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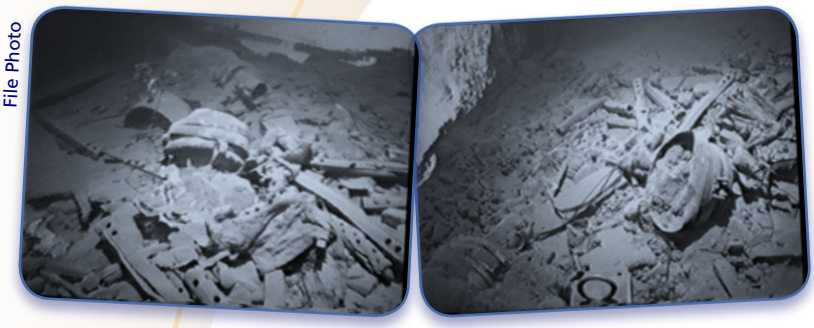
K Basins Closure Project sets new schedule

The K Basins Closure (KBC) Project has recently set a new schedule based on emerging issues and direction from the Department of Energy (DOE). the new schedule reflects longer times to complete specific tasks, more confident deadlines, new work scope and emerging conditions not previously identified.

The K Basins Closure Project includes removing and treating the estimated 70 cubic yards (54 cubic meters) of sludge in both basins, removing most of the 125-plus tons of debris and fuel racks in both basins and disposing of them as waste, hydrolasing the basin walls and floor to remove high levels of contamination, dewatering and shipping to treatment over 2 million gallons of contaminated water, grouting the basins, and then completely removing the basins and disposing of them at the Environmental Restoration Disposal Facility.

File Photo



Sludge obscures debris in the K East Basin.

The DOE sent an Implementation Plan to the Defense Nuclear Facilities Safety Board last week with new completion dates for sludge retrieval and treatment work:

- Containerize bulk sludge in the K East Basin by October 2006
- Transfer containerized sludge from the K East Basin to the K West Basin by May 2007
- Containerize bulk sludge in K West Basin by July 2007
- Remove containerized sludge from the K West Basin and package it for disposal by November 2009

The longer times-to-completion for the various aspects of the

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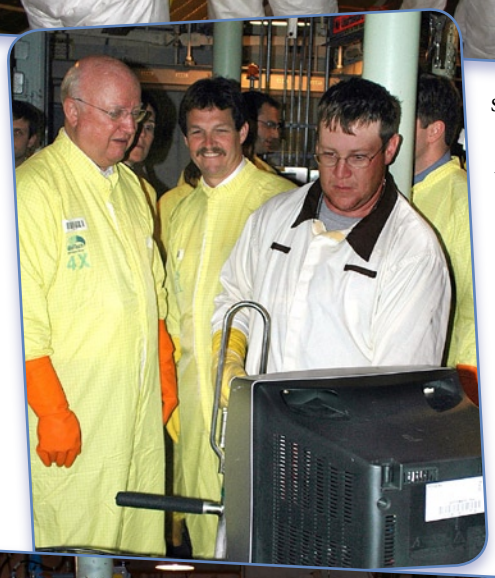
project are due to many factors. First, the plan for dispositioning the sludge changed. Until 19 months ago, Fluor had been instructed to simply remove the sludge and store it in T Plant. However, in May 2004, DOE directed Fluor Hanford to include treating the sludge. Although a cost estimate was included in the KBC baseline in June 2004, the proposal from the chosen vendor and new risks have driven longer project durations and higher cost estimates. In addition, conditions in the K Basins, especially in K East Basin, were not as expected when the project began. K East Basin alone contained over 107 tons of debris and old fuel racks, much of them hidden under sludge that measured six feet deep in some places. Debris found in the K East Basin included hoses, discarded work gloves, welding "blankets," sheets of plastic, discarded failed pumps, heavy metal screens, "spacers" (varied pieces of pipe used in reactor operations), long-handled pole tools, a long wood plank, "buggy springs" that once separated the inner and outer portions of the N Reactor fuel assemblies, and other items obscured from view by the deep sludge.

The K East Basin also included several significant surprises that have impacted Fluor's work. In early January 2005, cracks were found in the walls of the weasel pit. The cracks were thoroughly evaluated, costing time and money. At nearly the same time, hard "mounds" were detected at several key places on the basin's floor, some of them large enough to interfere with the planned installation of modern equipment to collect and hold the sludge. Examining the mounds and physically modifying new sludge tanks that were already built added additional time.

Although Fluor Hanford crews vacuumed over 80 percent of the sludge in the K East Basin into containers in the first year of vacuuming, they found that they could not access the remainder of the sludge without removing huge amounts of debris. A pause in the pumping of K East Basin sludge this past summer allowed sludge to settle, revealing a comprehensive view of the remaining debris, said K Basins Project Vice President Pete Knollmeyer. "Before that, we had been able to see just a small portion of the basin at a time, and that was through cameras mounted on 22-foot long poles."

The new view revealed several times the volume of debris originally estimated. KBC management and work crews quickly decided this debris made it impractical to vacuum the remaining sludge effectively and turned their attention to removing debris. Before that time, they had been simply moving debris around underwater, often suspending large pieces in the water. However, hoses pumping sludge sometimes became entangled in the suspended debris, wasting time as equipment was freed. "We decided that moving debris from one place to another in the basin wasn't the answer – completely removing it was the answer," said KW Basin Debris-Removal Manager Rob Gentry.

K Basins Project



In August, sludge pumping was demonstrated inside the K East Basin for Secretary of Energy Samuel Bodman (center photo, left), and others from Headquarters including DOE Assistant Secretary for Environmental Management, Jim Rispoli (bottom, second from right); and Undersecretary for Energy, Science & Environment, Dave Garmen (bottom, third from left).

Once the decision was made to remove the highly contaminated fuel racks, the work itself proved frustrating and difficult. Just over 200 huge racks had to be removed from the K East Basin. Two-thirds of the racks are 10 feet long and weigh 300 pounds apiece, while the rest are nearly 15 feet long and weigh 500 pounds each. As a way to reduce worker dose, the racks were not cut up, but were handled as whole pieces. As a result, it took a crew of 15 people, including riggers, millwrights, nuclear chemical operators, and radiological control technicians, to maneuver each rack up and out in a safe manner.

"Every aspect of work in K East is a lot more challenging than it is in K West for many reasons," said Gentry, who transferred from the East to the West basin in late summer. "The water clarity issue is huge – as soon as we touch anything in the East Basin, the flighty sludge swirls up and makes everything cloudy or opaque, so we have to work with cameras. Even after a year of sludge containerization, the K East Basin water looks like chocolate milk that's kind of orange."

Other reasons for the schedule increases include the need to procure and install a "final pass" sludge removal and filtration system that will operate after hydrolasing is finished; and the addition of more testing for sludge transfer and treatment.

The new schedule is realistic, Knollmeyer said. "DOE asked us for a plan that included contingency to account for various risks – risks that new systems might not work as designed, and many other types of risk. We can't just plan as if there are no risks that might lengthen the project. Fluor used its corporate risk management tools to identify, analyze, quantify and mitigate significant risks to the project. When we factored in those risks, we came up with a plan that has a high confidence level that it can succeed as described. The project is going to take longer than we had hoped, but at least we're dealing with the real issues and coming right out front with them. We want to get on with this work, succeed, and safely close the K Basins with the legacy spent fuel, sludge and contaminated water issue solved." ■

Michele Gerber, Communications