 20 years.

6. [DELETED]

7. [DELETED]

8. Casks of the Model VSC-24, which are authorized by this certificate, are 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 Conditions for Cask Use.

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9. Effective Date: May 7, 1993

Expiration Date: May 7, 2013

10. Renewal Effective Date: September 20, 2017

Renewal Expiration Date: May 7, 2053

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/

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

Attachment: Conditions for Cask Use and
Technical Specifications

Dated: August 30, 2017

