

# FLUOR HANFORD

## CLEANUP PROGRESS REPORT



OCTOBER – DECEMBER 1999



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Prime Contractor:

**Fluor Hanford, A Fluor Global Services Company**

Contributing Subcontractors:

- B&W Hanford Company
- DynCorp Tri-Cities Services, Inc.
- Numatec Hanford Corporation
- Protection Technology Hanford
- Waste Management Federal Services of Hanford, Inc.



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# 1<sup>ST</sup> QUARTER FISCAL YEAR 2000 HIGHLIGHTS

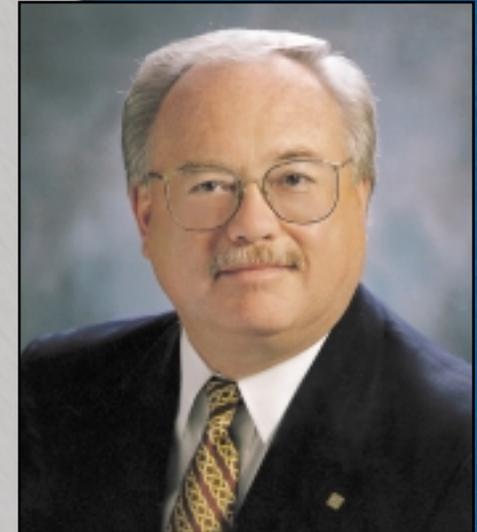
On the eve of the new fiscal year, Keith Klein, manager of the Richland Operations Office for the Department of Energy (DOE), laid out a new “vision” for Hanford. He said Hanford could now focus on three very distinct outcomes:

- Restoring the river corridor,
- Transitioning the central plateau, and
- Putting DOE’s assets to use for the future.

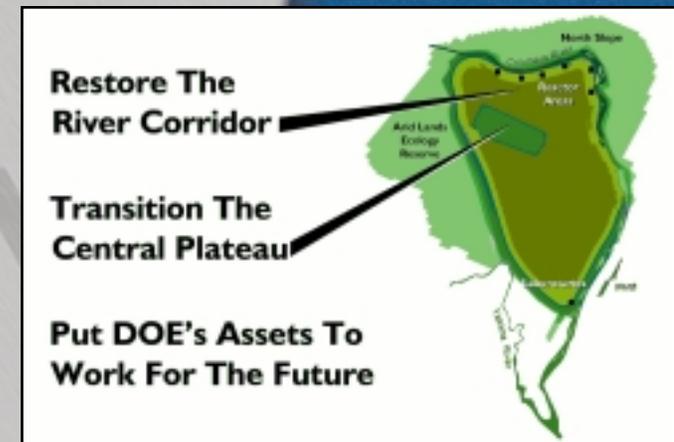
This three-pronged vision is the result of months of discussions Keith and I and other Hanford contractor presidents had with workers and key stakeholders like you.

Fluor Hanford’s new business model, which I briefly described in our last *Cleanup Progress Report*, is closely aligned with this new vision. We’re focusing our project-management expertise and resources directly on those specific outcomes. With respect to cleanup, for instance:

- The Nuclear Material Stabilization Project is focused on cleaning up the Plutonium Finishing Plant, located on Hanford’s central plateau, and its ultimate deactivation.
- The Spent Nuclear Fuel Project will move Hanford’s biggest threat to the Columbia River away from the shoreline and create safe, dry, interim storage in the 200 Area.
- The River Corridor Project largely encompasses cleanup, deactivation and waste-disposal activities elsewhere along the river.
- Waste Management Projects include a range of retrieval, treatment, packaging and storage activities on the central plateau, and shipping waste to New Mexico.



*Ron Hanson,  
Fluor Hanford President  
and Chief Executive Officer*



HIGHLIGHTS

# 1<sup>ST</sup> QUARTER FISCAL YEAR 2000 HIGHLIGHTS (continued)

We made many improvements and learned several lessons to strengthen our business practices in fiscal 2000. Among them, our Price-Anderson Amendments Act compliance, corrective-action management and quality-assurance procedures. The enhancements we've made will help us deliver an ever-higher level of quality performance.

