

SPENT Nuclear Fuel PROJECT

The Spent Nuclear Fuel project is one of the nation's highest environmental cleanup priorities. Nearly 80 percent of the Department of Energy's (DOE) inventory of spent nuclear fuel is stored underwater at Hanford in two 4.94-million-liter (1.3-million-gallon) pools. The pools – known as the K Basins – are less than a quarter-mile from the Columbia River and close to now-defunct production reactors. The K Basins are aging and the fuel is corroding, so the fuel must be moved to safe interim storage to minimize risk to the Columbia River until a permanent national repository is established.

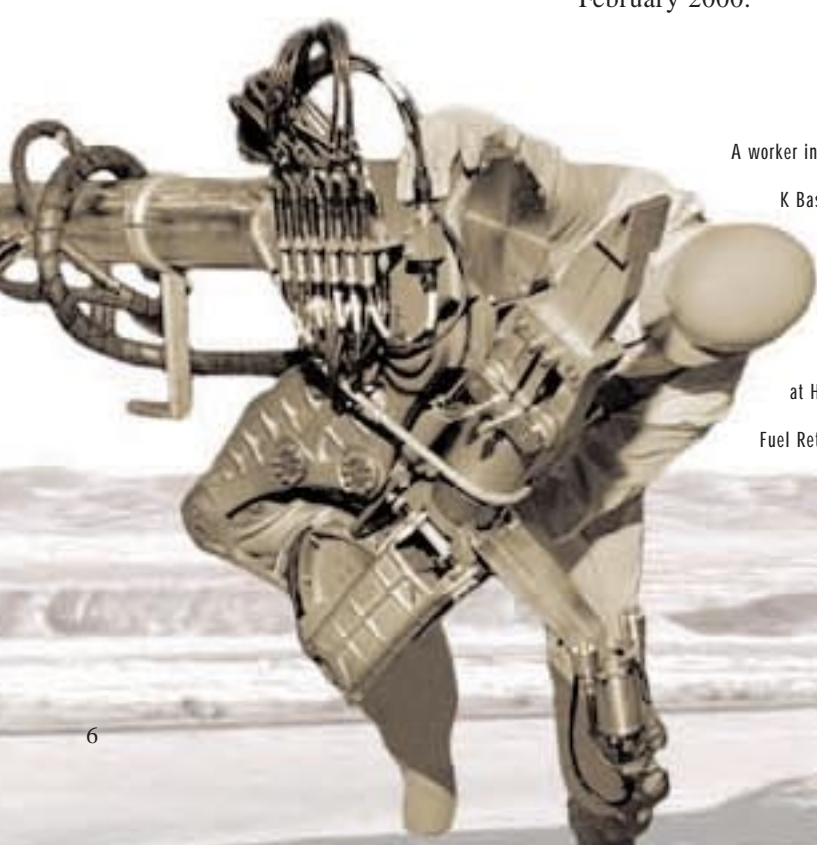
The project's goal is to move the more than 2,070 metric tons (2,300 tons) of corroding spent fuel from the K Basins, dry it in the new Cold Vacuum Drying Facility, and place it in interim storage at Hanford's 200 Area plateau near the center of the site.

This year, the Tri-Party Agreement agencies adopted the first set of reality-based, legally enforceable milestones and target dates for the project.

A number of one-of-a-kind processes and facilities must be designed, tested, built and retested in order to complete the project. Significant progress was made on that front in FY 1999:

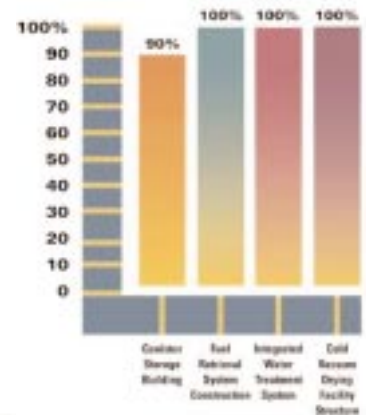
- The Canister Storage Building – a storage facility in Hanford's central plateau that will house the spent fuel once it has been dried and sealed inside robust canisters for storage – is more than 90% complete, and is on time and within budget. Construction will be complete and operations can begin in the spring of 2000.
- The cask loading system, which will move the spent fuel from the K West Basin to the Cold Vacuum Drying Facility, is receiving an additional safety modification and will be complete by February 2000.

