

The Fast Flux Test Facility — and the work goes on

Karin Nickola, *Fluor Hanford*

As this article is prepared for publication, the Fast Flux Test Facility's path toward deactivation has become clearer. Federal Judge Edward Shea ruled on Feb. 25 for the U.S. Department of Energy, finding that Benton County had not shown that DOE failed to follow National Environmental Policy Act regulations in deciding to deactivate the FFTF. The judge also extended the stay on certain deactivation activities for 30 days from the date of his written decision (*Hanford Reach*, March 3), to allow Benton County time to file an appeal if the county so desires.

In the midst of the legal turmoil, FFTF staff members continue to calmly accomplish work essential to future general plant operations. Off-loading spent-fuel assemblies is one such major task. During the process, spent FFTF fuel assemblies are removed, washed, dried, placed in dry storage casks and transported to interim-storage areas — eventually destined for permanent storage at Yucca Mountain in Nevada.



Dan Pitts works on the solid waste cask chain hoist assembly in FFTF's Maintenance and Storage Facility.

The process

Fluor Hanford workers at FFTF must off-load about 250 mixed-oxide (uranium and plutonium oxide) spent-fuel assemblies encased in stainless steel. These assemblies are housed in the plant's Reactor Containment Area and Fuel Storage Facility. Although time-consuming and intricate, the off-loading process is actually fairly simple to understand.

First, operators of the bottom loading transfer cask use a computer-controlled grapple drive system to pluck a spent-fuel assembly out of either the Reactor Containment Area or the Fuel Storage Facility. This is a closely monitored process, because the assemblies are surrounded by liquid sodium that is 400 degrees Fahrenheit and highly reactive in air. An elaborate series of seals ensures the work is performed in an inert argon atmosphere.

Once inside the heavily shielded stainless-steel bottom loading transfer cask, the spent-fuel assembly is transported to the Core Component Transfer Station, where it is lowered through a port in the floor into a "pot" inside an argon-filled chamber. Again, this environment prevents any sodium residue that may reside on the assembly's exterior from reacting with air.

After the bottom loading transfer cask is moved away, the immense orange-colored Closed Loop Ex-Vessel Machine, commonly called CLEM, moves over the Core Component Transfer Station. CLEM reaches through the port in the floor, grapples the lip of the pot, draws the spent-fuel assembly up and seals it inside. Once all is secure, CLEM transports and lowers the pot into the Interim Examination and Maintenance Cell where the spent-fuel assembly is either washed immediately or waits in storage to be washed.

Washing and drying a spent-fuel assembly takes about a day. After it has been washed, the assembly is loaded into an Interim Examination and Maintenance Cell core component container. This container holds, in

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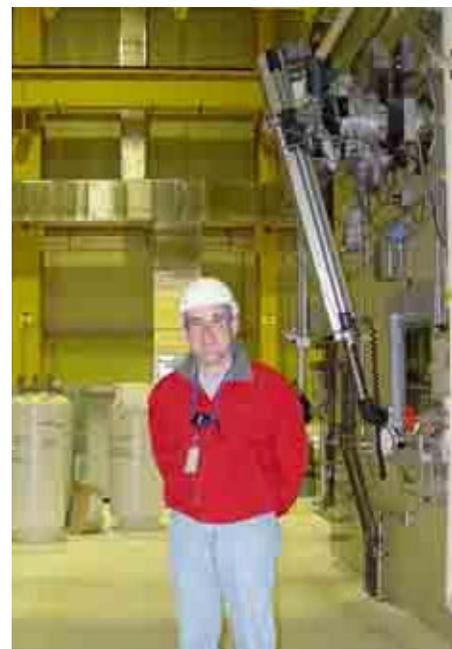
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a circular pattern, seven washed spent-fuel assemblies. A nozzle cutter is used to trim 15 inches off the length of the center assembly so the container's lid can be securely fastened. The trimmed pieces are collected in Interim Examination and Maintenance Cell waste bins and eventually taken to a Hanford low-level burial ground.

When a core component container is full, it is drawn up inside a solid waste cask by a computer-operated grapple drive system. After the solid waste cask is sealed, it is transported by rail to the FFTF Reactor Service Building.

In the Reactor Service Building, the solid waste cask is finally able to lower its container into an interim storage cask at the Cask Loading Station. Here, a one-ton steel plug is inserted into the top of the interim storage cask, bolted into place and leak-tested.

When operators are satisfied that all is safe and secure, the 114,000-pound interim storage cask is drawn up and placed on a custom-built cask transporter to be taken to one of the Hanford Site's interim-storage locations.



Greg Bergquist stands before a mock-up in FFTF's Maintenance and Storage Facility.

Of people and progress

To date, about a third of the FFTF spent-fuel assemblies have been washed, dried and placed in interim storage — that's about 18 interim storage casks filled, out of an eventual 57. Halted in 1997 because of mechanical problems with the solid waste cask — as well as a need for FFTF mission evaluations — the process is just now being prepared for restart. With retrofitting and readiness assessments finally nearing completion, FFTF workers hope to resume spent-fuel off-loading activities in late April. Of course, that wouldn't be possible without the exemplary teamwork that exists at all levels of the FFTF workforce.