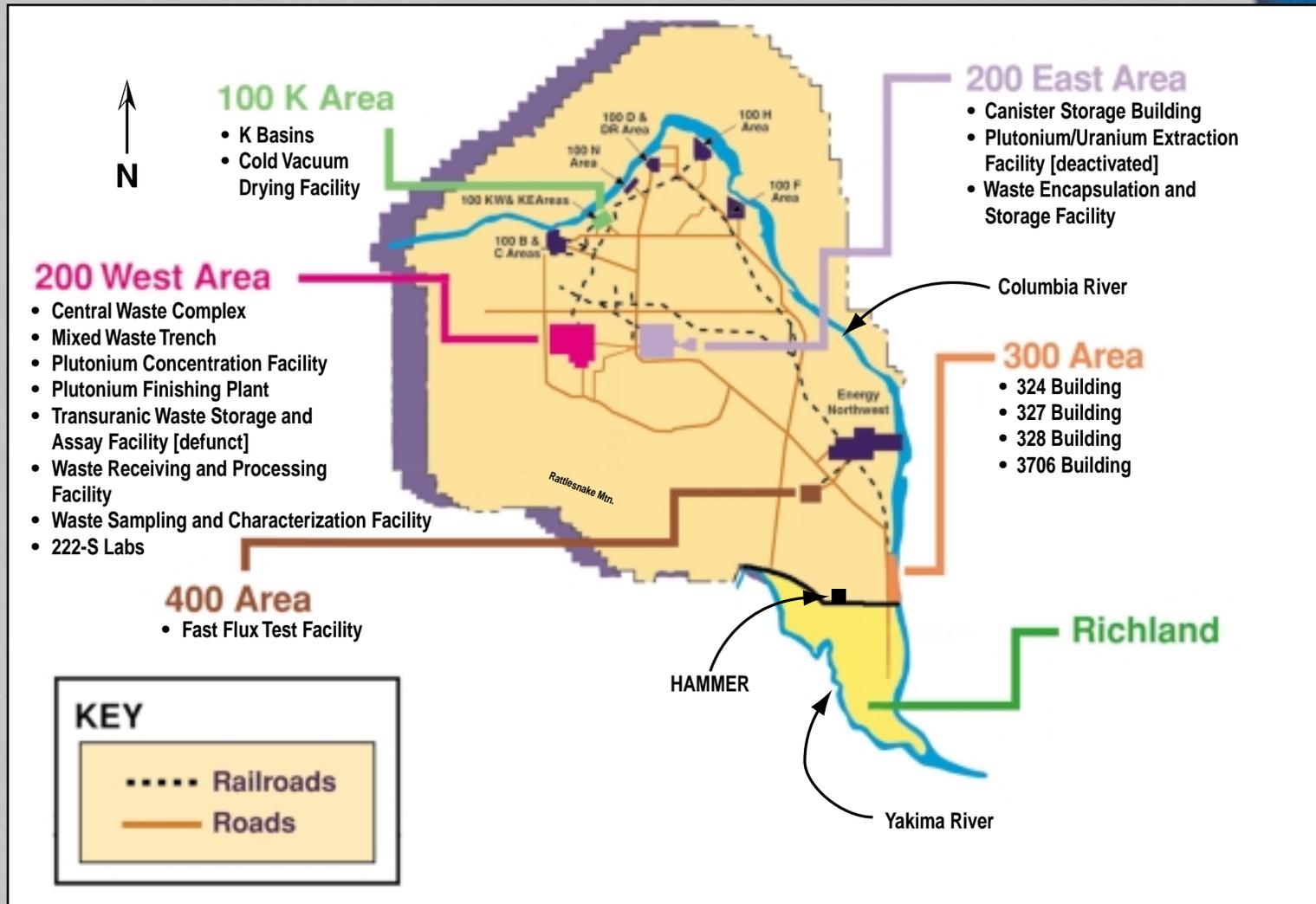
Key to the new vision is asking if we can achieve the goal even faster. Where possible, we're seeking to *accelerate the transition* of the central plateau to an area of waste management activities, and *speed the cleanup* of the river corridor – safely and cost effectively, of course. The following pages highlight many such efforts.

Just as important, we've revitalized our push to promote *more effective economic diversification* in our community. This addresses the third outcome: putting Site assets to use for the future. In 1999 alone, we helped redeploy nearly \$30 million worth of Hanford equipment in our community. We also rolled out our Target Tri-Cities initiatives, which included starting construction of a \$4.3-million industrial facility to help attract new business to the Tri-Cities. This and other recent economic transition efforts are noted on pages 23 and 24.

