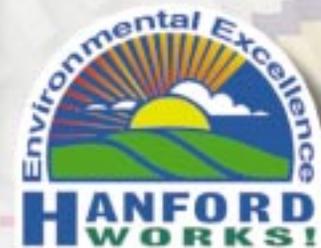




200 West Area -



K Basins

## Project Hanford Management Contract

# Cleanup Progress Report

April - June 1999



400 Area



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Prime Contractor (Integrator):

- **Fluor Daniel Hanford, Inc.**

Principal Subcontractors:

- **B&W Hanford Company** (Facility Stabilization Project)
- **DE&S Hanford, Inc.** (Spent Nuclear Fuel Project)
- **DynCorp Tri-Cities Services, Inc.** (Site Infrastructure)
- **Lockheed Martin Hanford Corporation** (River Protection Project)
- **Numatec Hanford Corporation** (Engineering & Technology)
- **Protection Technology Hanford** (Safeguards & Security)
- **Waste Management Federal Services of Hanford, Inc.**  
(Waste Management Project)



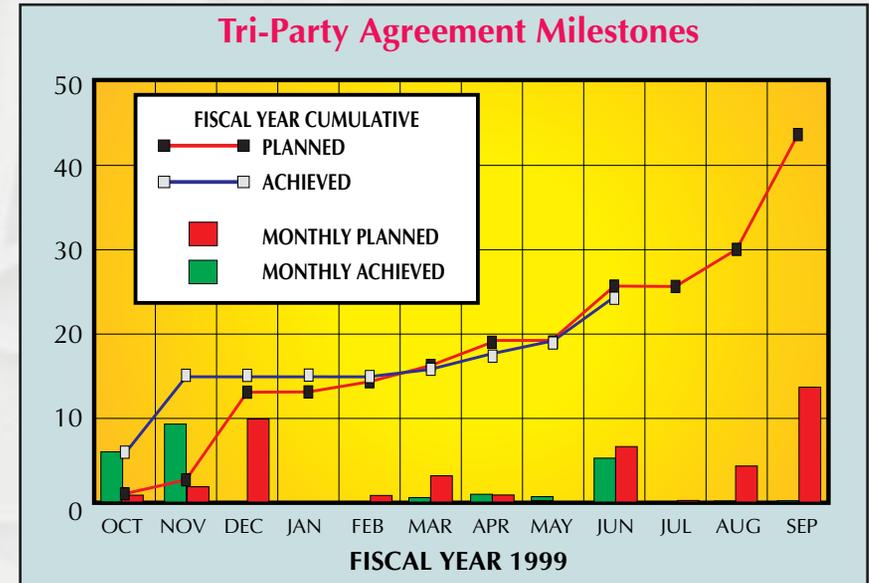
## 3<sup>rd</sup> Quarter Fiscal Year 1999 Highlights

On May 15, 1999, the Hanford Federal Facility Agreement and Consent Order – better known as the Tri-Party Agreement – marked its 10th anniversary. The model pact launched the Department of Energy, Environmental Protection Agency and State of Washington on a 30-year journey for the environmental restoration of Hanford. Its effectiveness in moving cleanup forward is due, in part, to its built-in flexibility: 281 changes have been negotiated over the decade to address environmental, safety, or technical issues that arose. The Agreement's success also stems from the continued focus of the three parties on the end goal: Hanford cleanup.

This report highlights another quarter of real progress by our team under the Tri-Party Agreement umbrella:

- Long-standing tank safety issues are being resolved.
- Wastes are being pumped out of aging underground single-shell tanks.
- The legacy from decades of plutonium processing is being safely stabilized.
- Facilities are being built and equipment installed to move spent fuel away from the Columbia River.
- We are close to certification to ship transuranic wastes to a repository in New Mexico this fall.

In addition, we continue seeking ways to reduce the cost to taxpayers and expedite cleanup. One way is to apply new technology. In fiscal 1999, we've deployed five alternative technologies and 10 more deployments are planned by October. We also conducted four demonstrations of promising cleanup technologies this year.

