

SNF Project innovations will save \$40 million

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Through two major changes adopted in September, the Spent Nuclear Fuel Project is projecting savings of \$40 million over the life of the project.

The largest savings, \$31 million, is expected to come from deactivating the K Basins and approximately 50 other project facilities by the end of September 2006 — 10 months earlier than previously scheduled. An additional \$9 million will be saved through a plan to accelerate the capture and removal of sludge.

According to Bob Heck, Fluor Hanford vice president for the SNF Project, the changes in sludge removal and deactivation plans came about logically after FH proposed and won acceptance of major changes in the fuel-removal sequence last spring. In March, 17 SNF Project Tri-Party Agreement milestones were changed, deleted or added to allow transfer of the K East Basin fuel to the K West Basin for processing.

“As a result of the changed fuel-removal strategy, we saw that irradiated fuel would be out of the K East Basin sooner than formerly planned,” said Heck. “We then knew we could get at the sludge and the basin debris and water earlier in that more contaminated facility. This realization suddenly opened up windows and possibilities for creative planning. Our people looked and found ways to optimize available resources in a thoughtful, healthy way that led to these project savings.”

Major deactivation

Deactivation agreements in place call for Fluor Hanford to place essentially all of the facilities in the 100K Area into safe, long-term storage to await final decommissioning in the future. The largest and most complex deactivation work will be needed at the K Basins — especially the more contaminated K East Basin.

In K East Basin, high radiation source terms in the basin floors and walls below the grating may make it necessary to remove portions of the concrete. Core sampling of the concrete to determine specific isotope levels is scheduled to begin in 2002. Once characterization data are obtained, Fluor will begin identifying and acquiring equipment needed to remove concrete safely.

The K West Basin contains hundreds of thousands of pounds of fuel processing equipment and electronics used in fuel packaging and removal operations. Additionally, both basins contain large racks that now hold fuel storage canisters in upright positions. All of these items will go to Hanford's Environmental Restoration Disposal Facility as nuclear “debris,” beginning in late 2004 after fuel, sludge and water have been removed from the basins. Large and small drying equipment in the nearby Cold Vacuum Drying facility also will go to the ERDF beginning in late 2004.

Additionally, FH will deactivate 18 mobile offices, 12 shop or storage buildings, 12 potable and service water facilities and three electrical service facilities in the 100K Area by Sept. 30, 2006.



Equipment such as this in Hanford's K Basins will be handled as nuclear debris after its work is done, eventually ending up in the Environmental Restoration Disposal Facility.

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“This deactivation workscope is large and complex, since we’ll be dealing with multiple facilities that are more than 50 years old,” explained Bob Suyama, SNF Intra-Site Projects manager for Fluor Hanford. “However, during detailed planning sessions, we’ve found ways to streamline the work.”

The K East and K West Reactors themselves were deactivated shortly after they were shut down in 1970 and 1971. They’re already in Hanford’s decommissioning program.

For all facilities used in the SNF Project in the 100K Area, the deactivation work is expected to cost about \$90 million. “Many of the 100K facilities date from the 1950s and have the familiar problems that reside in older facilities, such as the presence of asbestos and other hazards,” said Suyama. “However, we have developed plans that are economical and efficient. Our cost and schedule projections show that we can get this work done on time between 2002 and 2006. Just ending the SNF Project 10 months sooner than planned saves a substantial amount of money.”

Sludge containers

Savings expected in removing approximately 51 cubic meters of sludge from the K Basins will come from multiple changes. Under previous plans, the sludge going to Hanford’s T Plant for longer-term storage was to be transported in steel containers inside the same casks now used to move Multi-Canister Overpacks to the CVD facility and then to the Canister Storage Building. So the sludge containers had to be narrow enough to fit inside the approximately 4-foot-diameter fuel casks.

Under new plans, much larger high-integrity containers, called HICs, will hold the sludge inside two new and larger transfer casks. The larger containers can function safely because recent data obtained since fuel-removal operations began indicate that sludge from the basin floors and service pits contains lower radiation levels than originally assumed.

“We’ll be making vastly fewer trips with sludge between the K Basins and T Plant in the 200 West Area,” said Jim Crocker, manager of FH Construction Projects for Spent Nuclear Fuel. “Fewer trips mean greatly reduced costs, because transfers are heavily controlled to make sure they are done safely.”

In total, about 100 fewer HICs will be used than the number of sludge containers under previous plans.

Pumping the sludge

Additionally, a new Sludge Water System is being designed to pump both sludge and some of the water out of the K East Basin in a combined manner. A slurry pump will be used in this basin, which contains about 90 percent of the K Basins sludge.

K Basins sludge is a unique, non-homogeneous mixture possibly containing corroded fuel (uranium oxides, hydrates, hydride), cladding pieces, debris such as windblown sand or insects, rack and canister corrosion products, ion exchange resin beads, polychlorinated biphenyls or fission products.

Construction of the Sludge Water System, which is scheduled to be complete next September, eliminates the need for both the Integrated Water Treatment System and the Sludge Loadout System in the K East Basin, thus saving the costs for those two systems. ♦