H A N F O R D

PROGRESS

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Hanford Reach

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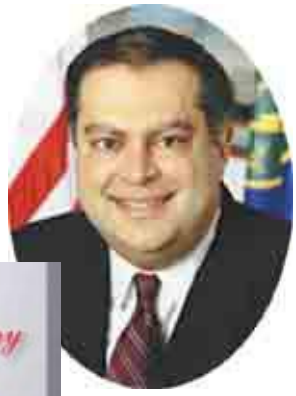

I am proud to serve as Secretary of Energy during the Department's 25th Anniversary celebration. My congratulations and thanks to the many talented employees who have worked so hard for so many years on behalf of the American people. There is much to show for your dedicated efforts.

In 1977 the new Department of Energy brought together for the first time not only most of the government's energy programs but also science and technology programs and defense responsibilities that included the design, construction and testing of nuclear weapons. At that time, a score of organizational entities from a dozen departments and agencies, each with its own history and traditions, joined together.

Now, in addition to the diversity that characterized our beginnings — which over these past 25 years has proven to be one of our great strengths — we share a common history. But more importantly, we share a common future. And we share a common overarching mission: national security.

As we look ahead, I am optimistic that we will fulfill our responsibilities and our success will be a great contribution to our energy and national security for generations to come.

Spencer Abraham
October 1, 2002

DOE has led Hanford Site through Cold War, environmental cleanup

President Jimmy Carter signs the Department of Energy Organization Act merging the Federal Energy Administration and the Energy Research and Development Administration, as well as energy-related offices in a half-dozen federal departments and agencies, to form the new Department of Energy in 1977.

As the Department of Energy celebrates 25 years of serving the American people, Hanford employees can point with pride to the site's defense-production mission that helped win the Cold War. But an even greater point of pride is our success in shifting gears to concentrate on environmental cleanup.

When President Jimmy Carter first proposed the cabinet-level Department of Energy in 1977, the Hanford Site, under the Atomic Energy Commission, was in its production mode. There were those who warned of the environmental consequences, but those concerns were secondary to the urgent task of making plutonium for the nation's nuclear arsenal.

In that era 25 years ago, Hanford progress was measured in terms of its output.

But the Berlin Wall fell in 1989, and our nemesis, the Soviet Union, began to crumble. We had truly won the Cold War. We talked of nuclear disarmament rather than a nuclear deterrent. Plutonium production ceased, and DOE released its first "Five-Year Plan" in 1989 for the remediation of its production sites. The State of Washington joined the department and the U.S. Environmental Protection Agency in signing the Tri-Party Agreement — a document that continues to evolve and guide the Hanford cleanup.

In 1990, DOE issued an updated five-year plan, giving top priority to bringing DOE facilities into compliance with environmental regulations and focusing its technology development on health hazards to workers and the public.

Today, we measure our progress in terms of soil and groundwater remediation, safeguarding our workers, making the site's facilities safe for future generations, and protecting the Columbia River.

Those are today's yardsticks for progress, and this report marks the status of our important mission at the 25th anniversary of the U.S. Department of Energy.

DOE and Hanford — we've come a long way together. ■

Spent Nuclear Fuel Project set records

The Spent Nuclear Fuel Project, managed by Fluor Hanford, capped a banner year this month when it completed a Tri-Party Agreement milestone requiring the removal of 957 metric tons of heavy metal (irradiated uranium) from the K West Basin. The project then went on to remove two additional Multi-Canister Overpacks (MCOs) of fuel before entering its quarterly January outage, bringing the total of fuel removed to about 972 metric tons in 187 MCOs. The total represents all the spent fuel that was in the K West Basin when the project began.

The fuel-removal feat was praised by Larry Gadbois, manager of the K Basins Project for the U.S. Environmental Protection Agency, as "the result of super-human efforts by hundreds of workers."

Above, a worker checks measurements of the large-diameter container inside the sludge/water transport cask recently procured by the Spent Nuclear Fuel Project.

"Our critics said we'd be months, or even years, behind schedule, but we knew we had to stay the course and let our performance prove them wrong," said Keith Klein, manager of the Department of Energy Richland Operations Office.

As a result of removing this much fuel, the project has taken about 25 million curies of radioactivity away from the Columbia River shoreline, accomplishing more risk reduction than any previous Hanford cleanup project.

In the past year, the SNF Project dramatically increased its fuel-removal rate. In December, Fluor Hanford SNF Project workers set records by removing 25 MCOs in a month and seven MCOs in one week. Employees decreased the cycle time for filling, sealing, removing, drying, transporting and placing an MCO in storage from about 155 hours per MCO to just over 80 hours.

Moving K East fuel

In another significant accomplishment this past year, the SNF Project began transferring fuel from the K East Basin to the K West Basin for processing, using the newly installed fuel transfer system. Keith Thomson, president and chief executive officer of Fluor Hanford, called the achievement "a definite turning point in this very important project, as now we can squarely focus on our next major cleanup task in the 100K Area — safely processing and storing the K East Basin fuel."

SNF Project employees conceived the complex fuel transfer system, which stretches through two major radiological facilities, as a way to save time, money and potential radiation exposure. The system loads, transfers and then unloads 10 canisters of K East Basin fuel in a heavy shielded transfer cask inside of a cask transfer overpack. About 45 transfers have been made safely and successfully since the system began operations in November 2002.