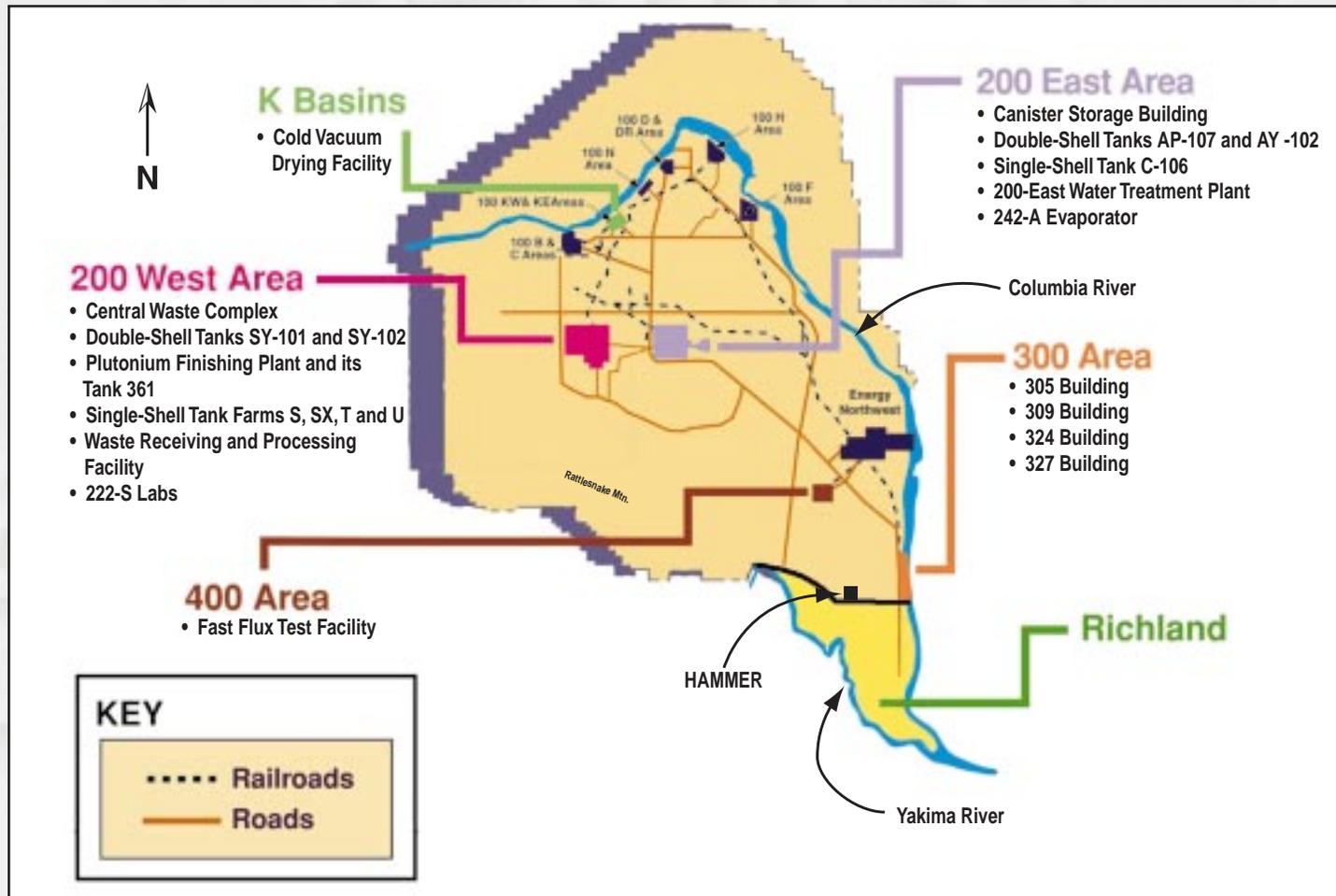


*DOE Richland Operations Office Manager Keith Klein addresses one of three employee rallies held to mark the Tri-Party Agreement's 10<sup>th</sup> anniversary.*

Highlights



## These Hanford areas and facilities are cited in this report....



# Facility Stabilization Project

## Expectation:

Safely deactivate contaminated buildings to reduce risk to workers and the environment while decreasing cost to taxpayers.

