U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Workers Train to Cut into Hanford Underground Waste Tank

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A Washington River Protection Solutions crew used a mock-up of a portion of a tank dome at the Hanford Site's Cold Test Facility to practice cutting and removing a tank dome core.

RICHLAND, Wash. – Workers on the Hanford Site are preparing to cut into the dome of an underground waste-storage tank later this summer to get ready for future waste retrieval operations.

This is just the third time in 15 years that EM Office of River Protection (ORP) contractor Washington River Protection Solutions (WRPS) will create an access hole in a tank that contains radioactive and chemical waste from plutonium production operations during World War II and the Cold War era.

WRPS crews used a mock-up of a tank dome to test a new drilling machine and tools designed to significantly reduce time and potential exposure for field crews.

"Mock-ups increase safety and efficiency, giving crews a chance to practice, provide feedback, and apply lessons learned as they prepare to work on the real waste tank," said Jim Greene, ORP Tank Farm Programs Division manager. "Using this technology means we can limit the time crews have to spend in a hazardous area."

NEW EMTV VIDEO ALERT: Watch this video about a mock-up of an underground waste-storage tank at the Hanford Site that allows workers to practice using core cutting equipment before performing the work in the field.

Known as the Tank Dome Core Cutting System, the modified drilling machine will excavate several feet of soil above the tank and drill through the tank dome. This is an improvement over workers digging by hand to remove the soil.

The drilling system was developed to create a 4-foot-diameter hole in Tank A-106 for the placement of a new riser, or long access tube, through which crews will install waste retrieval equipment.

Building the mock-up and training started earlier this year at Hanford's innovative **Cold Test Facility**, where workers test prototype systems and train in a nonradioactive environment.

"Occasionally an existing riser can become blocked with decades-old, contaminated equipment," said Peggy Hamilton, WRPS Single-Shell Tank Retrievals manager. "It is safer and more efficient to create a new riser than return the existing riser to a condition suitable for use. The training sessions at the mock-up helped the team become familiar with the new system and identify opportunities for improvement before setting up and operating the equipment at the tank."

The new cutting system is based on previous successes in dome access. In 2010, WRPS cut a 55-inch-diameter hole in the top of a tank in Hanford's C Tank Farm using high-pressure water and a fine material called garnet grit. Then in 2013, WRPS used a newly developed rotary-core cutting system to cut a hole in the dome of another C Farm tank. A **tank farm** is a large group of underground waste storage tanks.

The six 1-million-gallon capacity tanks that make up the A Tank Farm — including Tank A-106 — were built in the mid-1950s. As part of the cleanup mission, crews are safely retrieving waste from the older single-shell tanks into newer, more robust double-shell tanks until the waste can be **vitrified**, or immobilized in glass. Waste retrieval operations in the A Tank Farm are scheduled to start in mid-2024.

When completed, the A Tank Farm will be the third at Hanford where workers have finished retrieving waste from all tanks in a farm. Workers have finished waste retrieval operations on the 16 tanks in the C Tank Farm and will have finished the four tanks in the AX Tank Farm by then. To date, EM has completed retrieval operations on 19 of 149 single-shell tanks with operations at two additional tanks in progress.

Workers use the Tank Dome Core Cutting System, a modified drilling machine that will create an access hole in the top of an underground waste-storage tank where workers will install equipment to retrieve radioactive and chemical waste from the tank.