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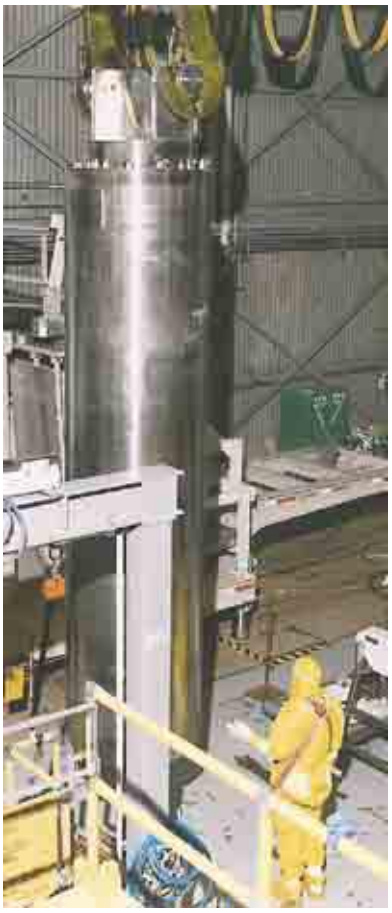
Spent Nuclear Fuel Project set records, cont.

Norm Boyter, Fluor Hanford vice president of the SNF Project, praised the employees and the FTS itself. “This effort has encompassed true employee involvement, in the best sense of the Integrated Safety Management program,” Boyter said. “Integrated safety management really means involving the people who will operate the equipment in designing it to the safest, most efficient operational parameters, so that it performs well. The fuel transfer system is not a simple system, yet the whole endeavor is a true case of finding a better, safer way to get work done.”

Success with other spent fuel

In 2002, the SNF Project received and began safely storing three other major types of spent fuel at the Hanford Site. Between August and November, all seven casks of irradiated commercial fuel that had been stored in the 324 Building were accepted at the Interim Storage Area. The Interim Storage Area is an outdoor storage facility managed by the staff of SNF’s Canister Storage Building. The fuel contained nearly 650,000 curies of radioactivity, and the move signaled a change to a much safer storage configuration and location.

In October, the SNF Project also moved 101 spent-fuel assemblies from an old research reactor that had operated in the 308 Building to safe storage in the Interim Storage Area. And, between August and December, the Canister Storage Building accepted seven loads of irradiated fuel that had been stored in Hanford’s T Plant since about 1979. This legacy fuel, contained in large canisters similar to MCOs, was placed in storage tubes. All of these fuel relocations were part of the SNF Project’s mission to consolidate, manage and store all on-site spent fuel in one location on Hanford’s central plateau.



At left, MCOs for spent fuel are made of stainless steel. Each MCO is about 14 feet high and 24 inches wide.

Other SNF Project successes

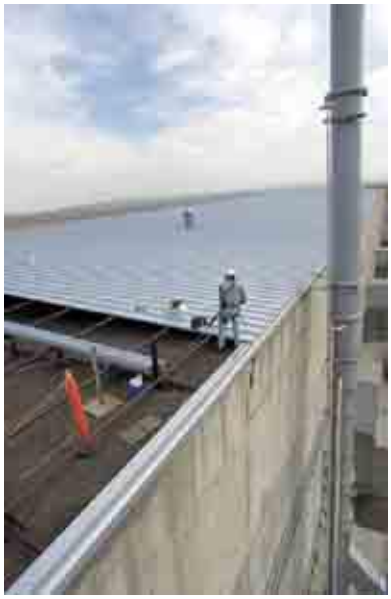
In December, the Basket Fabrication Sub-Project within the SNF Project completed its work of manufacturing 2,209 large steel and copper baskets to hold K Basins irradiated fuel through drying and permanent storage. The basket-fabrication team met its final delivery date, and every one of its previous interim benchmarks, early and under budget. The sub-project, considered one of the most successful activities of its kind in recent memory, fabricated more than 1.1 million pounds of materials and made more than three miles of welds. The workers had to make and assemble nearly 46,000 components, and they did so with less than a quarter of one percent of the parts being scrapped because of quality issues.

Late in 2002, Fluor Hanford agreed to aggressive new DOE performance goals and incentives for the project. Those goals include cleaning the K East Basin by June 30, 2005; cleaning the K West Basin by Sept. 30, 2005; welding all MCOs at the Canister Storage Building by Sept. 30, 2005, and completing deactivation and transition to Hanford’s River Corridor Project by Oct. 30, 2005.

The project’s next significant “deliverables” include the startup of welding operations at the Canister Storage Building next month, startup of both the sludge/water system and scrap processing this coming spring, and formulation of a breakthrough plan for deactivating its facilities by June. ■

Central Plateau Remediation Project was created

On July 1, 2002, the River Cor-ridor Project became the Central Plateau Remediation Project, and began working on scope transferred from the Environmental Restoration Contractor. The workscope includes the Groundwater Protection Program, the 200 Area Facility Disposition Project, and the 233-S Facility Decommissioning and Decontamination Project.



Workers install new roof panels at B Plant.

The Central Plateau Remediation Project will continue to manage the 300 Area workscope until it is transferred to the new River Corridor contractor.

Last spring, the former River Corridor Project earned two notable awards: the Department of Energy Voluntary Protection Program "star status" for its commitment to safety; and, for its commitment to protecting the environment, the first annual Fluor Hanford Environmental Stewardship Award.

"The Central Plateau Remediation Project employees in each of our varied areas worked very hard to succeed in saving taxpayer dollars and to substantially reduce risk to fellow workers, the public and the environment," said Larry Olguin, vice president and manager of the project. "Through their efforts, work was accelerated and completed in a safe and cost-effective manner. I am proud of our combined accomplishments in FY 2002 and our proven can-do spirit."

300 Area cleanup

In the 300 Area, deactivation successes were achieved at the 324 and 327 Buildings — highly radioactive facilities that contain heavily shielded enclosures, or hot cells, once used to examine and test reactor fuel elements and other radiological and hazardous materials.

At the 324 Building, the final container of spent nuclear fuel was shipped to the 200 Area Interim Storage Area seven weeks early. This shipment completed the removal of all spent nuclear fuel that had been stored in the 324 Building. In all, about 650,000 curies of radioactivity were moved away from the city of Richland and the Columbia River.