## Status Update:

- Issued a new Plutonium Finishing Plant (PFP) project baseline. It improves the schedule for disposition of PFP nuclear materials and processing facilities, shaving more than \$1 billion from the prior project lifecycle cost profile.
- Safely vented Tank 361, an old concrete settling tank once used for PFP effluents. No pressure or flammable gases were detected.
- Continued thermal stabilization of plutonium-bearing materials at PFP.
- Transferred seven cask loads of spent fuel without incident from the 327 Building storage pool to the K Basins, bringing us another step closer to 327 Building cleanup.



*Spent fuel moved as part of the cleanout of the 327 Building is lowered into the K Basins.*

# Facility Stabilization Project

## Status Update (continued):

- Cutting on one of two remaining highly contaminated equipment racks inside the 324 Building's B Cell is 95 percent complete. The final two-story rack will also be dismantled this year. B Cell, a three-story heavily shielded concrete room used for vitrification experiments, once held 12 such racks.
- Fast Flux Test Facility (FFTF) workers continued to maintain the facility in safe standby condition, achieving a million safe work hours in the process. On May 4, Energy Secretary Bill Richardson tasked the Pacific Northwest National Laboratory for an FFTF Program Scoping Plan by August.



*The remnants of the next-to-last rack in B Cell rest on container 136 (center). Using remotely operated cutters and manipulators, workers cut the two-story racks, then put the pieces in 55-gallon drums to ultimately be removed from the Cell, packed with grout and taken to Hanford's Central Waste Complex.*

# Facility Stabilization Project

## Future Focus Areas:

- Sustain safe quality performance while stabilizing plutonium-bearing materials at PFP. Start prototype calciner operation to begin stabilizing plutonium solutions.
- Collect samples from PFP's Tank 361 to learn more about its contents.
- Dismantle final B Cell rack in the 324 Building.
- Repair the 309 Building dome exterior, removing deteriorating, asbestos-laden insulation.



*We vented the former PFP settling pond known as Tank 361 (top photo), analyzed its vapors, and videotaped its interior (bottom). Now we'll collect samples to characterize the contents.*

# River Protection Project

## Expectation:

Protect the Columbia River, our workers and the public by safely storing and disposing of high-level radioactive tank waste.

## Status Update:

- Initiated pumping from two more underground single-shell tanks (S-106 and S-103) well ahead of the consent order due date of July 30. We now have seven tanks in the pumping phase. About 190,000 gallons were pumped out this quarter and more than 375,000 gallons since last summer when pumping resumed.
- Removed another two feet of waste sludge from high-heat Tank C-106 six weeks early. Sluicing activities to date have removed four feet of sludge – enough to drop the waste temperature in the tank below the level needed to resolve the high-heat safety issue once posed by this tank.



*A technician checks the pump winch for Tank AY-102. The double-shell tank is receiving the waste sludge removed from Tank C-106.*

# River Protection Project

## Status Update (continued):

- Moved 640,000 gallons of liquid wastes through the cross-site transfer line since its first use March 10. That's about half the 1.2 million gallons we plan to transfer this fiscal year from SY-102, one of only three double-shell tanks in the 200 West Area, to AP-107, one of 25 double-shell tanks in the 200 East Area.
- Twice deployed a mechanical arm in Tank SY-101 as a near-term mitigation measure while waste transfer equipment is installed. The arm successfully induced the release of about 300 cubic feet of gas from the tank's waste crust. As a result, the waste level stopped rising, and even fell slightly in May.



*Workers install a mechanical arm to induce controlled releases of gas from the waste crust of Tank SY-101. The device successfully stopped the rise in the measured level of waste inside the tank.*

# River Protection Project

## Future Focus Areas:

- Complete retrieval of waste sludge from Tank C-106.
- Prepare to transfer 100,000 gallons of waste from Tank SY-101 to SY-102 this fall. The transfer will bring us another major step closer to resolving SY-101 safety issues, and is possible with the room made in SY-102 by our cross-site waste transfers.
- Begin pumping in U Tank Farm. This would keep us ahead of the consent order schedule, which calls for pumping to start on four more single-shell tanks by June 15, 2000.
- Complete AN Tank Farm valve-pit upgrades needed to deliver wastes to Hanford's future waste treatment plant. The pits are being relined and new jumpers, cover blocks and leak detectors installed.



