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Hanford Waste Treatment Plant receives key vessel for decontamination system

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Richland, Wash. -- This week, the Hanford Waste Treatment Plant, also known as the "Vit Plant," received an enormous nuclear-quality vessel that will be essential to the Low-Activity Waste (LAW) Facility's container decontamination system. The 65-foot-long and 10-foot-diameter vessel will store carbon dioxide that will be used to clean the outside of filled low-activity waste containers before they leave the facility.

"The carbon dioxide vessel is a key component of the system that will ensure the exterior surface of the low-activity waste containers are free of radioactive contaminants and safe for removal," Gary Olsen, Department of Energy area project manager for the facility, said.

The carbon dioxide stored in the vessel will be transferred via stainless steel pipes to two machines inside the LAW Facility. The machines will convert the liquid carbon dioxide into a solid pellet form, and the pellets will be blasted at the filled containers using compressed air. The pellets will hit the surface of the containers, cause a microthermal reaction that removes contaminants and immediately transform into a harmless vapor.

The 50-ton vessel was built in accordance with rigorous nuclear-quality standards and is made of a special grade of carbon steel designed for use at below-freezing temperatures. It is also covered in a coating, a 4-inch thick foam glass insulation and an aluminum jacket. When combined, these layers help the vessel maintain an internal temperature below 0 degrees Fahrenheit. This temperature is essential to keeping the carbon dioxide in a liquid state while it is being stored. The vessel, which will be installed horizontally, will hold up to 32,000 gallons of liquid carbon dioxide, enough to clean more than 90 containers.

It arrived at the Vit Plant construction site on a 174-foot-long heavy-haul transporter and was offloaded at the Low-Activity Waste Facility. This summer, it will be installed outside the southeast corner of the facility.

"The arrival of the carbon dioxide vessel further demonstrates the momentum of major equipment deliveries to the Vit Plant over the next three years and will support our commitment to completing construction in 2016 and reaching operations in 2019," Rich Brown, area project manager for plant equipment, said.

The Low-Activity Waste Facility is currently 62 percent constructed.

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Bechtel National, Inc. is designing and building the world's largest radioactive waste treatment plant for the U.S. Department of Energy at the Hanford Site in southeastern Washington state. The \$12.2 billion Waste Treatment and Immobilization Plant (WTP), also known as the "Vit Plant," will immobilize the radioactive liquid waste currently stored in 177 underground tanks using a process called "vitrification."

Vitrification involves blending the waste with molten glass and heating it to high temperatures. The mixture is then poured into stainless steel canisters. In this glass form, the waste is stable and impervious to the environment, and its radioactivity will dissipate over hundreds to thousands of years.

The WTP will cover 65 acres with four nuclear facilities -- Pretreatment, Low-Activity Waste Vitrification, High-Level Waste Vitrification and Analytical Laboratory -- as well as operations and maintenance buildings, utilities and office space.

Construction of the WTP began in 2001 and is now 57 percent complete. Construction is scheduled to be complete in 2016 and operational in 2019.



The 50-ton carbon dioxide vessel arrived at the Vit Plant construction site earlier this week. It will be part of a container decontamination system for the Low-Activity Waste Facility.