We enter the year 2000 with renewed sense of purpose. We have a blueprint that points toward the cleanup finish line. We have the foundation in a project-focused structure to build on what we've already accomplished. We are poised to reach key new milestones in the very near future. I look forward to reporting more Fluor Hanford successes to you next quarter.



# THESE HANFORD AREAS AND FACILITIES ARE CITED IN THIS REPORT....



# NUCLEAR MATERIAL STABILIZATION

## Expectation:

Safely stabilize special nuclear materials at the Plutonium Finishing Plant and then deactivate the facility to reduce risk to workers and the environment while decreasing cost to taxpayers.

## Status Update:

- Thermal stabilization of plutonium-bearing materials continues at an increasing rate, as does our use of the prototype vertical calciner to stabilize plutonium solutions. We're on track to quadruple our rate of stabilization.

## What's Next:

- We plan to accelerate stabilization of plutonium polycubes by more than two years, beginning later this fiscal year – well ahead of the January 2003 target start date.



*We'll start stabilizing plutonium polycubes, like the one shown here, later this year when lab testing confirms the use of muffle furnaces for stabilization.*

# NUCLEAR MATERIAL STABILIZATION

## What's Next: *(continued)*

- To further increase the thermal stabilization rate, we'll start up three new furnaces in February, four months ahead of schedule.
- We're preparing to restart cementation of residues in April.
- We plan to begin magnesium hydroxide precipitation processing of plutonium-bearing solutions in July.



*This cementation glovebox (top photo) and mockup of a magnesium hydroxide precipitation glovebox (bottom) represent processes that will soon increase the amount of nuclear materials being stabilized at the Plutonium Finishing Plant.*

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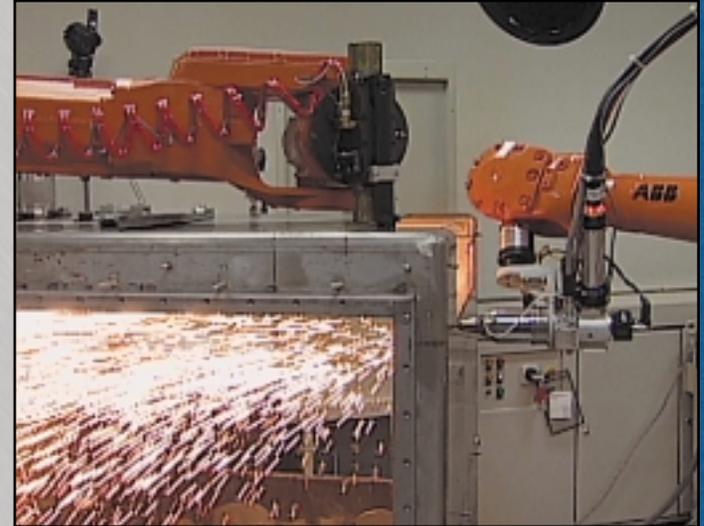
# RIVER CORRIDOR

## Expectation:

Safely deactivate contaminated facilities, including several near the Columbia River, to reduce risk to workers and the environment while decreasing cost to taxpayers.

## 324 Building Deactivation Update:

- Successfully demonstrated that commercially available lasers and robotic arms could remotely cut gloveboxes into disposable pieces, improving the safety and speed of the process.
- Several critical repairs to the aging in-cell cranes are ongoing to allow cleanup progress to continue in B Cell. The cranes were designed to aid chemical and materials research and were not built to dismantle and remove equipment, so frequent failures occur, slowing cleanup. The repair work requires dozens of manned entries into high-dose, contaminated environments, and has been safely conducted without incident using the Automated Job Hazard Analysis process.



*A laser head guided by a robot arm precisely cuts out a section of a glovebox, while a second robot arm grips the piece for removal and placement in a waste drum. The demonstration proved the robotic technology is safer and faster.*



# RIVER CORRIDOR

## 327 Building Deactivation Update:

- Packaged and removed all fuel items from I Cell. We can now focus on removing the rest of the equipment in this hot cell.
- Completed inventory and verification of 30 Pacific Northwest National Laboratory legacy waste buckets at the facility on schedule.