- The Cold Vacuum Drying Facility structure was completed. Its first two bays were assembled and have passed initial acceptance tests.
- Construction of the Fuel Retrieval System (FRS) in the K West Basin was completed, and will allow testing to go forward earlier than planned. The FRS will pick up, sort, wash and place into containers the nearly 55,000 fuel elements in K West for transport to the drying facility – a crucial step in the project's path forward.
- The Integrated Water Treatment System (IWTS) in the K West Basin was completed in June, two weeks ahead of schedule. IWTS will filter and collect sludge particles during the underwater sorting, cleaning and loading operation in order to maintain clarity and optimal working conditions.
- Several key technical issues associated with the fuel were resolved, ensuring that the cleanup processes will be safe.



A worker in the K Basins prepares to install the "Konan Arm," a robotic device built and tested at Hanford for the Fuel Retrieval System.

Levels of Completion



300 Area DEACTIVATION

For nearly 50 years, the 300 Area just north of Richland, Wash., was the center of Hanford's radiological research and fuel fabrication. That activity resulted in highly contaminated facilities and a large inventory of radioactive materials. 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 approved storage – away from Richland and the Columbia River.

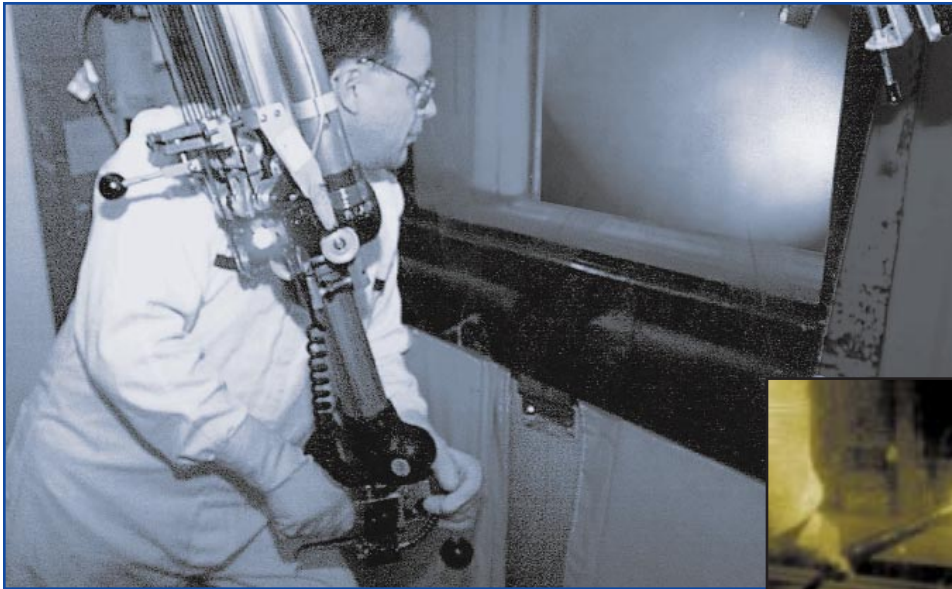
Current focus is on deactivation of the 324 and 327 Buildings – highly radioactive facilities that contain heavily shielded enclosures (hot cells) once used

to examine and test reactor fuel elements and other irradiated materials. Since deactivation began in 1996, major progress has been made and significant quantities of radioactive material have been moved out of the 324 and 327 Buildings, including:

- 150,000 curies of spent fuel samples
- 8 million curies of waste vitrified into glass logs
- 400,000 curies of cesium
- 137,236 waste containers and seven shipments of N Reactor and K Reactor spent nuclear fuel removed this year
- Major progress was achieved in the B Cell cleanout. The Fluor Hanford team dismantled the largest and most highly

contaminated equipment rack inside the 324 Building's B Cell. The final rack has been disconnected and will be dismantled in FY 2000.

- With support from the Department of Energy Research and Development Program, a procurement action was initiated for a robotic platform to enable hot cell cleanup in the 324 Building. The system will be installed in FY 2000.
- Equipment removal and final cleanup of the 327 Building's F and G Cells was completed two months ahead of schedule.



A hot-cell technician operates a robotic arm to manipulate a remote cutting torch to dismantle a highly radioactive rack inside the 324 Building's B Cell.