Dan Pitts, originally from Oakland, Calif., now calls the Tri-Cities home. A millwright and member of the Hanford Atomic Metal Trades Council, Pitts has been with FFTF for 24 years. His main job responsibility is erecting machinery.

At FFTF, Pitts has worked on everything from cooling-tower pumps to building layouts. His current workscope is associated with solid waste casks — making sure the chain hoist assembly is working properly, for example. An avid fisherman who enjoys both freshwater and deep-sea fishing, Pitts speaks highly of his co-workers and the facility itself.

"I like the guys I work with — they're very professional," Pitts said. "And FFTF is like a brand new facility — a showplace — compared to the outer areas. We're very proud of the plant, and that means we keep everything in top shape."

Greg Bergquist first came to FFTF from the Plutonium Finishing Plant in 1998 after working at PFP for

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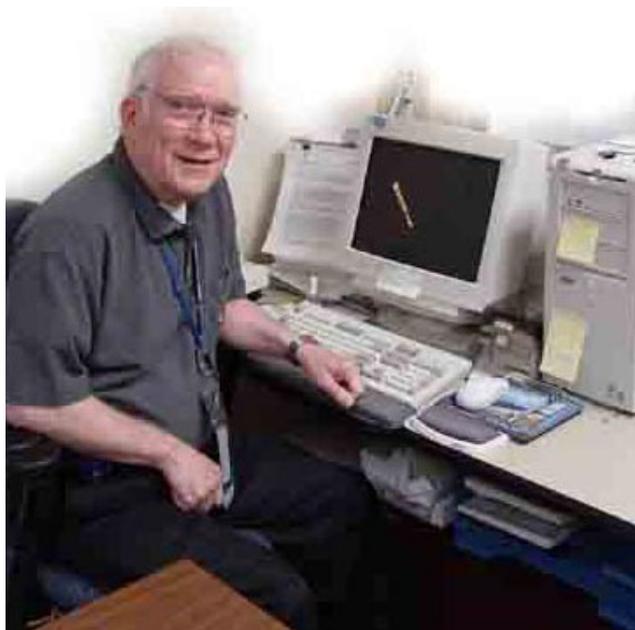
11 years. He's been with FFTF for five years performing mechanical systems engineering. His group has design authority for FFTF water systems.

Bergquist supervises fieldwork for the spent-fuel off-loading process. It involves replacing the ion-exchange resin beds and other corrective maintenance. In layman's terms, this means he ensures that the water for washing the spent-fuel assemblies can be recycled efficiently and safely.

"The people at FFTF are extremely dedicated and have strong moral character," Bergquist said. "I like that. It's a wonderful environment in which to work." He likens FFTF to a second family with common goals and interests. When he's not working, he is often found golfing with some of his "second family" members.

Bob Beach came to FFTF, supposedly for a two-month stint, six years ago! A member of the business-management group, Beach and his team members are working hard on readiness assessments for off-loading spent-fuel assemblies, which they hope to complete by April 28. On Feb. 26, the team completed and presented to management a CLEM readiness assessment. A sodium removal system readiness assessment is scheduled to begin this month, and solid waste cask and interim storage cask readiness assessments are due to begin late in the month or in early April.

Besides his work goals, Beach has some serious personal goals. One of them is to stay fit as "an older person." He accomplishes this by walking about 5 miles a day. About half of that is at work, where he uses a pedometer to count his steps — usually from 4,000 to 5,000 a day. He meets his daily goal each evening by continuing to walk at the mall or along the river.



With utmost respect for his dedicated co-workers, Beach said he's "looking forward to resuming fuel off-load."

In the lead

Either directly or indirectly, everyone at FFTF has a hand in the enormous task of off-loading spent FFTF fuel assemblies. Training, operations, engineering, maintenance, safety, procedures, business-management and upper-

Bob Beach's group prepares readiness reviews to make sure contractors are prepared to safely perform hazardous activities.



Pat Schweiger is project manager for the FFTF Fuel Off-Load Project.

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management employees are all vital to the success of this mission. Perhaps nowhere is the load felt heavier, however, than with the project lead.

Pat Schweiger came to FFTF in 1982, direct from Washington State University armed with a mechanical engineering degree. He worked first in operations, progressing through qualifications to become a chief operator, then an assistant shift manager. In 1989 he received his Professional Engineering License in mechanical engineering.

By 2000, Schweiger had moved from shift operations manager to deputy operations manager. And finally, late last year, he became project manager for the FFTF Fuel Off-Load Project.

“The Fuel Off-Load Project is an enormous task, requiring lots of coordination among many people,” Schweiger said. “The dedication, knowledge and just plain hard work these folks bring with them every day are essential to the success of the project. I am honored to work with such an outstanding team.”

Meeting the challenge

Although it's only one facility at one DOE site in one of the 50 states, the Fast Flux Test Facility is a special place with special people who continue to exhibit excellence in their work. Through their individual talents and perspectives, the workers at FFTF have managed to have a positive influence on the Hanford mission in the midst of a very uncertain and trying situation.

And so the work goes on, one day at a time. ■