## Accelerated Deactivation Update:

- Disconnected and capped off five sprinkler systems for the unoccupied 3706 Building, avoiding \$350,000 a year in heating costs to protect the fire system from freezing.
- The 200-Area accelerated deactivation team was nominated for this year's DOE Pollution Prevention Award: they saved \$345,000 recycling four 34-volt batteries from a battery-operated locomotive once used at the deactivated Plutonium/Uranium Extraction (PUREX) facility.



*Cleanup in Hanford's 300 Area comprises much of the River Corridor Project (RCP). Accelerated deactivation work, an important aspect of the RCP scope, also involves several small facilities in the 200 Areas, such as the shut down Transuranic Waste Storage and Assay Facility, known as TRUSAF.*

RIVER CORRIDOR



# RIVER CORRIDOR

## Safety Update:

- River Corridor employees completed a full year without a work-related lost-time injury, despite the potential risks inherent with their decontamination tasks.

## What's Next:

- Continue 324 Building B-Cell cleanout activities, including use of remote manipulators to cut up and package the last of 12 two-story equipment racks.
- Transfer grouted waste containers from B Cell to A Cell. Then, initiate nine careful shipments with a special cask and liner to move the highly radioactive containers to compliant storage in the 200 Area. The reusable cask must be decontaminated between shipments.



*Retrieving more than 300 soup-size cans of radioactive material from a storage carousel 10 feet below the 327 Building canyon*

*floor requires raising a long tube high overhead to remove each can. Using good safety-management techniques, the work team effectively eliminated a potential hazard from an open electrical bus bar located overhead, so that retrieval work proceeds safely.*

RIVER CORRIDOR



# SPENT NUCLEAR FUEL

## Expectation:

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

## Construction and Fabrication Update:

- Installation of the cask loadout system is on track for completion by the end of February. Much of it is in place, including the shuttle in the transfer channel that connects the main basin to the loadout area, and a gantry and grapple to lift multi-canister overpacks (MCOs) from the shuttle into casks.
- We began fabricating 2,170 heavy steel and copper baskets to hold spent fuel in the MCOs during movement out of the K Basins, the drying process and interim storage in the Canister Storage Building. (Details of this onsite fabrication effort are on Page 17, Site Services section.)
- Fabrication also began on the 400 stainless-steel MCOs after our vendor successfully passed strict quality reviews.



*A multi-canister overpack (MCO) sample hood gets final inspection at the vendor's plant. The hood will be used in the Canister Storage Building to sample internal gases from the MCOs.*

# SPENT NUCLEAR FUEL

## Construction and Fabrication Update: *(continued)*

- Completed the Cold Vacuum Drying facility, and installed equipment in the first two bays on schedule.

## Safety Update:

- Project workers completed one million hours without a lost-workday injury.
- Successfully passed DOE review of Phases I and II of the Project's Integrated Environment, Safety and Health Management System.
- DOE has approved nearly 3,000 pages of safety documentation since summer, including final reports for the K Basins and Cold Vacuum Drying facility, a topical report for the MCOs, and the Project's general requirements.



*Hundreds of workers and guests got their first look at the 450-ton multi-canister overpack handling machine (top) and the rest of the new Canister Storage Building at a November open house.*

SPENT NUCLEAR FUEL



# SPENT NUCLEAR FUEL

## Safety and Compliance Update: *(continued)*

- DOE classified sludge accumulated in the basins as “remote-handled transuranic waste.” The decision is a key step toward eventual shipment of the sludge, after treatment, to the Waste Isolation Pilot Plant in New Mexico.

## What’s Next:

- Initiate operational tests of K-West Basin fuel retrieval and water treatment systems as part of a phased approach to enhance worker proficiency and our ability to start removing spent fuel by November.
- Complete the K-West Basin cask loadout system.
- Submit the Project’s final safety document, for the Canister Storage Building, and secure DOE’s approval.



*As fuel-removal preparations proceed in K West, work gets under way in nearby K-East Basin to make room for equipment to remove more than 50,000 spent fuel assemblies and*

*tons of contaminated debris in that basin. Activities include underwater relocation of 400 28-inch tall canisters like these. Two, eight-inch diameter, interlocked barrels form one canister holding 14 fuel assemblies.*

SPENT NUCLEAR FUEL



# WASTE MANAGEMENT & ANALYTICAL SERVICES

## Expectation:

Safely treat, store and dispose of solid wastes and liquid effluents; store cesium and strontium capsules; provide waste generator, environmental and waste minimization services; and manage and integrate analytical services, optimizing use of onsite and offsite laboratories.