The project achieved another milestone in cleaning up the 324 and 327 Buildings one month early. From Oct. 1, 2000, through May 26, 2002, project personnel moved more than 340,000 curies away from the city of Richland and the Columbia River. Items in this cleanup effort in the 327 Building included the following:

- the removal and shipment of a curium source to the Central Waste Complex, which cleared the way for changing the classification of the facility from Nuclear Hazard Category 2 to Nuclear Hazard Category 3. This classification change indicates lower risk and fewer requirements for the facility.

- the removal of all 16 waste buckets from B and C Cells, the cleanout of I Cell, and cleanout of the excess and obsolete equipment in the basement. This cleanup significantly reduced the facility's inventory.

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Central Plateau Remediation Project was created, cont.

Project personnel completed removing the 303-K Building slab. The project received the Professional Engineer and the State of Washington Department of Ecology certification for the 303-K Building Resource Conservation and Recovery Act Closure, which completed the 300 Area accelerated skyline initiative. This initiative included the earlier removal of two water towers and the 303K Building.

Ecology also approved the certification for partial closure of the 300 Area Waste Acid Treatment System.

The central plateau

The central plateau is a 75-square-mile area near the middle of the Hanford Site that includes the 200 East and 200 West Areas. Many facilities formerly used for nuclear materials production are located in the 200 Areas.

Under the 200 Area Facilities Disposition project, personnel recently completed the Tri-Party Agreement milestone to complete the installation of new roofs at PUREX and B Plant two weeks ahead of schedule.

The Equipment Disposition project saved a total of $1.1 million in disposal costs by shipping the following:

- two tall cask cars from Hanford to Memphis, Tenn., for recycling, saving $300,000
- a radioactive liquid waste evaporator condenser to be recycled and recast into shield blocks for use in DOE high-energy physics projects, saving $500,000
- a contaminated crane to a Nuclear Regulatory Commission licensed company for reuse, saving $300,000.

A T Plant flatcar was also released to off-site users for unrestricted use, saving $440,000 by accelerating work six months through innovative strategies.

The 233-S Facility Decommissioning and Decontamination project removed the structural steel from inside the 233-S Building, making way for decontamination and ultimate demolition. The characterization, decontamination and non-destructive assay contractors began their work using advanced decontamination equipment. ■

Groundwater Protection Program accelerated cleanup

The past year was a turning point for the Hanford Groundwater Protection Program. In partnership with the U.S. Environmental Protection Agency and the Washington State Department of Ecology, the Department of Energy and its contractors initiated a comprehensive groundwater remediation and monitoring program.

"We're finally getting our arms around this complex, critical cleanup program," said John Morse, manager of the Groundwater Protection Program for the Department of Energy Richland Operations Office. "We're continuing the activities we know protect the groundwater — like fixing broken water lines and capping contaminated areas — but also aggressively cleaning up the highest-risk waste sites and developing a timely, effective and comprehensive program."

"Our overarching mission is to clean up groundwater contaminants, avoid future groundwater contamination and prevent groundwater contaminants from migrating to the Columbia River," said Dick Wilde, Fluor Hanford's Groundwater Protection Program manager. The Groundwater Protection Program, managed by Fluor Hanford's Central Plateau Remediation Project, incorporates and builds upon capabilities of the former Groundwater/Vadose Zone Integration Project, which was managed by Bechtel Hanford.

During fiscal year 2002, the combined efforts of the Groundwater Protection Program and the Groundwater/Vadose Zone Integration Project (transferred from Bechtel to Fluor in July 2002 as part of DOE's plan to geographically consolidate work at Hanford) produced significant accomplishments. Jointly, the programs accomplished the following:

- Operated Hanford's five pump-and-treat systems at nearly full capacity (97.8 percent), processing more than 1.2 million gallons of groundwater. Pump-and-treat stations extract contaminated groundwater, treat the water to remove the contaminants of concern, and then re-inject the treated water back into the ground. Since 1994, when the first pump-and-treat system was initiated, contaminants have been processed from more than 1.65 billion gallons of Hanford groundwater, preventing contaminants from reaching the Columbia River.

- Removed 1,384 pounds of carbon tetrachloride from the soil between April and September through the soil vapor extraction process. Since 1991, this process has removed 171,478 pounds of carbon tetrachloride from Hanford soil. Carbon tetrachloride is a suspected carcinogen, which, once it reaches groundwater, is extremely difficult to remediate.

- Installed the third and final phase of the in-situ redox manipulation technology, used to convert chromium in Hanford groundwater near the 100 Area. In-situ redox manipulation uses a chemical "curtain" or treatment zone to transform a hazardous chemical in the groundwater to a non-hazardous form.

- Sampled more than 700 Hanford groundwater- monitoring wells. This sampling serves one of two purposes — either helping determine compliance with environmental protection requirements or charting the movement of contaminants in the groundwater.

- Completed an initial assessment of Hanford contaminants to evaluate remediation alternatives. The accomplishment demonstrated that an assessment for a broad range of risks could be conducted for all Hanford waste sites containing radiological and hazardous chemical contaminants.

"In fiscal year 2003, the Groundwater Protection Program at Hanford will remain focused on remediating waste sites, shrinking the contaminated area, reducing recharge conditions, implementing final groundwater remedies and integrating groundwater monitoring needs," Wilde said. ■

Plutonium Finishing Plant passed halfway mark

The Plutonium Finishing Plant complex, managed by the Fluor Hanford Nuclear Material Stabilization Project, reached a significant milestone this past year when it completed stabilizing more than half of its large collection of special nuclear material product items and leftovers from decades of nuclear weapons production. Stabilizing plutonium involves several processes — thermal treatment, removal of corrosion products and repackaging into sturdy containers approved for long-term storage or disposal.

Lead nuclear chemical operator Kathy Turner works at a glovebox where plutonium-bearing polycubes are being thermally stabilized.