*Craft workers finish one of six concrete pads that will support new systems to monitor tank farm air emissions. The construction start was under budget and ahead of schedule. An early completion is predicted. The improved design more fully meets the rigid standards of the Federal Clean Air Act, and might be usable at other DOE sites.*

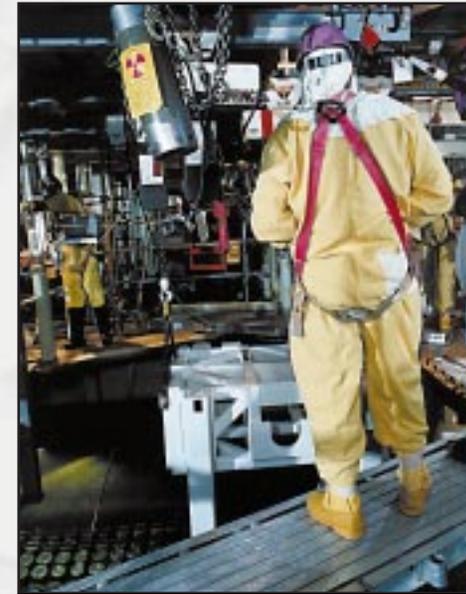
# Spent Nuclear Fuel Project

## Expectation:

Protect the Columbia River by safely moving more than 2,100 metric tons of deteriorating spent nuclear fuel from the aging K Basins to safe, dry, interim storage in the center of Hanford.

## Status Update:

- Finished moving spent fuel from the 327 Building to the K Basins without incident. Some of it was once stored in the K Basins and examined in the 327 Building to help determine strategies for K-Basin cleanup.
- Initiated public review of the project's proposed plan, as prescribed by the Comprehensive Environmental Response, Compensation and Liability Act.
- Developed a low-cost sludge disposal alternative. It calls for treating the radioactive sludge accumulated in the basins with similar site wastes, saving the taxpayer millions of dollars and potentially accelerating K-Basin cleanup.
- Continued installing hardware in the K West Basin to support fuel removal next year.



*A fuel retrieval system support table is installed in the K West Basin.*

# Spent Nuclear Fuel Project

## Status Update (continued):

- Installed a new water treatment system in the K West Basin.
- Took delivery of three test multi-canister overpacks (MCOs) – stainless-steel containers two feet in diameter and 13 feet tall. Each MCO will hold up to six baskets of cleaned fuel assemblies or scrap from the K Basins, be placed in water-filled casks, sealed and vacuum dried for interim safe, dry storage.
- The Canister Storage Building project is 85 percent complete: all 220 storage tubes are in place, and the MCO handling machine was assembled and tested.
- Construction of the Cold Vacuum Drying facility is on track for completion this fiscal year. Design review is complete, the Final Safety Analysis Report submitted to DOE, and process equipment is being procured.



*In a successful start-up test at the Canister Storage Building, a prototype transport cask was moved into the facility and lowered into the receiving pit.*

# Spent Nuclear Fuel Project

## Future Focus Areas:

- **Finish design of a cask loading system that minimizes the risk of dropping a cask inside the K Basins during fuel movement and retrieval.**
- **Complete construction on the fuel-retrieval system in the K West Basin.**
- **Complete construction of the Cold Vacuum Drying facility.**
- **Streamline the safety analysis process. We'll review, address comments and resubmit to DOE our documents for the Canister Storage Building and Cold Vacuum Drying facility, then complete the last safety analysis report, which covers K Basin work.**



*An engineer tests a tool to remove lids on the canisters stored in the K Basins so the spent fuel elements can be retrieved. Testing on components of the fuel retrieval system is being conducted in the 305 Building.*

# Waste Management Project

## Expectation:

Safely treat, store and dispose of solid wastes and liquid effluents, and provide analytical, generator, environmental, transportation and packaging, and waste-minimization services.