## Transuranic (TRU) Waste Update:

- Submitted revised analytical and other procedures to the DOE Carlsbad Area Office to comply with new requirements for the Resource Conservation and Recovery Act Part B Permit from the New Mexico Ecology Department.
- Expect certification to begin shipping TRU waste to the Waste Isolation Pilot Plant this spring, following a joint DOE/Environmental Protection Agency audit.



*A worker repackages transuranic waste in the glovebox at the Waste Receiving and Processing (WRAP) facility. This quarter we performed non-destructive examinations of 118 drums, non-destructive assays of 27 drums, visual examinations of 24 drums and radiography of two boxes, and processed three drums through the repackaging/compaction glovebox at WRAP.*

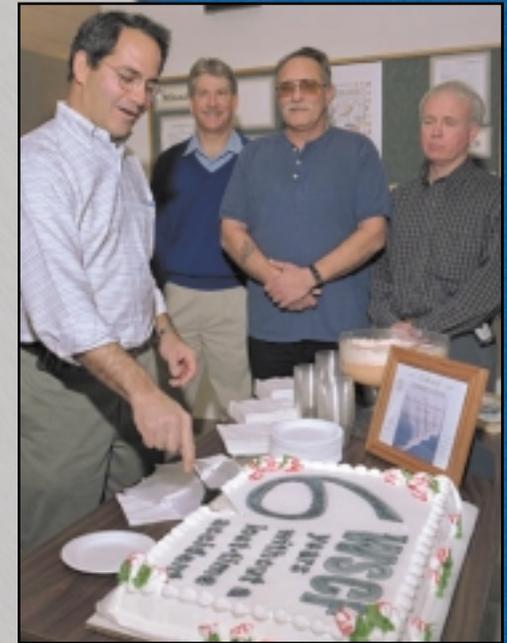
# WASTE MANAGEMENT & ANALYTICAL SERVICES

## Waste Treatment and Disposal Update:

- Shipped more than 42 cubic meters of mixed low-level waste to the local Allied Technology Group (ATG) facility for non-thermal treatment. This is the first of 1,060 cubic meters that will be shipped to ATG for treatment this year.
- ATG began non-thermal treatment operations in December. Treated waste will be returned to Hanford for disposal on Site.

## Analytical Services Update:

- Completed in excess of 2,700 analyses at the Waste Sampling and Characterization Facility this quarter. These and analyses performed at the 222-S Labs supported cleanup projects throughout the Site, including the Office of River Protection (underground waste tanks).
- Cleaned up 2,600 cubic feet of space in the 222-S Laboratory to reduce radiation and contamination levels, lessening personal-protection requirements and reducing the risk to workers.



*DOE Richland Operations Manager Keith Klein cuts cake for the 61 workers at the Waste Sampling and Characterization Facility celebrating six years without a lost day of work due to injury. The laboratory has not posted a lost-time accident since opening in October 1993.*

# WASTE MANAGEMENT & ANALYTICAL SERVICES

## What's Next:

- Obtain certification and initiate shipments of transuranic waste to the Waste Isolation Pilot Plant in New Mexico.
- Ramp-up shipments to the Allied Technology Group, and the rate of non-thermal treatment of mixed low-level waste.
- DOE was expected to issue a national Waste Management Programmatic Environmental Impact Statement as we went to press. Consistent with a December announcement of "Preferred Alternatives," it will likely identify Hanford as a regional disposal site for DOE low-level and mixed low-level waste. Impacts of the Record of Decision will need to be assessed.



*At left is the first Resource Conservation and Recovery Act-approved mixed-waste trench in DOE. It opened in 1999. In the center is the Waste Receiving and Processing facility and, at right, Hanford's Central Waste Complex.*

FLUOR HANFORD

# FAST FLUX TEST FACILITY

## Expectation:

**Maintain the Fast Flux Test Facility (FFTF) in a safe and compliant condition. Prevent facility degradation and optimize the ability to respond cost effectively to a Department of Energy mission decision. Continue deactivation of related legacy facilities in the 300 Area.**

## Status Update:

- **The FFTF team continues to build its safety performance record. More than 1.3 million hours have been worked since the last lost-workday accident in September 1998.**
- **In October, the Energy Department completed public meetings on the future role of the FFTF in nuclear research and isotope production. The draft environmental impact report is expected in May.**