Even as the project concentrated on important processing work, it developed an accelerated deactivation plan to complete cleaning out the 61 structures in the PFP complex seven years early. PFP's deactivation organization increased fieldwork, flushed and removed 21 chemical tanks and hundreds of feet of related piping, removed "held up" plutonium within plant systems and demolished unnecessary structures. Additional demolition work is now under way, along with expedited planning, to meet an accelerated goal to ready the complex for overall razing by September 2006.

The PFP Deactivation team also met a Tri-Party Agreement milestone when it submitted a PFP Residual Chemical Hazards Assessment to DOE and the Washington State Department of Ecology. Additionally, the team completed or advanced several other key pieces of environmental documentation.

Most importantly, PFP performed its work safely. In November, employees reached a million safe hours without a day lost to an injury. During fiscal year 2002, PFP reduced its restricted and recordable injury rates (as measured by Occupational Safety and Health Administration standards) by 20 percent from the previous fiscal year. PFP director Scott Sax is proudest of the fact that, although the plant quadrupled its plutonium stabilization rate twice between 2000 and 2002, the average radiation dose to workers actually went down.

Plutonium solutions complete

In July 2002, PFP workers completed stabilizing about 4,500 liters of plutonium-bearing solutions (bearing 300-400 kilograms of plutonium) into dry oxide form, using an oxalate precipitation process followed by thermal treatment. Packaged into sturdy new cans and stored in vaults in the PFP complex, the oxides derived from higher-concentration solutions are now ready for shipment to the Savannah River Site. The solutions-stabilization campaign, one of the plant's most beneficial, completed a key commitment to the Defense Nuclear Facilities Safety Board. Stabilizing solutions is important because solutions are the form of plutonium most susceptible to accidents.

"The completion of the solutions-stabilization campaign improved the safety posture of the entire PFP complex," said George Jackson, Fluor Hanford vice president for the Nuclear Material Stabilization Project. "It also allowed us to clearly see that the work being done here at PFP has real, quantifiable, safety-related results."

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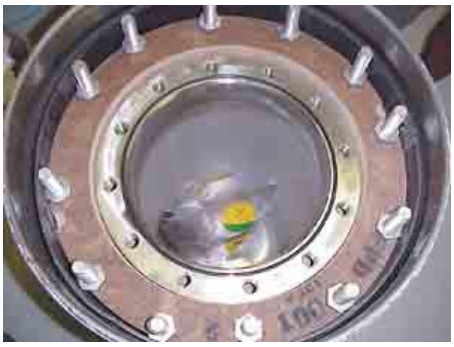
Plutonium Finishing Plant passed halfway mark, cont.

Residues

Stabilization of plutonium residues is more than 93 percent complete. In February 2002, PFP workers completed repackaging approximately 547 items of plutonium-laced ash from a historic Hanford incinerator. The ash was placed into slip-lid cans and packaged into pipe overpack containers, called POCs, through a "pipe-and-go" method.

The residues team also completed repackaging another large subgroup of residues, known as sand, slag and crucible, ahead of schedule. Workers expect to finish the remaining residue inventory in the spring.



A vented plastic bag containing a billet can packed with plutonium-bearing residues rests inside a pipe overpack container. Once the container is sealed, the material is ready for final disposition.

Metals, oxides and polycubes

After completing the stabilization and repackaging of plutonium metals at the plant in 2001, PFP workers turned to stabilizing the largest group of materials at the facility. Plutonium oxides, in various forms, constitute nearly half of the plutonium-bearing materials, by bulk, in the PFP complex. Following thermal stabilization, oxides are packaged into "3013" containers, which are triple-layered, robust stainless-steel cans designed for 50 years of safe storage. Workers have packaged about 35 percent of the oxide inventory and expect to finish in about a year. The welded cans are safely stored in the PFP vaults awaiting final disposition at the Savannah River Site or an alternate storage location.

Within certain oxides groups, some items contain high amounts of chloride salts. Because of the difficult challenges posed by these materials, PFP personnel have been carefully studying methods to drive off undesirable materials and process the chlorides safely. Stabilization of chloride-bearing items is expected to begin in March.

Also in 2002, PFP workers began stabilizing plutonium-laced polycubes — tiny cubes of polystyrene containing plutonium oxide that were once used for criticality experiments at Hanford. Stabilizing polycubes, which contain high-purity plutonium oxide, is unique to PFP. It involves a thermal process that is very delicate. Preliminary tests showed that if the polycubes were heated too quickly, they could burn. The burning would produce soot and flammable gases that could plug filters, resulting in costly filter replacements and system maintenance, leading to additional worker radiation exposure.

Early in the campaign, scientists at Pacific Northwest National Laboratory and workers at PFP's Process Laboratory conducted extensive research before carefully revising the process, using Integrated Safety Management System principles. After the polycubes are thermally stabilized into an oxide form, they are packaged through a "bagless transfer system" into stainless-steel containers and placed in long-term storage cans. Polycube processing provides a real dose reduction in areas where they had been stored.

Polycube stabilization is now about 75 percent complete, and personnel expect to finish ahead of the April completion target.

In November 2002, DOE and Fluor Hanford signed a challenging new set of performance agreements for the Nuclear Material Stabilization Project. The agreements accelerate the final completion date for stabilizing all 17.8 metric tons of plutonium-bearing materials at PFP to February 2004. ■

ERC team answered challenge of accelerated cleanup

The Environmental Restoration Contractor team continued to deliver on its promise of cleanup progress by completing several high-profile projects in fiscal year 2002.

Notable achievements included "cocooning" DR Reactor, removing 665,000 tons of contaminated soil and debris from along the river, remediating a high-profile burial ground, cleaning out the 233-S Plutonium Concentration Facility and processing more than 1.2 million gallons of contaminated groundwater using the site's pump-and-treat systems (see "Groundwater Protection Program," page 7).

The Bechtel-led ERC team completed cocooning the second of Hanford's nine plutonium production reactors.

