



U.S. DEPARTMENT OF
ENERGY

MEDIA CONTACTS:
Erik Olds, (509) 372-8656

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MASSIVE SHIELD DOOR INSTALLED AT HANFORD NUCLEAR FACILITY

Richland, Wash. -- Construction crews with Bechtel National, Inc. have successfully completed the precision installation of a massive 50-ton shield door at Hanford's Waste Treatment Plant (WTP) in southeastern Washington State. Bechtel is designing and building the WTP for the U.S. Department of Energy's Office of River Protection.

The shield door is in a key area of the WTP's High-Level Waste Vitrification (HLW) Facility and was installed to extremely tight tolerances, down to five-thousandths of an inch, or less than the diameter of a human hair.

"Installation of the melter shield door is a significant project accomplishment and highlights the continued progress we are making in the construction of the Waste Treatment Plant," said Jeff Trent, ORP's Federal Project Director for the HLW Facility.

The steel shield door is 8 inches thick and measures 15 feet tall and 18 feet wide. It was installed in the melter area, which is the core of the HLW Facility. 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 waste/glass mixture will then be poured into stainless steel canisters, sealed and prepared for storage and ultimate disposal.

"We installed the doors using precision optics and verified the installation with a laser tracker," Scott Neubauer, Bechtel's superintendent for the HLW Facility, said. "This technology is one of the few that provides accurate measurements to the precision this project requires." The laser tracker used was originally developed for and used in the aerospace industry.

Each HLW melter is designed to a five-year lifespan. At the end of the melter's lifespan, it will be encased in a 250-ton, 8-inch-thick protective container, removed from the melter area and replaced with a new melter. This will be safely accomplished using a sophisticated, remotely operated rail-and-airlock system, which will ensure 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. When the melter is safely encased in the protective container, it will be moved out of the facility for permanent storage.

The recently installed shield door is the first of the rail-and-airlock system's shield doors. It is also one of the two that will be closest to the melter itself.

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“This system is key to operations of the HLW Facility,” Neubauer said. “By completing this first installation, we are setting the stage for the subsequent installations and ultimately for the entire WTP becoming operational in 2019.”

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 more than 50 percent complete. The plant will be operational in 2019.

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A 50-ton shield door requires precision installation at the High-Level Waste Vitrification Facility at the Hanford Waste Treatment Plant.

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