



Tank-Side Cesium Removal System enclosure with the bay doors open.



Inside the system.



The system control room.

Background

The Tank-Side Cesium Removal (TSCR) system will filter undissolved solid material and remove cesium, which accounts for 99.9% of the radioactivity in the waste steam, providing a low-activity waste stream that can be sent to Hanford’s Waste Treatment and Immobilization Plant’s (WTP) Low-Activity Waste Facility for vitrification (immobilization in glass). TSCR is located just outside Hanford’s AP Tank Farm, which stores the waste before and after the TSCR treatment of it. TSCR is comprised of the main process enclosure, a control room, and ancillary enclosures containing support systems. The TSCR will utilize three ion exchange (IX) columns to remove radioactive cesium from the waste stream and process 170,000 gallons of waste during the first phase of the approach. As part of the U.S. Department of Energy’s comprehensive Direct-Feed Low-Activity Waste approach, TSCR provides the following benefits:

- Treats liquid waste to provide low-activity waste feed for the WTP
- TSCR is the first step to feeding waste to WTP, which will create space in double-shell waste storage tanks
- Supports phased mission progress and a scale-up of treatment capabilities
- Entails a small modular approach, resulting in lower costs

Phased Approach for Cesium Removals

- Subproject I is the TSCR demonstration, which is a modular at-tank cesium-removal capability.
- Subproject II will address the need for a long-term cesium removal capability. This phase is planned to commence after the TSCR demonstration has operated for sufficient time to inform a subsequent alternatives analysis.

The TSCR facility can be viewed using the self-guided [Hanford Virtual Tour](#).