"All of our accomplishments last fiscal year were completed on or significantly ahead of schedule," said Bechtel Hanford President Mike Hughes. "But what pleases me most is that we were able to make substantial progress while increasing our safety performance. Total injuries were down nearly 20 percent, moving us closer to our goal of zero accidents."

The ERC team, led by Bechtel Hanford, includes preselected subcontractors CH2M HILL Hanford and Eberline Services Hanford.

Another reactor cocooned

In September, DR Reactor became the second of Hanford's nine surplus plutonium production reactors to be successfully cocooned, and cocooning is under way at three others. In addition to current demolition activities at H Reactor, significant progress was made at F and D Reactors.

Interim safe storage, or "cocooning," means placing Hanford's surplus reactors into a safe state for up to 75 years — demolishing the reactor building down to the five-foot-thick concrete shield walls surrounding the core, sealing all openings and constructing an extended-life roof over the remaining structure. When finished, remote-monitoring equipment limits the need for human entry to once every five years.

Work was especially challenging at F Reactor as the team spent most of the year excavating and removing the fuel storage basin. The challenge was to locate, remove, package and transport highly radioactive spent-fuel elements and fragments that were at the bottom of the sand-filled fuel storage basin. Workers located and disposed of 17 fuel elements using remote equipment and specialty instruments. A similar challenge at H Reactor will be addressed in FY 2003.

Rivershore cleanup

During the past fiscal year, the ERC team cleaned up 12 waste sites in the 100 Area. The team also removed 125,000 tons of contaminated material, including concrete, steel, soil and piping in the N Area, as well as 151,000 tons of contaminated soil and 6,500 feet of effluent piping in B Area. Backfill operations also were completed for three Columbia River outfall structures in the B/C Area.

Continued on page 11.

ERC team answered challenge of accelerated cleanup, cont.

Waste-minimization efforts helped accelerate cleanup in F Area so the job could be completed more than seven months ahead of the Tri-Party Agreement date. Mobilization activities in K Area were accelerated so that soil remediation work could begin in early FY 2003.

The team completed excavation work at the high-profile 618-4 Burial Ground in the 300 Area. Workers excavated 786 drums containing depleted uranium waste and transported them to the Environmental Restoration Disposal Facility for disposal or temporary staging. Two months ahead of schedule, the team moved to the adjacent 618-5 Burial Ground, where they expect to encounter similar challenges.

Workers at the ERDF disposed of nearly 665,000 tons of contaminated material in FY 2002 — 9,000 tons more than planned. By the end of the fiscal year, nearly 3.8 million tons of waste had been disposed of in the ERDF since operations began in 1996 — nearly 40 percent of the estimated total of contaminated soil and debris in the river corridor.

Late in fiscal 2002, the Environmental Restoration Project team finished cleaning up a high-profile waste site near the Columbia River and the city of Richland. Remediation of the 618-4 Burial Ground included excavating 786 drums containing depleted uranium waste and transporting them for disposal or temporary staging at the Environmental Restoration Disposal Facility.

Maintaining surplus facilities

Surveillance, maintenance and transition are critical elements of environmental restoration at Hanford. The efforts ensure that Hanford's surplus contaminated facilities remain safe for workers and the public until DOE and its regulators make disposal decisions about them.

In FY 2002, surveillance and maintenance workers finished removing contaminated pre-filters at B Plant, removing more than 14,000 cubic feet of asbestos from 202-S and 182-N facilities, repairing the K West Reactor roof and stabilizing hexone tanks used to store solvent at REDOX.

The ERC team also maintained the historic B Reactor to make it safe for workers and visitors, upgrading electrical systems and making repairs. The B Reactor team hosted more than 500 visitors and 43 tours during the year, including tours by regulators, lawmakers and the news media.

High-risk decommissioning

In March, the ERC team completed the five-year 233-S Plutonium Concentration Facility Decommissioning Project nearly a year ahead of the original schedule, avoiding nearly $5 million in costs. When the team began cleanup efforts in 1997, it was the first full-scale decommissioning project of a plutonium production facility at Hanford.

The work was high-risk, not just because of the radioactive components being handled, but because contamination was spread throughout the building by a major fire in 1963.

In all, the team removed 15 highly radioactive process vessels and more than a mile of piping and electrical conduit. They disposed of 172 boxes of low-level waste, 48 drums of transuranic waste, 283 feet of roof

Continued on page 11.

ERC team answered challenge of accelerated cleanup, cont.

ventilation ductwork and 13 cement blocks used to cover a radioactive pipe trench.

During the five-year project, the team made more than 12,400 entries into areas of high contamination with only 10 minor personnel contamination events.

Improved safety performance

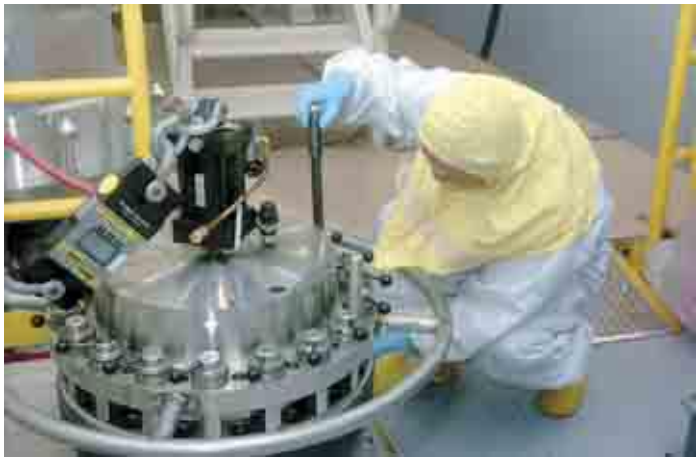
The 233-S facility wasn't the only area where the ERC team demonstrated superior safety awareness and performance. In FY 2002, CH2M HILL Hanford employees logged eight-and-a-half work years with no lost-time injuries. For Eberline Services Hanford employees, it was four-and-a-half work years, and Reactor Interim Safe Storage employees worked the equi-valent of six years with zero lost-time injuries.