## Status Update:

- Received National Environmental Policy Act approval to transfer mixed low-level waste to an offsite thermal treatment facility. The facility, to be operated by the Allied Technology Group, is to start treatment in December 2000.
- Continued preparations for obtaining certification to ship transuranic (TRU) waste to the Waste Isolation Pilot Plant in New Mexico this fall. In addition to passing audits by DOE's Carlsbad Area Office, we'll need final Environmental Protection Agency and Nuclear Regulatory Commission approvals.



*At Hanford's 1999 Safety Expo, area fire captains and the public learned about the shipping container designed to safely transport transuranic waste to the underground repository in New Mexico.*

# Waste Management Project

## Status Update (continued):

- We've far exceeded our pollution prevention goals this fiscal year. We earned a "Closing the Circle" award from the White House for our new program to purchase recycled products and DOE's National Pollution Prevention Award for our outreach into the community with pollution prevention information.
- Engineered more than 20 shipments of high-level waste samples to the Savannah River Site and United Kingdom to support the Office of River Protection privatized tank waste treatment contract.



*Hanford saved taxpayers \$90,000 in one three-month period this year by purchasing remanufactured toner cartridges.*

# Waste Management Project

## Future Focus Areas:

- Achieve certification to ship TRU waste to the Waste Isolation Pilot Plant in New Mexico.
- Characterize sludge samples from Tank 361, located at the Plutonium Finishing Plant.
- Complete a 242-A Evaporator campaign of about 1 million gallons for the River Protection Project this fiscal year.
- Complete secondary containment upgrades at T Plant and the 222-S Lab needed to make waste streams compliant with the Resource Conservation and Recovery Act.
- Ship 560 cubic meters of mixed low-level waste for non-thermal treatment to the local Allied Technology Group facility. Much of this legacy waste has been in storage on site since 1987 awaiting final disposition.



*Nuclear chemical operators stage metal boxes of mixed low-level waste at the Central Waste Complex for shipment offsite for treatment. The treated waste will be returned to the site for disposal. This summer, the National Waste Management Programmatic Environmental Impact Statement Records of Decision will be issued. These will define Hanford's future waste treatment and disposal role in the DOE Complex.*

## Site Infrastructure

### Expectation:

Optimize the Hanford Site infrastructure, reduce site inventories and be more cost effective.

### Status Update:

- Shut down the 200 East water treatment plant and tied the 200 East and West potable water systems together. This eliminates the risk of storing chlorine gas in the 200 East Area and reduces permitted wastewater discharges to the soil by 12 million gallons a year.
- Brought septic systems serving the Plutonium Finishing Plant and other 200 West facilities into compliance with current regulations.
- Decontaminated and made available a 40-ton crane, avoiding use of about 100 cubic yards (80 cubic meters) of low-level waste disposal space.
- Proposed an innovative use of excess assets that entails demolition of unneeded facilities – reducing the site footprint – at little or no cost to taxpayers.



*Shutting down the 200 East water treatment plant and tying 200 East and West potable water systems together satisfied a Tri-Party Agreement milestone to meet State wastewater discharge requirements.*

## Site Infrastructure

### Status Update (continued):

- Awarded a unique contract for calibration services to Energy Northwest that retains jobs locally for the workers and transfers government-owned equipment with the corresponding workscope. Cost savings of \$300,000 and a cost avoidance of more than \$1 million will result.
- Contributed to two more Vice Presidential Hammer awards for streamlining government. One was for the transfer of land, facilities and railway to a local port authority and the second award was for the modernization of Hanford's aging steam supply system.



*A transfer of land and facilities eliminated unneeded functions, helped create 100 local private-sector jobs and saves taxpayers \$3.5 million a year. The modernization of our steam system reduces greenhouse gas emissions more than 600 tons a year. Both achievements earned Hammer awards from Vice President Al Gore.*

# Volpentest HAMMER Training and Education Center

## Expectation:

Host, broker and provide training to the Hanford workforce with hands-on use of realistic props and settings to save lives, reduce injuries and increase worker productivity, and serve as a catalyst for regional training.

