



Harvesting success at Hanford tank farm

Retrieving, treating and disposing of approximately 53 million gallons of radioactive and hazardous waste stored in 177 underground tanks is a task measured by many milestones. CH2M HILL Hanford Group has celebrated several key milestones in recent months.

Here is a look at some accomplishments that are bringing the U.S. Department of Energy's Hanford site in Washington closer to completed cleanup:

Pumping operations begin five months ahead of schedule

In the effort to move radioactive liquid wastes from Hanford's older single-shell tanks to newer, safer double-shell tanks, staff started pumping operations on the last of 29 waste tanks five months ahead of schedule. This sets the stage for removing all the pumpable liquid waste—over 330,000 gallons—by October 2004 and then starting the solids waste removal.

Solid-waste solutions

With much of the liquid waste removed from the tanks, what remains is two forms of solid waste, sludge and salt cake. The sludge is similar to dry river mud

or clay. Salt cake is like wet beach sand and can dry rock-hard. A proof-of-concept demonstration of a technology to dissolve solid deposits in underground tanks is underway. The demonstration is being done on Tank U-107, which contains 320,000 gallons of salt cake waste, and involves dissolving and pumping out the waste using conventional sprinkler heads and water. A centralized pump in the tank removes the dissolved waste.



Sprinkler heads are being tested for dissolving solid wastes in Tank U-107.



Tank-crawling technology

CH2M HILL Hanford Group and the Department of Energy are taking a cue from the petroleum industry in an effort to clean up radioactive sludge. Demonstration of a remote-controlled cleanup machine is underway in

a simulated waste tank. Called the tank crawler, the sturdy and agile 1,300-pound machine looks like a small bulldozer with treads and a folding blade. A pump on the crawler sucks up waste and sprays it toward a central vacuum pump. The crawler is an adaptation of technology used extensively in the petroleum and mining industries. Up to 60 of Hanford's 177 tanks contain waste that may be suitable for using the crawler and vacuum pump.

Pumped-up pump

CH2M HILL Hanford Group is one step closer to being ready to send tank waste to a glassification plant, currently under construction. Crews recently removed a 60-foot waste transfer pump from double-shell tank AP-101 to make room for a stronger pump that will feed waste for glassification. The tank will be the first to transfer low-activity waste to the treatment plant.

Testing three new treatments

The treatment of 53 million gallons of tank waste by 2028 is key to completing the project cleanup at Hanford. To meet this milestone, treatment technologies will be needed that sup-



Crews pull the old pump from Tank AP-101, making room for a more powerful pump to feed waste to a treatment plant for glassification.

plement the capacity of the glassification plant. CH2M HILL Hanford Group is investigating three technologies for the DOE. The pilot technologies include: bulk vitrification, a method of turning waste into glass in large disposal containers suitable for land disposal; steam reforming, a technology that includes treating low-activity tank waste that has been through a pre-treatment process to remove most of the radioactivity; and testing containerized grout, which would be used to immobilize the waste in grout-forming additives in a form suitable for land disposal.

The tank crawler, a 1,300-pound tracked vehicle that works like a cross between a plow and a snowblower, is being tested for mixing waste at the Hanford site.