*The Fast Flux Test Facility is a state-of-the-art 400-megawatt sodium-cooled reactor.*



FAST FLUX TEST FACILITY

## SITE SERVICES

### Expectation:

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

### Spent Fuel Basket Fabrication Update:

- The Spent Nuclear Fuel Project basket team began fabricating 2,170 steel and copper baskets to hold the 2,100 metric tons of spent nuclear fuel from the K Basins during the fuel-drying process and interim dry storage at Hanford.
- Nine companies are represented on the dedicated team of craft workers, engineers, quality specialists and managers for this precise, intricate fabrication effort.
- The team implemented lessons learned from a 1998 trial fabrication run of 30 baskets. As a result, the hours needed to produce each basket declined from 172 to 60. This will help the Spent Nuclear Fuel Project meet an aggressive schedule to start removing fuel from the K-West Basin in November.
- Four basket configurations will be built, weighing from 230 to 625 pounds each and about two feet tall and 22 inches in diameter.



*Consolidating all production and support functions at the 328 Building resulted in a \$2 million cost avoidance in the fabrication of 2,170 baskets for the Spent Nuclear Fuel Project. Fabrication began in November.*

SITE SERVICES



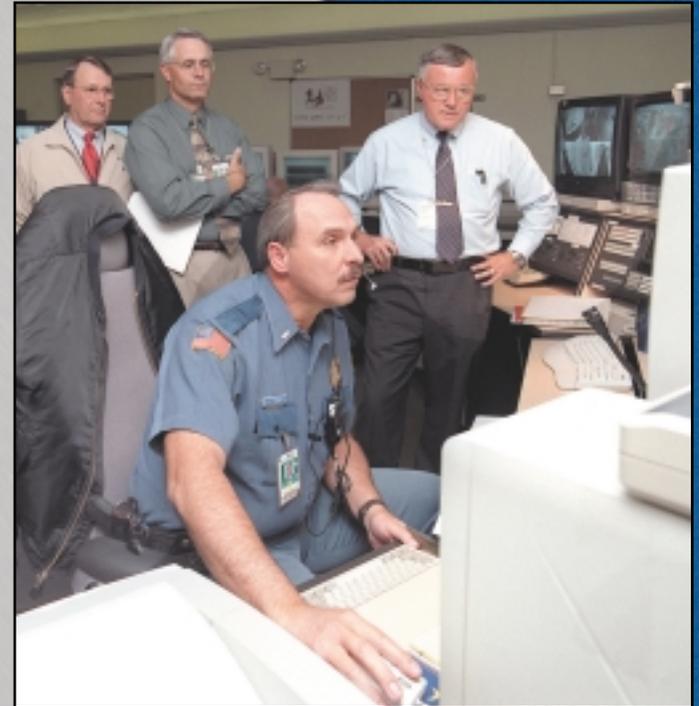
## SITE SERVICES

### Reducing the Site Footprint Update:

- We transferred three excess mobile offices to a local school district through a Washington State commodity redistribution program. They'll be used for an alternative high school.

### Safety Update:

- Subcontractor DynCorp's Site Services team attained full validation of its Integrated Environment, Safety and Health Management System (ISMS). Reviewers said labor and management demonstrated strong ownership of ISMS, contributing to a strong safety culture throughout the organization.



*Hanford Patrol Lieutenant Terry Eberts briefed General Eugene Habiger (right) on emergency communications during a Site tour. The General heads DOE's new Office of Security and Emergency Operations, and called his visit "validation" that Hanford's safeguards and security program is the best in the agency.*

SITE SERVICES



# 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.

## Hanford Support Update:

- Delivered 348 classes this quarter for a total of 7,424 student days. This included 339 classes for Hanford workers, such as Confined Space, HAZMAT, Salvage Training and Paramedic Refresher courses for Hanford's fire department and 13 classes related to Site transportation activities.
- Partnered with the University of Washington to bring its Safety and Health Specialist Certificate program to HAMMER for Site workers.



*Hanford workers take part in a hoisting and rigging class (top) while private-industry firefighters spray foam to extinguish a fire at the flammable-liquid burn pad. HAMMER held its first open-enrollment Basic Industrial Fire Brigade class this quarter.*

HAMMER



# VOLPENTEST HAMMER TRAINING AND EDUCATION CENTER

## Federal Agency Support Update:

- Partnered with the Occupational Safety and Health Administration to become OSHA Training Institute West, bringing courses once only offered in Des Plaines, Ill., to HAMMER.
- Conducted 16 of 80 National Transportation Program classes slated this year.
- Initiated National Counternarcotics Center Tactical Training, in conjunction with Florida counterdrug task force training personnel, for more than 40 Northwest law-enforcement agencies.



