

THE HANFORD SITE

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Welcome Home to Hanford, Tank-Side Cesium Removal System

RICHLAND, Wash. – Workers recently moved three enclosures that make up a system that will pretreat [Hanford Site](#) tank waste for processing to their permanent home onsite.

“This is a major accomplishment,” Janet Diediker, federal projects manager at the Department of Energy’s (DOE) [Office of River Protection](#), said of the delivery of the Tank-Side Cesium Removal system (TSCR). “It keeps construction of this vital part of the waste feed delivery system on schedule for commissioning by early next year.”

The pretreatment system will remove radioactive cesium and solids from tank waste and is critical to the site’s [Direct-Feed Low-Activity Waste approach](#), which will send pretreated waste directly from the tank farms to the Low-Activity Waste Facility at the [Waste Treatment and Immobilization Plant](#) for vitrification.

Workers built the system and conducted factory acceptance testing at the AVANTech facility in Richland, located just south of the 580-square-mile site. DOE Hanford tank operations contractor Washington River Protection Solutions worked with Lampson Crane to move the process, auxiliary, and control enclosures by flatbed trailer about 25 miles onto the site and lifted them into place on a concrete pad next to the AP Farm tanks.



The white enclosures of the Tank-Side Cesium Removal system are visible adjacent to the Hanford Site's AP Tank Farm. In the background is the Waste Treatment and Immobilization Plant, where waste pre-treated by TSCR will be heated to 2,100 degrees Fahrenheit, mixed with glass-forming materials, and poured into stainless steel containers for disposal.

At the heart of the pretreatment system are three ion exchange columns that will remove cesium from the waste stream. They will be moved from AVANTech when preparations for operational acceptance testing begin later this year. Workers will deliver the equipment using a custom-designed trailer that allows offloading and placement of the 24,000-pound columns into a process enclosure.

During pretreatment operations, tank waste will flow through the ion exchange columns at about five gallons per minute. Pretreated waste will be stored in a double-shell tank in AP Farm until it is sent through underground piping to the Low-Activity Waste Facility, where it will be heated to 2,100 degrees Fahrenheit, mixed with glass-forming materials, and poured into stainless steel containers for disposal.



From left, auxiliary, control, and process enclosures for the Tank-Side Cesium Removal system, critical to the Direct-Feed Low-Activity Waste approach at the Hanford Site, have been anchored to a concrete pad next to large underground waste tanks in the AP Tank Farm.

The Department of Energy (DOE) is engaged in one of the great public works of this century at the Hanford Site near Richland, Washington. Responsible for the federal government's cleanup of the legacy of more than 40 years of producing plutonium through the 1980s, DOE is transforming the site back into a 24/7 operations mode to treat tank waste from the production era. The DOE Office of River Protection (ORP) is responsible for the safe and efficient retrieval, treatment and disposal of the 56 million gallons of chemical and radioactive waste stored in Hanford's 177 underground tanks. The mission includes building and commissioning the world's largest radioactive waste treatment plant, which will immobilize the legacy tank waste through vitrification. The DOE Richland Operations Office is responsible for all remaining Hanford cleanup and is currently focused on stabilizing and demolishing former plutonium production structures, excavating and disposing of contaminated soil and waste, treating contaminated groundwater, and configuring Hanford Site infrastructure for the future, with an emphasis on supporting the tank waste mission. Hanford Site work is conducted by a federal and contractor workforce of approximately 9,400 personnel. Visit www.hanford.gov for more information about the Hanford Site.