The ERDF operations team reached five safe years worked, and the ERDF drivers completed 6.3 million miles without an at-fault accident. Remedial Action and Waste Disposal workers excavated, transported and disposed of nearly 4 million tons of radiologically contaminated material without a personnel contamination event. And, for the fifth time, the entire ERC team reached a million hours worked without a lost-workday injury. ■

Waste Management Project accelerated waste disposal

The DOE Richland Operations Office and Fluor Hanford's Waste Management Project are aligning work with new Hanford Site goals for accelerating waste disposal.

Well ahead of past plans, activities are under way to accelerate treating and disposing of mixed low-level waste, retrieving transuranic waste and shipping TRU waste off the site. The Waste Management Project is working with other DOE sites to ensure that disposal capability exists to meet DOE mission and closure schedules.



A worker prepares a Shippingport spent fuel container for departure from T Plant.

Acceleration initiatives

Key initiatives to accelerate cleanup during the next four years include the following actions:

- treat and dispose of more than 6,000 cubic meters of waste currently stored at the Central Waste Complex
- treat and dispose of more than 800 cubic meters of mixed low-level waste forecasted to be generated by cleanup activities during the contract period
- process approximately 2,000 cubic meters of above-ground transuranic waste, currently stored at the CWC, and ship it to the Waste Isolation Pilot Plant in New Mexico for permanent disposal
- retrieve, designate and disposition more than 15,000 drums of below-ground suspect transuranic waste
- place 1,936 cesium and strontium capsules into dry storage.

Receiving sludge, spent fuel

Recent accomplishments and current activities focus on preparing T Plant for compliant storage of sludge from the K Basins. In addition to storing sludge, T Plant is the prime candidate for a future remote-handled transuranic and mixed-waste processing mission. That mission will also include preparing the K Basins sludge for shipment to WIPP.

Since the late 1970s, T Plant has stored spent fuel from the Shippingport, Pa., reactor in a water-filled cell. To make way for the sludge, activities are under way to remove the Shippingport fuel to safe, dry interim storage at Hanford's Canister Storage Building until permanent disposal plans are finalized.

The first of 18 planned shipments was made in September, and seven shipments have been made to date. The next one planned will be this spring. The 72 Shippingport fuel assemblies represent nearly 16 metric tons of irradiated uranium.

Other preparations continue for storing sludge, including cleaning out eight process cells and 15 sections of canyon deck in the 850-feet-long T Plant "canyon." The job required removing and disposing of six PUREX towers, 19 large pieces of equipment and 145 empty drums. It resulted in 68 filled waste containers and more than 30,000 cubic feet of waste removed from the canyon.

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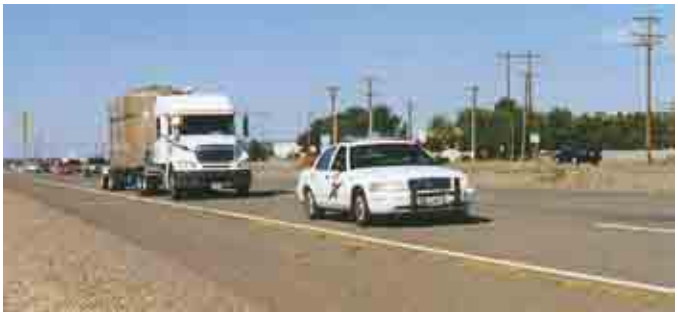
Waste Management Project accelerated waste disposal, cont.

Meeting the challenges

Other notable benchmarks in the Waste Management Project over the past year include these accomplishments:



A shipment of transuranic waste is on its way to the Waste Isolation Pilot Plant in New Mexico.

• In December 2002, Waste Management Project workers surpassed 4.5 million work hours without anyone missing a day of work because of an injury.

• The project accelerated mixed low-level waste shipments to off-site treatment facilities to make room for retrieved transuranic waste storage at the Central Waste Complex. The current average is 20 shipments per quarter — the equivalent of 1,500 drums — of debris and radioactive lead solids, which are macro-encapsulated by a local treatment facility. The project is planning to more than triple this rate during the next year.

• In 2002, Hanford was the first DOE site to achieve recertification under new WIPP requirements. Since September, three transuranic waste shipments have been sent to WIPP, for a total of 13 since the first departed from Hanford in July 2000.

• During fiscal year 2002, 790 suspect transuranic waste drums were retrieved from low-level burial grounds. Retrieved drums are processed at the Waste Receiving and Processing (WRAP) facility and temporarily stored at the Central Waste Complex awaiting shipment to WIPP.

• Waste Management workers disposed of more than 140,000 cubic feet of low-level waste in fiscal year 2002.

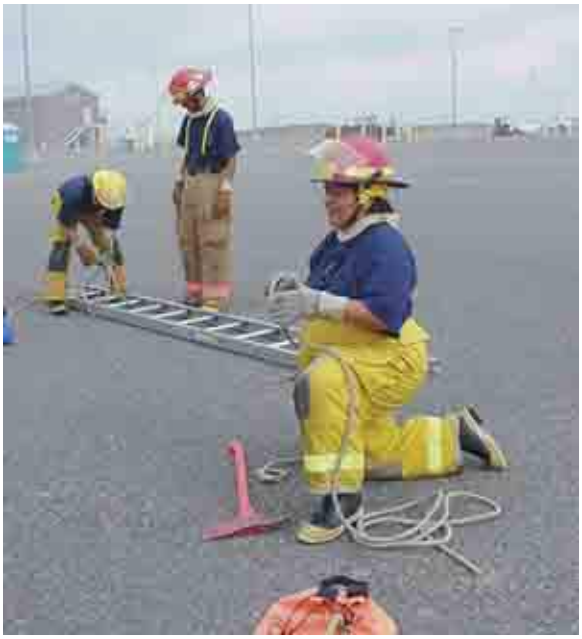
• More than 10,700 cubic feet of mixed low-level waste were treated during the fiscal year.

