TN 68 Dry Storage Cask

The TN 68 Metal Cask System uses metal cask technology that is unique in dry storage. The short loading operational cycle time also reduces operational cost. This is the simplest dry storage system to operate and requires the minimum investment in on-site equipment. The use of a transporter to move the cask vertically from the reactor building to the storage pad eliminates the risks of critical lifts at the ISFSI pad.

The containment vessel for the TN 68 Dry Storage Cask consists of an inner shell, which is a welded, low alloy steel cylinder with an integrally-welded, low alloy steel bottom closure; a welded flange forging; a flanged and bolted low alloy steel lid with bolts and metallic seals; and vent and drain covers with bolts and metallic seals.

There are two penetrations through the containment vessel. A double-seal mechanical closure is provided for each penetration. The inter-space between the seals is connected to a pressure monitoring system.

The cask is provided with significant gamma and neutron shielding.

The basket structure consists of an assembly of stainless steel cells with borated aluminum or boron carbide/aluminum metal matrix composite plates for the necessary criticality control and to provide the heat conduction paths from the fuel assemblies to the cask cavity wall.

The cask cavity surfaces are uncoated, but are protected by the inert gas environment inside the cask during storage. The external surfaces of the cask are painted for ease of decontamination and corrosion protection. A stainless steel overlay is applied to the o-ring seating surfaces on the body and lid for corrosion protection.

Four trunnions are attached to the cask body for lifting and rotation of the cask between vertical and horizontal positions.

Damaged fuel that can be handled by normal means can also be stored in the TN 68 by using unique end caps to confine the assembly inside the basket cell.

About AREVA TN

AREVA TN, a division of AREVA Inc., is a leader in the American nuclear market offering innovative total systems solutions for used fuel and radioactive waste management and transportation. More than 50 percent of American nuclear plant operators use AREVA TN's used fuel storage or transport solutions, irradiated waste removal and processing, and pool to pad services.

As part of AREVA, the global leader in nuclear technology, AREVA TN offers the industry an unparalleled level of engineering, technical and logistics expertise.

AREVA TN's track record of providing safe storage and transportation of used fuel is driven by state-of-the-art products and services, innovative engineering solutions, and integrity in meeting customer expectations for low-dose and error-free campaigns. AREVA TN customers include utilities, reactor operators, research reactors and the U.S. government.

AREVA TN's products are marked by the highest standard of safety, uncompromising commitment to quality and operational dependability, and "as promised" service integrity.

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Technical Features

Payload

68 BWR Assemblies

Intact Fuel with or w/o Channels

Damaged Fuel – Maximum 8 Assemblies per DSC

Materials of Construction

Low Alloy Steel Shell and Lid

Low Alloy Steel Shield Plugs

Stainless Steel/Aluminum Basket Assembly

Polypropylene Neutron Shielding

Double Metallic O-Rings

Borated Aluminum Poison

Metal Matrix Poison

Physical Data

Outside Diameter – 98 inches

Outside Length (with cover) – 215 inches

Outside Length (w/o cover) – 201.25 inches

Cavity Diameter – 69.5 inches

Cavity Length – 178 inches

Cask Lid – 5 inches with 48 bolts

Weight, Empty – less than 91 tons

Weight, Loaded – 115 tons

Intact & Damaged Fuel

Max Initial Enrichment – 4.7 wt% U235

Min Cooling Time – 7 years

Max Burnup – 60 GWd/MTU

Max Heat Load – 30 kW

Max Heat Load – 0.441 kW/Assembly

Max Uranium Content – 197.7 kg/Assembly

Max Assembly Weight – 705 lbs

Damaged Fuel

Damaged BWR Fuel assemblies for storage in the TN 68 are fuel assemblies containing fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks. The fuel shall not contain any missing fuel pins or fuel pin segments, unless dummy rods are used to displace an amount of water equal to or greater than that displaced by the original fuel rod(s). The assembly average burnup is limited to ≤ 45 GWd/MTU.

Damaged fuel shall be stored within the eight peripheral compartments with top and bottom caps.

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