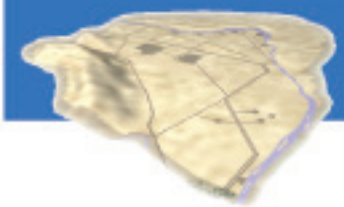
Overview



Base Operations

WRPS Base Operations division manages 28 double-shell radioactive waste storage tanks, the 242-A liquid waste evaporator, the 222-S laboratory and associated infrastructure near the center of the U.S. Department of Energy's 586-square-mile Hanford Site in Washington State. Its mission is to safely store and manage liquid radioactive waste until it can be sent to the Waste Treatment Plant for disposal.

The tanks, each with a capacity of 1.1 million gallons, were built between 1968 and 1986 to hold waste left over from the production of plutonium for the nation's defense. They contain both liquid and settled solids from past nuclear operations, including waste transferred from the older single-shell tanks as part of the interim stabilization and retrieval activities, reducing the threat to the environment.

As a result of recent upgrades and installation of new systems, the double-shell tanks (DST) represent the largest environmentally compliant hazardous waste storage system in America. This was accomplished with completion of significant multi-year projects laid out in the Tri-Party Agreement (TPA), which governs Hanford waste cleanup.

586-square-mile Hanford Site in Washington

242-A Evaporator

Tank farm pit

14 miles of new transfer lines

TPA M-43 Tank Farm Upgrades

Completion of M-43 work was a major accomplishment and was the result of excellent team work and innovative methods of doing the work, resulting in the savings of millions of dollars. Major projects included:

- Installation of 14 miles of new transfer lines from Hanford's 200 West Area to the 200 East Area, including a new lift station and a new ventilation station.
- Upgrades to 35 tank farm pits where piping is connected to facilitate transfer of waste between tanks.
- Addition of 14 new transfer lines and installation of more than 12,000 feet of transfer piping between tanks which included high risk radiological work.
- Removal of 13 non-compliant cleanout boxes from transfer lines.
- Installation of 6,600 feet of new transfer lines from DSTs to the Waste Treatment Plant. The project also upgraded two pits.

continued on

DST Infrastructure Integrity Check

The milestone required a complete integrity check of the entire DST infrastructure, which included underground pipes, transfer pits, raw water pits, catch tanks, and anything else that would have to contain hazardous waste. This included pressure testing of all transfer lines that we intend to use in the future.

One of the major challenges was the ultrasonic testing of the inner tank walls on all 28 DSTs. Testing the vertical surfaces required the development of new equipment that could be inserted into the space between the inner and outer walls. Testing the area known as the knuckle, which is the curved surface that connects the tank wall to the bottom of the tank also required the development of a new ultrasonic testing device called the Tandem Synthetic Aperture Focus Technique, or T-SAFT, that generated a "bounce wave" that can travel through the curve and return. The ultrasonic testing was designed to reveal any cracks or excessive corrosion in the tank walls that could shorten the life of a tank.

The testing showed that the steel tank walls are holding up extremely well. It revealed only a small amount of pitting in a few locations where the liquid waste meets the airspace, but corrosion was much less than expected.

Other challenges included the cleaning out of all old transfer pits and recoating them. Each pit is a reinforced concrete structure set into the ground and covered with a thick cover block. Within each pit are multiple nozzles and connections that allow transfer of liquid waste to numerous locations. Workers had to take special precautions to minimize radiation exposure and contamination risks. Other work included pressure testing of the Cross-Site Transfer Line that runs between the 200 West and 200 East areas, plus the installation of three new transfer pits.

Tandom Synthetic Aparture Focus Technique (T-SAFT)

Tank Pit AZ-01A before and after clean-out

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