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Hanford Waste Treatment Plant Project finishes setting series of massive shield doors

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Richland, Wash. -- Last week, the Hanford Waste Treatment Plant Project, the “Vit Plant,” finished setting the last of four massive shield doors in its High-Level Waste (HLW) Vitrification Facility. The first was set this spring. These four doors are located in a key area of the facility and are crucial to advancing construction.

“By successfully completing these major placements, we’re ensuring civil construction will progress above and around the shield doors as scheduled,” Ray Patterson, area project manager for the HLW Facility, said. “This will begin with laying the 23-foot elevation concrete floors above them and continuing to advance upward.” The HLW Facility will reach 91 feet when complete.

Each shield door measures 8 inches thick, 15 feet tall and 18 feet wide. Two of the doors weigh 50 tons, and two weigh 14 tons. The doors were set in the melter area, with the heavier doors closest to the melters. When operational, the HLW Facility will use two identical 90-ton melters to heat the high-level waste and glass-former mixture to 2,100 degrees Fahrenheit. The molten glass will then be poured into stainless steel canisters for permanent storage.

Each melter is designed for a five-year lifespan. At the end of a melter’s lifespan, it will be encased in a protective container, removed and replaced. This will be safely accomplished using a sophisticated, remotely operated rail-and-airlock system, which will ensure radiation is contained and workers are protected.

The system includes six airlock shield doors, three for each melter. The doors will open and close sequentially, when the transfer is taking place. The protective container and doors will both move using rails. When the melter is safely encased in the protective container, it will be moved out of the facility for permanent storage.

Two additional doors, which will sit outside the 23-foot elevation floors, will be installed in early 2011.

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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 55 percent complete. The plant will be operational in 2019.



The High-Level Waste (HLW) Vitrification Facility shield doors are 8 inches thick, 15 feet tall and 18 feet wide. Two of the doors weigh 50 tons, and two weigh 14 tons. Setting these doors will allow construction to continue above and around them.