River Corridor Project focuses on deactivations

For nearly 50 years, the 300 Area, just 1.5 miles north of Richland and along the west bank of the Columbia River, was the location of Hanford's radiological research and fuel fabrication facilities. Those activities resulted in highly contaminated facilities, a large inventory of radioactive materials and contaminated soil waste sites.

One of the highest Hanford cleanup priorities is to safely deactivate contaminated buildings and ship radioactive and hazardous waste out of the 300 Area to compliant storage away from Richland and the river. The work is being done by the River Corridor Project managed by Fluor Hanford.

Progress in the 300 Area has focused on deactivation successes at the 324 and 327 Buildings — highly radioactive facilities that contain heavily shielded enclosures called hot cells — and the removal of excess uranium from storage in 300 Area buildings. The hot cells were once used to examine and test reactor fuel elements and other radiological or hazardous materials.

The cleanout of B Cell and shipment of the mixed waste and equipment to the 200 Area burial grounds met a key Tri-Party Agreement milestone for 300 Area cleanup. B Cell is a shielded concrete room where highly radioactive material was remotely handled. While it was operating, B Cell was considered the largest operating hot cell west of the Mississippi River and is one of Hanford's most challenging cleanout efforts.

"Removing this equipment and debris from B Cell eliminates a major risk," said Beth Bilson, assistant manager for the River Corridor in the DOE Richland Operations Office. "We used innovative techniques and equipment to successfully complete this very complicated task."

Experts estimated that B Cell contained nearly 3 million curies of radioactive material. All equipment removal activities had to be conducted using hot-cell manipulators and other remotely handled devices. To remove the equipment and debris, workers used a technology new to Hanford — a robotic crawler known as the Dispersible Removal System, or DRS, to help collect and vacuum the loose contaminated debris from the B Cell floor.

Workers operated the DRS remotely, using TV cameras and looking through 4-foot-thick shielded windows. Once the waste was collected, workers packaged the material into waste containers that were shipped to Hanford's 200 Area.

Project workers also were a week early in meeting a DOE milestone for removing a vault waste treatment system in the 324 Building's D Cell. In addition, fabrication of the robotic lifting fixture and the support stand were completed in support of the pipe trench cleanout in the Radiochemical Engineering Cell airlock.

Key radiological inventory reductions were also completed elsewhere in the 300 Area. As part of the 327 Building deactivation, waste was loaded into drums for shipment or consolidated into A Cell for later packaging. Fissile and irradiated material were removed from the dry storage carousel and packaged into drums. Also about 380 metric tons of uranium were moved away from the 300 Area Fuel Supply Shutdown facilities, including 240 metric tons of fuel sent to other DOE sites and 140 metric tons of scrap buried in Hanford's Low-Level Burial Grounds.

In a related success, the project saved taxpayers more than $1 million by sending uranium dioxide crystals to the Oak Ridge National Laboratory and transferring thorium to the Pacific

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Northwest National Laboratory. Both labs can use the materials in research programs, avoiding disposal costs for Hanford.

Another successful project for the 300 Area was the accelerated "skyline reduction" initiative that included the demolition of two water towers in the 300 Area. Another part of the project was the demolition of the 303-K Building, a former radioactive and mixed-waste storage facility.

The first of four "tall well" railcars was shipped from Hanford to Memphis, Tenn. The 150,000-pound specialty cars were once used to transport fuel from the reactors near the Columbia River to the processing plants in the 200 Area. Instead of burying them as mixed waste, the cars are being recycled, which leaves no mixed waste, saving taxpayers at least $100,000 per car. ✦

ERC team continues 'cocooning' surplus reactors

Some of the most visible progress in the Columbia River corridor is the Environmental Restoration Contractor team's work on "cocooning" Hanford's retired reactors. Cocooning involves demolishing all parts of the reactor building except for the 5-foot concrete shield walls surrounding the core. Then all the exterior openings are sealed and a 75-year roof is placed over the building.

Eight of Hanford's nine surplus plutonium production reactors will be placed into interim safe storage for up to 75 years. With the exception of the 100 K, N and C areas, all that essentially remain are reactor buildings containing highly radioactive cores. C Reactor is already cocooned.

Bechtel Hanford, Inc., the Department of Energy Richland Operations Office's Environmental Restoration Contractor, and its pre-selected subcontractors CH2M HILL Hanford, Inc. and Eberline Services Hanford, Inc. are at work to place the retired reactors in interim safe storage.

This is the status of interim safe storage for four reactors:

H Reactor – 19 percent complete. Pre-demolition work was completed including hazardous material removal, asbestos abatement, liquid pipe checks and equipment removal along with the backfill of the valve pit/supply fan area. Cocooning is scheduled to be complete in fiscal year 2005.

D Reactor – 47 percent complete. Demolition of major building complex portions was completed including the fan and valve pit areas. Cocooning is scheduled to be complete in FY 2003.

DR Reactor – 90 percent complete. All openings in the shield wall were sealed, the final stage before installing the roof. A subcontract to design and install the roof was awarded with most of the design completed. Cocooning is scheduled to be complete in FY 2002.

F Reactor – 77 percent complete. Unlike other reactors, the fuel storage basin was filled with sand before it was cleaned out and drained during deactivation. Visible progress included removing 17 feet of clean fill from the basin and planning to remove the remaining 3 feet that is known to contain radioactive sludge and other debris, including spent fuel elements and fragments. The ERC team improved safety plans and began fill removal using a specialized remotely controlled Brokk excavator that was custom-built in Sweden. Cocooning is scheduled to be complete in FY 2003. ✦