## Status Update:

- Staged a highly successful confined-space mock-up for Plutonium Finishing Plant (PFP) workers. The practice enabled them to address a major safety issue, 24 needed equipment changes and 12 critical work-sequence changes. One estimate pegged the return on investment at 1 to 300: for every \$1 spent preventing problems during the actual work, \$300 in corrective actions was avoided.
- Identified solutions to meet future PFP glove-box training mock-up needs.
- Delivered 515 classes this quarter for a total of 9,202 student days, including 401 classes for Hanford workers, HAMMER's first priority.



*Staff members discuss some of the problems Hanford workers avoided by using a HAMMER mock-up to plan and practice for a confined-space operation at the Plutonium Finishing Plant.*



# Volpentest HAMMER Training and Education Center

## Status Update (continued):

- Added more hands-on activities to Hanford incident command and building emergency director training courses.
- Identified specific hands-on training for the River Protection Project that will meet readiness review requirements.
- Northwest Public Power Association chose HAMMER as the hands-on training facility for its 184 members, which include the local public utility districts.
- Broke ground for a new State Department-funded port-of-entry building to be used for foreign border officials' training.
- Graduated the first Columbia Basin College-HAMMER firefighter level one class.



*Top: State transportation workers use HAMMER props and staging areas to hone their forklift skills. Bottom: Employees of Willamette Industries, being trained by Gator Safety of Sweet Home, Oregon, practice safely putting out a propane tank fire under the watchful eye of a HAMMER staffer (far left) who stands ready at the controls to shut off the flames if the need arises.*

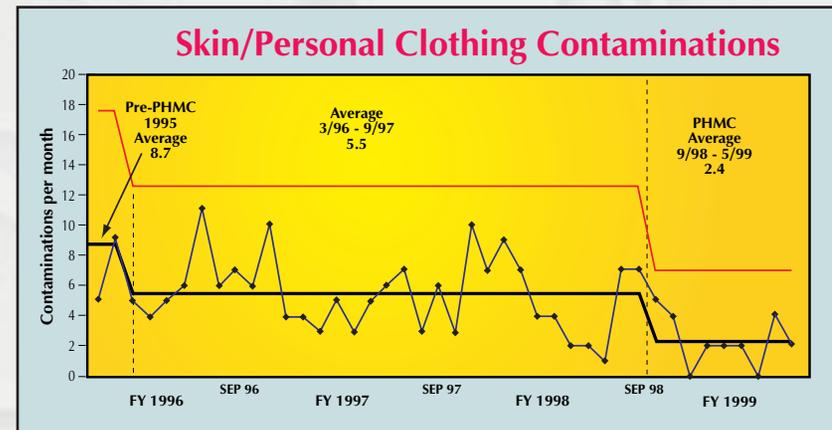
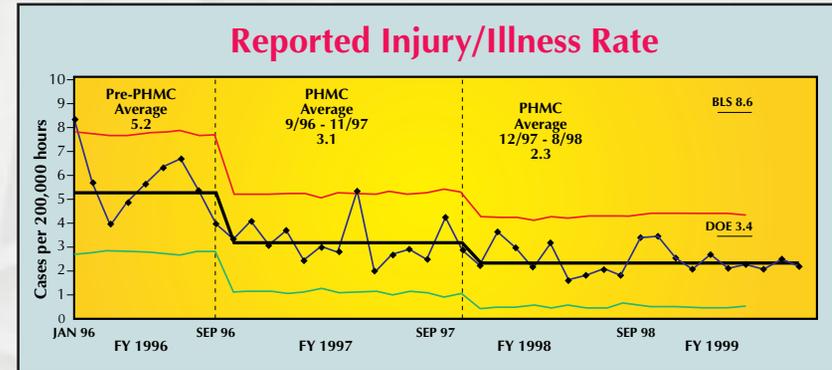
# Environment, Safety, Health and Quality

## Expectation:

Achieve safe quality performance by implementing an integrated environment, safety and health management system.

