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Orano TN Completes Transfer and Storage of Highest Heat Load Used Nuclear Fuel Canisters Using NUHOMS EOS System at U.S. Nuclear Energy Facility

Industry-first storage of highest heat load used nuclear fuel.

WASHINGTON, D.C., January 15, 2020

In its final loading campaign of 2019, Orano TN completed the transfer of 296 used nuclear fuel assemblies from a U.S. reactor's wet storage pool to the onsite dry storage Independent Spent Fuel Storage Facility (ISFSI). The pool-to-pad campaign used eight NUHOMS® EOS 37PTH canisters to securely store the used fuel in eight NUHOMS EOS Horizontal Storage Modules (HSM).

Averaging a total heat load per EOS canister of 44.75 kilowatts, Orano's Extended Optimized Storage (EOS) system is the first dry storage system to load and store used nuclear fuel with heat loads well above industry experience to date, which has ranged between 14-34 kW per canister. Heat load in kW is a measurement of the used nuclear fuel's decay heat.

The loading campaign benefited from using Orano's advanced EOS technology licensed by the NRC for heat loads of up to 50 kW per canister, the highest in the industry. Designed by Orano TN and manufactured at Orano's TNF site in Kernersville, North Carolina, the EOS canisters are engineered to store 37 PWR high burnup fuel assemblies with the highest total heat load per canister, and the highest heat load per used fuel assembly of any system in the industry.

The EOS Horizontal Storage Modules are manufactured by Orano's precast concrete facility in Moyock, North Carolina, and engineered to provide maximum physical protection from external events, the highest heat load dissipation capability at 50kW, and the lowest radiation dose—with nearly half the dose rate of a vertical module system.

Other nuclear energy sites in the U.S. will also benefit from the EOS system's advanced capabilities by allowing reactor owners to transfer hotter fuel assemblies and fuel cooled for less time from the reactor's wet storage pool into secure dry storage. This benefits operating nuclear facilities by simplifying the management of the pools and continuously reducing the wet-stored inventory of high heat and short-cooled fuel assemblies.

The benefit is even greater for shutdown reactor sites. The EOS system allows a shutdown site to accelerate the transfer of used fuel from the pool to the ISFSI, enabling the site to shorten its transition period and accelerate updates to the facility's emergency response plan.

"This initial loading of the EOS system is a milestone event for Orano TN," said Amir Vexler, U.S. president of Orano TN, "The safe and efficient performance clearly demonstrates the expertise and advanced technology Orano provides for our customers."

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The recently constructed and loaded EOS dry storage system is Orano's first installation of this advanced version of its NUHOMS portfolio, which has been securely storing used nuclear fuel for decades at more than 30 U.S. sites. The new EOS system retains the same simple and stable horizontal used fuel loading process unique to Orano's NUHOMS technology.

Lower Dosage and Efficient Transfer Times

The public's and the nuclear site workers' safety is a pillar underpinning the activities of Orano TN's dry storage technologies and services. Used nuclear fuel transfer campaigns are defined by three radiation dose-limit considerations: the upper limit set by the Nuclear Regulatory Commission, the lower Customer Estimate set by the reactor site owner, and the Actual amount recorded during each loading campaign. A site owner may also set a challenging Customer Stretch Goal measurement below the established Estimate.

In all five 2019 loading campaigns, the Orano TN Services team fully leveraged best practices and the NUHOMS system's inherent design features to deliver the lowest dose achievable. The dose performance in many of these campaigns significantly beat the Customer Estimate, and was often better than the Customer Stretch Goal.

Another industry record was set during this latest campaign when the final two EOS canisters were loaded in a record-setting seven days. The 3.5-day cycle per canister is an industry first. This new record bests Orano's industry-leading 4-day average for a canister loading cycle.

Learn more about Orano's NUHOMS storage system.

About Orano TN: Orano TN operates in the U.S. as TN Americas, which is a subsidiary of Orano USA, with more than 55 years of experience providing nuclear packaging and transportation solutions for its customers worldwide. Globally, Orano TN conducts more than 5,000 transports of used nuclear fuel and radioactive material packages worldwide, while meeting the highest international security requirements.

About Orano USA: A subsidiary of the global company Orano, Orano USA is a leading technology and services provider for decommissioning shutdown nuclear energy facilities, used fuel management, federal site clean-up and closure, and the sale of uranium, conversion, and enrichment services to the U.S. commercial and federal markets. Orano Med is also developing anti-cancer treatments using radioisotopes. With its parent company Orano, Orano USA has more than 30 years of experience in decontaminating and dismantling nuclear facilities, and more than 55 years of experience securely transporting and storing used nuclear fuel.

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