• Liquid-waste activities during 2002 protected the groundwater by processing more than 22 million gallons at the 200 Area Effluent Treatment Facility and more than 42 million gallons in the 300 Area Treated Effluent Disposal Facility.

• Waste Management supported the DOE cleanup mission by providing key support to numerous on-site and off-site cleanup projects. On-site support was provided to the Plutonium Finishing Plant, the tank farms and the deactivation efforts for the 324 and 327 Buildings. Off-site wastes were accepted from a wide variety of generators, and these included wastes from Parks Township, Pa., an effort initiated in 1999. ■

HAMMER and Hanford Training helped students

From the time the Volpentest HAMMER Training and Education Center opened its doors in September 1997 through the end of fiscal year 2002, the facility has recorded 137,090 Hanford student days (the number of days Hanford employees train at HAMMER). Hazardous waste classes, initial and refresher courses for basic medic first aid and respiratory protection, crane and rigging classes and sessions for radiation workers and nuclear criticality are some of the training courses regularly held for Hanford workers. HAMMER also trains a number of non-Hanford workers in a variety of subjects that are compatible with its mission.



Native American Fire Academy recruits work with ropes and ladders at HAMMER.

The variety of props at the facility offers many different types of workers a testing and training opportunity to hone their skills or work out the bugs in a procedure. Recently, a 7-by-10-by-8-foot pit offered a crew of nuclear chemical operators, pipe-fitters, teamsters, a radiation control technician and a field supervisor from the Central Plateau Remediation Project the chance to mock up a pumping system designed to filter solids and then transfer liquid into a tanker truck for disposal. The mock-up helped identify ways to improve instructions for actual operation of the system.

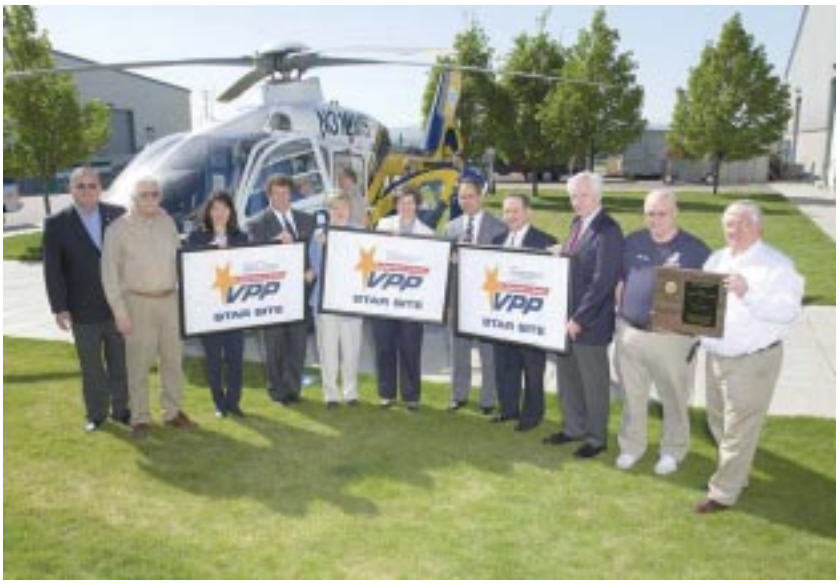
In the area of homeland security, HAMMER hosted training for bioterrorism responders for the 10th Weapons of Mass Destruction Civil Support Team of the Washington Army National Guard. International and domestic border security training classes and international first responder classes conducted by Pacific Northwest National Laboratory are also held at HAMMER.

HAMMER also worked with Columbia Basin College to present a fire recruit academy, which served as a pilot for an Intertribal National Fire Academy. Approximately one third of the attendees were from the Warm Springs and Yakama Nations. Students went on to complete an emergency medical technician certification through CBC, as such training could be useful for future employment opportunities.

Students training at HAMMER and Hanford Training learn new tasks and put into practice methods that help them do their jobs safely. The DOE Voluntary Projection Program awarded HAMMER and the Hanford Training organization “star status” in September, recognizing the safety covenant shared by the workforce and management at the facility. “It’s a validation of all the work we have been doing to create and maintain a safe environment for those presenters, instructors, students and visitors who pass through our gates,” said Don Brock, training specialist. ■

Safety culture at work and home recognized

During the last year, “Doing Work Safely” continued to be the focus of Fluor Hanford as evidenced by the addition of resources to provide employees with safer working conditions; the achievement of VPP status at three more Fluor Hanford projects; the continuity of millions of safe hours worked; and state recognition for safety excellence.



Representatives of DOE Headquarters, the DOE Richland Operations Office and Hanford contractors celebrate Hanford’s Voluntary Protection Program successes at the 2002 Hanford Health and Safety Expo.

Automated external defibrillators, which can be used when responding to victims of sudden cardiac arrest, were installed in several Fluor Hanford facilities. AEDs are now present at the Plutonium Finishing Plant, the Fast Flux Test Facility, the Spent Nuclear Fuel Project and the 222-S Laboratory. AEDs will be placed in the Stevens Center Complex buildings soon. The AEDs are easy to use and are placed in easily accessible areas. The Hanford Fire Department provides initial and refresher training on the AEDs to designated volunteers or responders.

“Flash suits” were made available to provide protection to electricians while performing electrical maintenance work on energized equipment. Electricians can use these arc suits and switching hoods while taking electrical current readings on exhaust-fan circuits. The flash suits have been used at the 222-S Laboratory.