## Status Update:

- ALARA data show continued improvement for our team. Workers' actual total dose received last year was 14 percent less than projected. To share the success, we hosted a workshop to promote lessons learned and ALARA management. About 150 site contractors, DOE officials, commercial utility reps and nuclear suppliers who attended gave positive feedback.
- Line management, safety professionals and labor participated in a first-ever Hanford Safety Summit to develop innovations for improved safety performance.
- 14,000 visited a highly successful 5th Hanford Safety Expo.



*Workplace injuries and contaminations continue to show favorable long-term trends.*

Environment, Safety, Health and Quality



# Environment, Safety, Health and Quality

## Future Focus Area:

- Achieve DOE verification of our team's Integrated Environment, Safety and Health Management System.



*Hanford's annual exercise involved more than 500 site, state and local agency personnel in a disaster scenario at the tank farms that demonstrated continued improvement in our emergency preparedness and response.*

# Economic Development

## Expectation:

Support economic diversification in the Tri-Cities and surrounding six counties near the Hanford Site.

## Status Update:

- A \$20,000 contribution from B&W Hanford to nearby Sunnyside helped leverage grants to expand city infrastructure. This, in turn, helped retain 100 employees and create 80 new jobs at Canam Steel Corp.
- A Fluor Daniel Northwest mentor-protégé firm, E2 Consulting Engineers, has grown its local office from 4 to 105 employees in less than 3 years. One third of the staff now does non-Hanford work, helping diversify the local economy.
- To make the most of underutilized site assets, Lockheed Martin Services, Inc., launched use of the Hanford Video Production Center for commercial work nationwide in addition to Hanford tasks.



*Commercial technical, documentary, safety or training films may now be produced at the Hanford Video Center, as part of our efforts to make the most of underutilized site assets.*

# Economic Development

## Status Update (continued):

- Lockheed Martin Services, Inc., one of our enterprise companies, secured three more commercial contracts (from General Motors, Gateway and Child Support Network) for computer support.
- Two teams of employee inventors earned patent awards or royalties for commercially available software they originally developed for site uses.
- The Tri-Cities Industrial Development Council established a reinvestment company to support transfer of Hanford assets for local economic development.



*Our companies and employees have donated more than \$1.325 million to date this fiscal year to improve the region's quality of life. Thousands of volunteer hours are also contributed to community projects, such as this \$20,000 volunteer landscaping effort for the local Children's Center.*

## Other Significant Cleanup Progress at Hanford

- Placed C Reactor in interim safe storage, reducing its footprint 81 percent. Deactivated N Reactor. Both are in the 100 Area along the Columbia River.
- Moved more than 1.6 million tons of contaminated waste to date from four remedial action sites near the Columbia to a disposal facility in central Hanford.
- Processed more than 665 million gallons of contaminated groundwater to date through five pump-and-treat systems.
- Initiated decommissioning of the Plutonium Concentration Facility in 200 West, the first Hanford full-scale plutonium processing facility to undergo decommissioning.
- Prepared a long-range plan integrating site activities related to underground soil contamination.
- Began pilot melter testing for the privatized waste treatment plant. Aggressive design development is under way.



*Four vaults were constructed in 200 East in the early 90s for a now-defunct grout program. Based on PHMC recommendations, DOE has decided to use these vaults to hold immobilized (vitrified) low-activity tank waste that will be produced by BNFL Inc.*

## For More Information...



- **U.S. Department of Energy**  
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Richland, WA 99352  
(509) 376-5742



- **Fluor Daniel Hanford, Inc.**  
Office of Communications  
& Media Relations  
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Richland, WA 99352  
(509) 376-5101

OR

- Visit the Hanford Homepage at:  
<http://www.hanford.gov>



*Hanford successfully accelerated its preparations for the year 2000. In an effort deemed "superior" by DOE, we completed 216 of 217 Y2K projects by March 31, including 23 mission-essential items. The final Y2K item was completed May 9, well ahead of the original July 30 deadline.*

