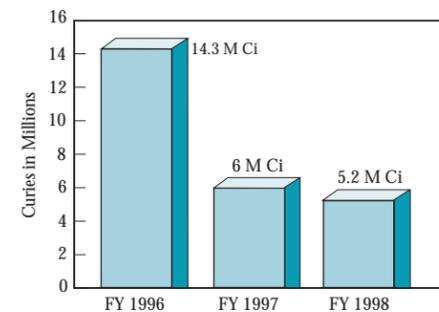


# Facility Stabilization • Reducing Risks . . . Reducing Costs

## 300 Area Projects

A plasma arc cutting torch is used to dismantle equipment racks inside 324 Building B-Cell



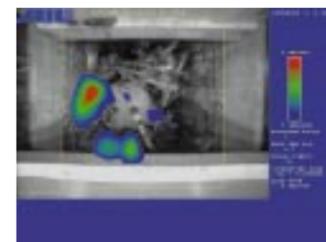
The PHMC Team continues to reduce risks by moving curies away from the Columbia River and the City of Richland

- More than 50%, (236 containers) of legacy waste buckets stored in 327 Hot Cells were shipped to 200 Area for compliant storage
- Dispositioned or shipped 80% of suspect legacy waste containers
- