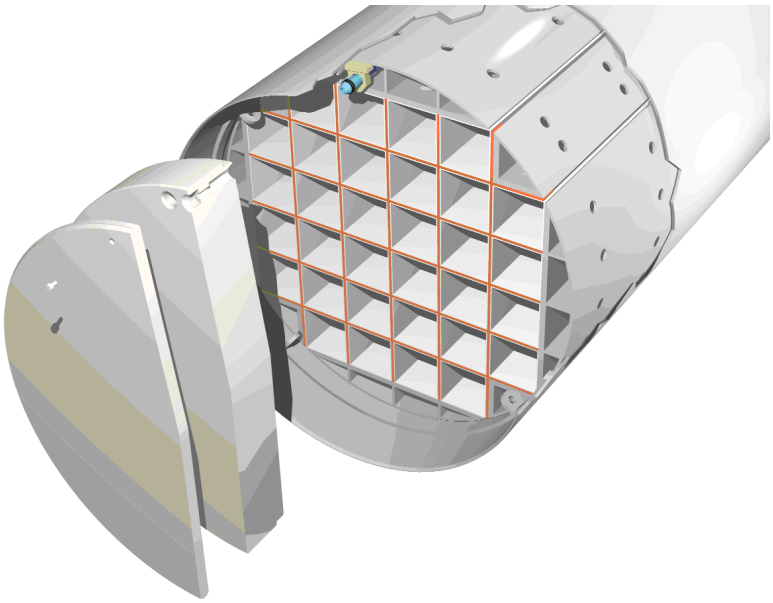
Orano TN

NUHOMS® 32PTH1

Dry Shielded Canister



The NUHOMS® 32PTH Dry Shielded Canister (DSC) is a state-of-the-art high-heat canister that TN Americas has developed for storage and transport of high burnup short cooled fuel.
The 32PTH DSC incorporates a 3-inch larger canister diameter than the standard NUHOMS® canisters. The larger diameter allows for increased payload and optimized use of heat conducting materials to increase the thermal heat rejection capacity of the system.

The 32PTH benefits from the use of an advanced egg crate basket geometry used in the NUHOMS® 24PTH. It consists of uninterrupted aluminum heat conductive pathways and utilizes crisscrossed slotted plates to construct the egg crate shape. The slotted plates minimize gaps to improve heat conduction while minimizing welding and simplifying construction.

Construction of this basket is simple and efficient. The slotted plates are assembled into a simple “egg crate” segment. To span the full axial length of the canister, the short egg crate segments are stacked axially with stainless steel bands between each two stacks. Stainless steel fuel compartments are inserted through the egg crate segments and fuse-welded to each of the steel bands to achieve high structural rigidity. The fusion welds minimize distortion. The basket uses “transition rails” to bridge the gap to the outside shell to provide a wide contact surface that improves thermal conduction while providing a larger footprint on the shell for load transfer under some of the severe drop accidents.

This canister incorporates the same closure weld design as the many other safely loaded NUHOMS® canister systems in use today.
The 32PTH offers the most advanced fuel parameters of any system in the industry. Parameters of this design simplify used fuel management for our customers.

The 32PTH system does not sacrifice shielding in the transfer cask, allowing the system to store high neutron and gamma source terms without a dose penalty.

Technical Features

Payload:

- 32 Intact including Reconstituted PWR Fuel Assemblies
- 16 Damaged Fuel Assemblies
- Control Components – BPRAs, TPAs, CRAs, RCCAs, APSRAs, ORAs, VSIs, NSAs, Neutron Sources, BLEU Fuel Material and Instrument Tube Tie Rods

Materials of Construction:

- Stainless Steel Shell and Cover Plates
- Coated Carbon Steel Shield Plugs
- Stainless Steel Basket Assembly
- Borated Aluminum, Boral & MMC Poison

Physical Dimensions:

- Outside Diameter – 69.75 inches
- Outside Length – 193 inches
- Cavity Length – 171.63 inches
- Weight, Empty – 58,000 lbs
- Weight, Loaded – 108,850 lbs

Intact fuel:

- Zircaloy Based Cladding Material
- Maximum Initial Enrichment – 5 wt% U235
- Minimum Initial Enrichment – 0.2 wt% U235
- Minimum Cooling Time – 5 years
- Maximum Burnup – 60 GWd/MTU
- Maximum Heat Load – 34.8 kW
- Maximum Decay Heat – 1.5 kW/Assembly
- Maximum Uranium Content – 476 kg
- Maximum Assembly Weight – 1610 lbs

Reconstituted Fuel:

- 4 Assemblies per DSC with up to 10 Stainless Steel Rods per Assembly
- Unlimited number of Lower Enriched Rods/Assembly

Damaged Fuel:

- Assemblies containing missing or partial fuel rods or fuel rods with known or suspected cladding defects greater than hairline cracks or pinhole leaks that are able to be handled by normal means. Damaged fuel assemblies are stored in a fuel compartment with top and bottom end caps.

Benefits

Designed to meet dry used fuel storage and transport needs

Improved thermal performance and capable of storing high burnup short cooled spent fuel assemblies

Optimized 32 cell system for sites with size and weight constraints

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