*Students gather evidence at HAMMER's cultural test bed during an Archaeological Resource Protection Act Incident Investigation class. More than 40 federal, tribal government and local law-enforcement personnel attended.*

## Regional Training Update:

- Conducted our second offsite course for the Army Corps of Engineers at Ice Harbor Dam. The first was at John Day Dam.
- Added three private-sector clients for fire training to our current customer base of Washington and Oregon metropolitan, county and regional fire associations.

HAMMER



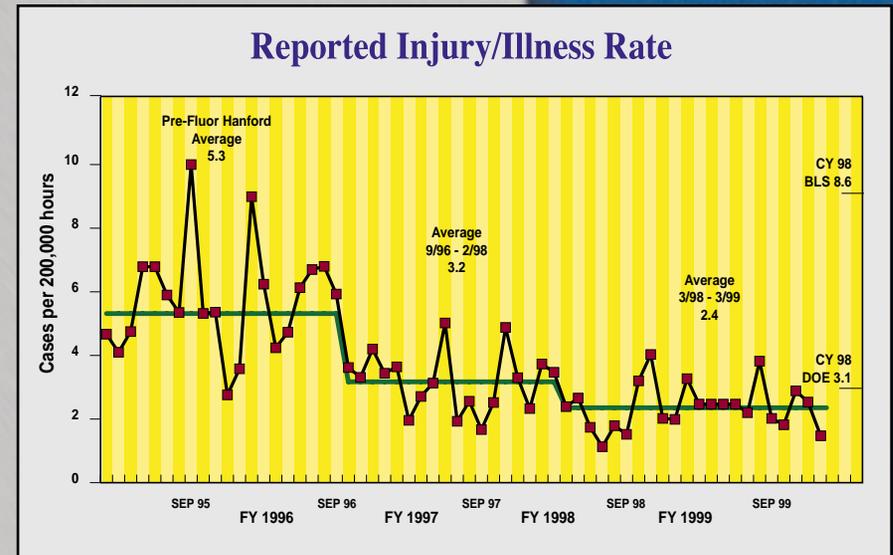
# ENVIRONMENT, SAFETY AND HEALTH

## Expectation:

Achieve safe, compliant, quality performance by implementing an Integrated Environment, Safety and Health Management System (ISMS).

## ISMS Update:

- We successfully met 12 of 13 criteria in DOE's review of our ISMS implementation efforts. Because the review took place while our restructuring was under way, full approval was deferred until our organizational changes are more complete and fully reflected in our ISMS documents.
- The review team cited a number of noteworthy practices along with some opportunities for improvement, saying that we have "made progress in achieving the DOE objective to systematically integrate safety into management and work practices at all levels."
- A second set of workshops was held to better familiarize the workforce with ISMS principles and advance implementation. Our goal is full ISMS implementation by September.



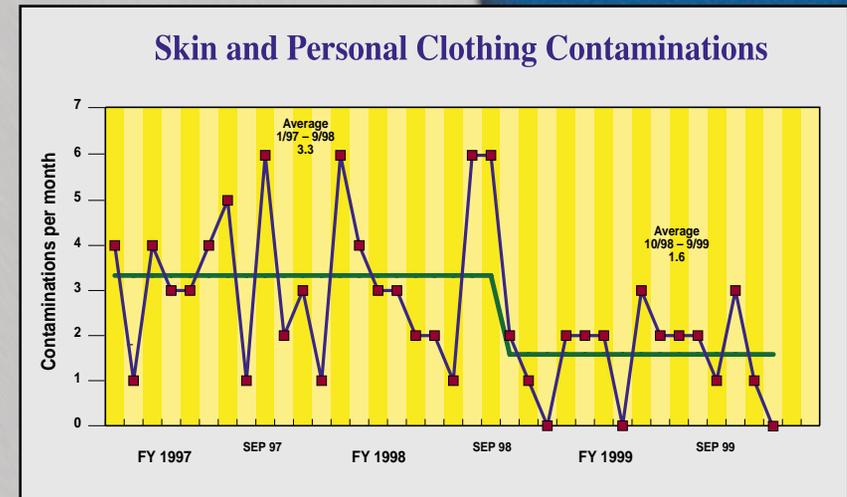
*Though we have sustained a favorably low injury rate that's now about half what it was in fiscal 1995, we've taken steps to further improve our safety leadership, worker involvement, communications and employee recognition. Our goal is to move beyond mere prevention of injuries to continuous innovation in injury avoidance.*

