DOE NEWS

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K BASIN SLUDGE RETRIEVAL BEGINS AT HANFORD

A major new risk reduction activity is underway at the U.S. Department of Energy's (DOE) Hanford Site, where contractor Fluor Hanford has started retrieving radioactive sludge from the K Basins.

Hanford's K East and K West Reactor Basins sit about 400 yards from the Columbia River. Prior to the start of their cleanup, the two water-filled basins held about 2,100 metric tons of spent nuclear fuel, plus sludge-like contaminants and sand/debris particles on the basin floors. The approximately 50 cubic meters of radioactive sludge is contained almost entirely in the K East basin, where the fuel canisters are open and some of their contents degrading, causing silt-like sludge particles to be formed or stirred up during the process of removing the fuel for dry storage away from the river.

"Our progress on fuel removal – now at 90 percent – has cleared the way for us to focus on sludge as the other major risk reduction priority in the river corridor," said DOE Richland Operations Office Manager Keith A. Klein. "This material has a high curie count and is difficult

to handle. DOE did not grant approval for the work to proceed until we were confident the right approach and processes had been developed and tested thoroughly."

"The sludge in the K Basins presented a formidable challenge for recovery and processing," said Ron Gallagher, President and Chief Executive Officer of Fluor Hanford. "We have embarked upon a solid plan that protects workers and will get the job done. We're determined to continue making progress on removing both the spent fuel and the sludge from these facilities as we ready the K Basins for deactivation and demolition."

Fluor Hanford is continuing work on a system to transfer the remainder of the K East sludge to the K West basin for handling. That will enable accelerated draining and deactivation of the K East basin, which has leaked water in the past. Once in the K West basin, the sludge will be consolidated in containers to simplify treatment. Fluor Hanford plans to subcontract the treatment work, which may include grouting it as remote-handled transuranic waste. Under new proposed milestones in the Tri-Party Agreement, DOE has committed to having the K East Basin emptied of sludge by January 31, 2006, and complete all sludge containerization by June 30, 2006.

"With the spent nuclear fuel nearly gone, and now sludge removal underway, we are making great strides towards finishing the K East basin cleanup", said Larry Gadbois, U.S. Environmental Protection Agency's K Basins Project Manager responsible for regulatory oversight and support for K Basins cleanup.

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BACKGROUNDER: K BASINS SLUDGE RETRIEVAL

Sludge volume

- Total amount of sludge in the K Basins: 50 cubic meters
- Amount of sludge in the K East Basin: 42 cubic meters (6 of those in the K East Basin North Loadout Pit, where retrieval is beginning)
- Amount of sludge in the K West Basin: 8 cubic meters

Sludge constituents in both basins

- Fragments of concrete from the basin walls and sand blown in from the desert (largest volume of sludge)
- Fuel corrosion products (e.g. uranium metal, uranium oxides, hydrates, hydrides)
- Pieces of corroded fuel cladding, racks and canisters
- Ion exchange resin beads
- PCBs (trace amounts)
- Soluble reactor byproducts, including relatively high concentrations of cesium-137, strontium-90, americium-241, and technetium-99

Where is the sludge?

- On the floors of the water-filled basins
- In the fuel canisters stored underwater
- Clinging to old fuel racks and debris underwater
- In sections of the basins known as pits. Pits are deeper areas of the K Basins used during defense production to handle special materials or use special equipment.

What was the K East Basin North Loadout Pit used for?

- During production years, the pit was used to “load out” irradiated fuel (irradiated in KE reactor) from underwater buckets into railroad well cars, for transport to processing facilities in Hanford's Central Plateau (or the 200 Areas). Most recently, the pit was used to hold “backwashed” sand from a filter system that keeps the water in the basin clear. Because uranium metal is so heavy, it typically dropped to the basin floor before the water entered the filter system. The pit has been isolated from the rest of the basin until recently, which also prevented a significant quantity of uranium from getting into the pit.

How is the sludge in the North Loadout Pit different from the rest of the sludge in the K East Basin?

- The six cubic meters of sludge in the North Loadout Pit contains less uranium metal than the rest of the sludge in the K East Basin, which means that it can be treated as contact-handled TRU waste.

How will the sludge be retrieved from the North Loadout Pit?

- The sludge will be vacuumed using two underwater pumps (main vacuum pump and booster pump) through a quarter inch strainer (to remove any fuel scrap) and into large containers inside a specially designed transportation cask.

What will happen to that sludge once it is retrieved from the North Loadout Pit?

- The sludge in the North Loadout Pit will be mixed with grout in a treatment facility for disposal off the Hanford Site as contact-handled TRU waste.

What about the rest of the sludge?

- Fluor is designing a system to move the remaining sludge in the K East Basin (about 36 cubic meters) to the K West Basin. Removing the sludge from the K East Basin allows for deactivation of the facility to proceed —including removing the water, cleaning the concrete walls of the basin to remove radioactivity, and removing the facility—so that the K East Reactor can be placed into the same condition ("cocooned") as the other production reactors along the Columbia River.

What is the overall timeline for the sludge retrieval activities?

- The DOE and the regulatory agencies are soliciting public input on proposed completion dates. The proposed Tri-Party Agreement schedule includes completing the removal of sludge from the K East Basin by January 31, 2006, and completing sludge containerization in the K West Basin by June 30, 2006.

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