

Spent Nuclear Fuel Project advances up steep production curve

The Spent Nuclear Fuel Project has made extraordinary progress over the past several months. Since March 26, the date of the last progress issue of the *Hanford Reach* covering SNF activities, 27 Multi-Canister Overpacks of irradiated fuel have been removed from the Columbia River shoreline.

These 27 loads contained just over 4 million curies of radioactivity in nearly 130 tons of irradiated fuel, and represent about 6.2 percent of the total amount of SNF in the K Basins when fuel movement began. Thirty-two MCOs of fuel have been removed, dried and placed into safe, interim storage since fuel movement began nearly one year ago. Thus, the job is about 8 percent complete.

However, the fuel removal rate, or the project's production curve, is accelerating rapidly. According to Bob Heck, Fluor Hanford vice president for the SNF Project, this acceleration points to rapid progress ahead.

Project metrics good

At the K West Basin, where fuel is loaded underwater into new baskets and MCOs and the MCOs are sealed and lifted from the water, the "processing interval" now stands at about 38 hours per MCO, well below the project's target of 45 hours. The processing interval refers to that time period between the completion of loading one MCO and the completion of loading



The 'Konan' manipulator arm readies spent nuclear fuel for loading into baskets and canisters for removal from the K West Basin.

another MCO. Also at K West Basin, the "shipping interval," or that time period between MCO shipments, is quickly dropping from earlier levels toward the desired project goal of 45 hours.

At the Cold Vacuum Drying Facility, processing times (the total door-to-door time that each MCO spends in the facility) have averaged four to five hours below the project target of 90 hours since August. Learning curves and operating experience are also shortening cycle times at the Canister Storage Building. At this facility, the cycle time between the arrival of an MCO and its placement into below-ground tube storage averages just 13 hours, well below the project goal of 18 hours.

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Additional good news at the SNF Project is that radiation dose rates on the outside of the fully loaded MCOs are significantly lower than planning estimates. The lower dose rates have led to some promising ideas and tests to streamline operations further.

Times of change

Changes came in rapid succession throughout the last several months at the SNF Project. In late March, regulators and the Department of Energy approved an “alternate fuel transfer strategy” that changed 17 Tri-Party Agreement milestones and will bring all of the K East Basin fuel into the K West Basin for processing. Other changes quickly cascaded from this major shift, accelerating sludge removal from the more contaminated K East Basin by a year, avoiding duplicate equipment installation in that basin, and combining the planned sludge and water treatment systems into a more efficient new design.

The Fluor Hanford Construction Projects group also located a new type of sludge container with a self-contained filter system that will allow a simpler de-watering process. The new sludge containers also are much larger, so that fewer trips will be needed between the K Basins and the interim sludge storage location in Hanford’s T Plant. The sludge changes alone are expected to save \$9 million.

In another major change, the deactivation schedule for the K Basins themselves, the Cold Vacuum Drying Facility, the equipment in these buildings and approximately 45 other facilities being used by the SNF Project, was brought forward by 10 months. The project now expects to complete deactivation of these facilities by September 2006, thereby saving another \$31 million.

Other SNF successes

Despite the challenges and unknowns inherent in working with Hanford’s SNF, the project attained 3 million safe hours in June and has now reached over 3.5 million hours without a workday lost due to an injury. According to Steve Veitenheimer, director of the DOE Richland Operations Office of Spent Nuclear Fuels, “The excellent safety record compiled by the SNF project workers is a tribute to their professionalism and dedication, and it’s also the best news that we as a project could have. We want every single person to go home safely every day.”

In July, for the second year in a row, the SNF Project was rated “excellent” in all of the criteria evaluated by quality assurance auditors from DOE’s National SNF Program. This past summer, the project also installed and began operating two new process tables in the K West Basin. Project staff members also successfully fabricated hundreds of fuel baskets under strict quality controls.

Additionally, the SNF Project completed readiness to begin the transport and acceptance of 72 irradiated fuel assemblies from the Shippingport, Pa., reactor that now lie in wet storage in T Plant. The start of Shippingport fuel drying in T Plant is expected in December, and the first dried assemblies are scheduled to move into interim safe storage in the Canister Storage Building that same month. This is an important step in the SNF Project mission to consolidate all Hanford Site spent nuclear fuel.

The SNF Project also held its first three regular maintenance outages in April, July and October, accomplishing work with speed, efficiency and safety.

In an all-project message in October, Heck congratulated SNF employees on a job “very well done over these last months. Moving spent fuel safely is a *team* effort of the entire project. Every person, no matter what his or her job, contributes to our success. And I want to recognize and thank every single one of you. Let’s not forget that the spent fuel in the K Basins, along with sludge, contaminated water and debris, represents about 95 percent of the radioactivity in Hanford’s 100 Areas. Removing this fuel is important work, and I am proud of each one of you.” ♦