# ENVIRONMENT, SAFETY AND HEALTH

## Radiological Control Improvement Update:

- With a three-year improvement plan now complete, workers' skin and clothing contaminations continue to show a favorable downward trend (see graph). On average, contaminations are down 52 percent since 1997.
- One factor is the increased use of our ALARA\* Center of Technology, which helps workers match radiological control measures with field needs early in the planning cycle. This enables us to better manage and control work hazards and radiological conditions.
- We've also emphasized increased worker participation in work planning and use of lessons learned from prior, similar experiences.

\*As Low As Reasonably Achievable



# ECONOMIC TRANSITION

## Expectation:

Focus economic diversification efforts on the Tri-Cities and workers affected by Hanford job declines.

## Status Update:

- Broke ground and started construction on a 100,000-plus square-foot Class A industrial building that can be readily adapted to a prospective tenant. An independent panel selected Pasco for the site; construction will be performed by local contractors and craft personnel represented by the Central Washington Building & Construction Trades Council.
- Fluor Global Services submitted the first of four initial industry marketing deliverables to the Tri-City Industrial Development Council (TRIDEC). In partnership with Fluor Hanford and its subcontractors, the revitalized effort targets companies involved with food processing and agricultural products; advanced materials; selected metals; and office and administrative services.



*Groundbreaking ceremonies got construction going on Fluor Hanford's industrial "shell" building in Pasco, Washington. "The building demonstrates Fluor is serious about fulfilling the promises it made when it won the Hanford cleanup contract three years ago," asserted a November 15, 1999, Tri-City Herald editorial.*



# ECONOMIC TRANSITION

## Status Update: *(continued)*

- In a restructuring of Fluor's government business, local corporate subsidiary Fluor Daniel Northwest became the operations center for Fluor Federal Services, based in Richland, Washington. Initially, about 25 jobs in the Tri-Cities will result from its expanded mission to sell a full range of project management, engineering, procurement and construction services to federal agencies such as the Energy, Defense and State Departments.
- At a three-day Economic Development Summit, DOE, Hanford contractors and community leaders agreed on economic transition issues and proposed a practical definition for the third "outcome" in the new Hanford vision: "Put DOE assets to use for the future."
- In the wake of the sale of Lockheed Martin Hanford to CH2M Hill, corporate subsidiary Lockheed Martin Services, Inc. (LMSI), assured the local community that its 500-plus employee team is committed to the Tri-Cities. LMSI has successfully grown its base of non-Hanford work, supported the community, and teamed and subcontracted with local business over the past three years.



*The Fluor Daniel Northwest sign at its Richland headquarters is changing to Fluor Federal Services, a strategic business unit of Fluor Global Services. Its expanded mission will initially result in 25 new Tri-City jobs.*

## OTHER SIGNIFICANT CLEANUP PROGRESS AT HANFORD

- Interim safe storage of the D and DR Reactors is under way; the footprint of each has been reduced 40 percent.
- Decommissioning of the Plutonium Concentration Facility continues.
- Safely transferred 100,000 gallons of liquid wastes from Tank SY-101, once considered the most hazardous tank at Hanford.
- Completed sluicing and removed more than 188,000 gallons of radioactive sludge from Tank C-106, which once posed a potential safety risk due to high temperatures inside the tank.
- Finished a comprehensive restructuring of waste tank characterization studies, closing out a 1993 Defense Nuclear Facilities Safety Board recommendation.
- Design of tank waste treatment facilities continues. Completed soil analysis and seismic testing and constructed a power substation at the site.



*More than two million tons of contaminated soil and debris have been removed from four major sites near the Columbia River.*



*Workers remove asbestos in the Plutonium Concentration Facility, the first full-scale plutonium processing facility at Hanford to undergo decommissioning.*



*Waste transfers and other remediation actions continue at Tank SY-101.*



OTHER HANFORD CLEANUP

## FOR MORE INFORMATION....



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INFORMATION