Three Fluor Hanford projects received recognition under the Department of Energy’s prestigious Voluntary Protection Program for 2002. “Star status” was awarded to Fluor’s Central Plateau Remediation Project in April and to the Volpentest HAMMER Training and Education Center and the Hanford Training Center in September. The Nuclear Material Stabilization Project earned “merit status” in December. All three projects proudly fly the VPP flag at their facilities.

The VPP program, which honors organizations that demonstrate excellence in worker safety across the DOE complex, is a true example of teamwork and a commitment to safety by employees and regulators. In all, seven VPP flags have been awarded to the Fluor Hanford team. At the 2002 Hanford Health and Safety Exposition in May, Assistant Secretary Beverly Cook of the Department of Energy Headquarters honored the Hanford Site with special recognition for its commitment to safety and pursuit of excellence in the DOE VPP Star Program.

Fluor Hanford’s safety statistics are also impressive. The company completed more than eight months without a “day-away-from-work” injury, and achieved 7.5 million safe work hours in fiscal year 2002. This record earned recognition from Washington State Governor Gary Locke, Lieutenant Governor Brad Owen and the Washington State Department of Ecology.

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Safety culture at work and home recognized, cont.

Fluor Hanford also achieved an Occupational Safety and Health Administration recordable case rate of 1.45 — in other words, there were 1.45 injuries per 200,000 hours worked — significantly below the average of 2.3 for the DOE complex.

Fluor Hanford's noteworthy achievements reducing injuries and promoting the 24-hour-a-day, seven-day-a-week safety culture at work and at home earned the company the Certificate of Continuous Excellence, in the category of workplace safety, from the Association of Washington Business. This is the second time Fluor Hanford has been honored with this award as one of the safest workplaces in the state of Washington. ■

Fast Flux Test Facility heads toward deactivation

The Fast Flux Test Facility shone brightly in its early days, but is shceduled for permanent shutdown.

While the Fast Flux Test Facility continued to be maintained in a safe and compliant manner during fiscal year 2002, Fluor Hanford and its external experts began reviewing cost evaluations and schedule profiles associated with the decision the Department of Energy made on Dec. 19, 2001, to permanently shut down the facility.

The various scenarios predicted how much money and how long shutdown would take. The outside experts identified a number of alternatives and approaches that would substantially reduce the cost and accelerate the schedule for decommissioning the FFTF.

Upgrades aimed at increasing the efficiency and reliability of the FFTF refueling system were a primary area of focus in fiscal year 2002. A new control system for the Closed Loop Ex-Vessel Machine was installed. An upgrade to the Sodium Removal System's control system neared completion. And major repairs and modifications to the Solid Waste Cask were supported. All of these adjustments are important to safe operations at the facility. Although litigation subsequently affected additional shutdown fieldwork, work-package preparation continued.

Finally, significant changes were made in FFTF senior management during the fiscal year as the organizational structure was changed to a project-oriented approach. The changes will posture FFTF for whatever the future holds. ■

PNNL continues on scientific 'voyage of discovery'

Two hundred years ago this month, the U.S. government initi-ated one of the great voyages of discovery by funding the Lewis and Clark expedition. America's scientific voyage of discovery continues today, and the Department of Energy's Pacific Northwest National Laboratory plays a vital role in shaping the scientific innovations that will help ensure our national security, enhance our energy options and expedite ongoing environmental cleanup. PNNL is committed to delivering scientific solutions to these core DOE missions.

"Fast glass" is a more efficient formula for vitrifying radioactive waste, developed by a team of researchers at PNNL and the Savannah River Technology Center.

For this commitment and the dedication of its 3,800-member staff to operational and scientific excellence, DOE gave Battelle, which operates PNNL, its fifth consecutive outstanding performance rating in 2002.

Battelle has operated the laboratory for 37 years, from its early days as a nuclear energy laboratory providing research and development for the Hanford Site, to today's role as a multi-program national laboratory with an annual business volume of $560 million. Battelle continues to invest heavily in maintaining the laboratory's state-of-the-art research facilities, encouraging development of spin-off technologies and supporting local and regional organizations through its charitable distributions.

Border officials from the Czech Republic learn to use detection technologies such as the acoustic inspection device developed at Pacific Northwest National Laboratory. They participated in a nonproliferation training program conducted by the U.S. Customs and PNNL at HAMMER last July.

"Neither the Department of Energy nor staff members at PNNL could sustain this growth and these accomplishments without the outstanding partnerships formed with our customers, who help create, support and effectively use the scientific contributions we are developing together," said Walter Apley, interim laboratory director.

In 2002, those partnerships led to the arrival at PNNL of the world's most powerful nuclear magnetic resonance spectrometer and the order of a new, advanced supercomputer. PNNL teamed with the Savannah River Technology Center to design a more efficient glass formula for vitrifying radioactive waste, which could result in $1 billion in savings over the life of the project. PNNL works very closely with DOE's Richland Operations Office and the Office of River Protection, as well as their dedicated remediation contractors — Bechtel, Fluor Hanford and CH2M HILL Hanford Group — to help expedite cleanup at Hanford.

Working with local, national and international organizations, PNNL helps prevent the spread of weapons of

Continued on page 20.

PNNL continues on scientific 'voyage of discovery', cont.

mass destruction. Its staff leads one of the world's largest and most important nonproliferation programs in Kazakhstan. Since 1997, in conjunction with the U.S. Customs Service, PNNL has used the Volpentest HAMMER Training and Education Center to train nearly 300 border officials from more than a dozen Eastern European countries to identify and intervene in potential smuggling of weapons of mass destruction.

Last summer, the 1,000th patent was granted for technologies developed at PNNL, for ultrabarrier substrates. This patented technology contributed to the formation of Vitex, a Battelle spin-off company created to commercialize the ultrabarrier coatings and substrates for flat-panel displays and devices.

PNNL researchers received an R&D 100 Award for the development of a data mining and visualization software tool called OmniViz. PNNL has received 59 R&D 100 Awards since 1969. ■