

# Once infamous Hanford tank returned to service

Geoff Tyree, CHG

Following rigorous safety reviews by the U.S. Department of Energy Office of River Protection, its contractors and regulators, Hanford's once infamous "burping" waste tank is back in service. The announcement marks the end of more than a decade of serious safety problems and a costly effort to solve those problems.

Returning the million-gallon tank to service closes the book on what was once Hanford's and the Department of Energy's top safety concern. It is a success in terms of helping avoid an annual cost of \$30 million in extra safety measures that were needed, and it helps avoid spending tens of millions of dollars to build new tanks.

Tank SY-101 received national media attention and was a top concern of DOE, the regulators and the public beginning in the early 1990s. Concern over the buildup and occasional release of flammable hydrogen gas inside the tank and a growing waste crust led to a major effort that included running a large mixer pump in the waste to prevent gas buildup.



**Hanford's once-infamous "burping" Tank SY-101 will receive waste for the first time in 20 years. The tank was once a top safety concern because chemical reactions in the waste generated potentially flammable gases. SY-101 is expected to play a key role in future transfers of tank waste to the planned vitrification facility.**

## Rising crust

When a new problem with a growing waste crust emerged, the DOE Office of River Protection and tank-farm contractor CH2M HILL Hanford Group resolved the safety issues by diluting and removing more than 520,000 gallons of waste from the tank last year.

Solving those problems led to the tank's removal in January from the now-closed Wyden congressional safety watch list, which required the Department of Energy to watchdog the most dangerous of Hanford's 177 waste tanks. Tank SY-101 was officially returned to service in September, and is available to receive waste for the first time in two decades.

Before being returned to service, the tank and its associated facilities went through a stringent review by DOE and CHG, with oversight from the Defense Nuclear Facilities Safety Board, the Washington State Department of Ecology, the Oregon Office of Energy and the Tanks Advisory Panel. The panel includes experts from several universities and private industry who have expertise in hazardous waste, radioactive materials and waste management.

"The problems with SY-101 are over, and we expect the tank will be a critical resource in our effort to retrieve the waste from Hanford's aging tanks for treatment," said Rick Raymond, vice president of Projects for CH2M HILL Hanford Group.

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“We need this existing double-shell tank space for removing liquids from the older tanks and to be ready for removing the remaining waste,” said Raymond. “The ultimate goal is to close Hanford’s tanks for good and remove the long-term threat they pose to the Columbia River.”

### Critical mission

Tank SY-101 is an important staging point for transferring millions of gallons of waste from 200 West to a planned vitrification facility in 200 East. Until now, only one other double-shell tank, SY-102, has been capable of receiving waste retrieved from dozens of aging single-shell tanks on its way to the cross-site transfer line.

The million-gallon SY-101 is one of Hanford’s 177 underground tanks that store approximately 53 million gallons of radioactive and hazardous waste from decades of plutonium production. It’s one of the newer double-shell tanks and was put into service in 1977.

After receiving a batch of radioactive waste in 1980, reactions inside the tank began to generate a flammable concentration of gases. The gas became trapped in the waste and would vent inside the tank about every three months — an event that came to be known as a “burp.” The tank was taken out of service in February 1991.

Tank SY-101 is expected to receive its first transfer of radioactive waste from single-shell tanks later this year. ♦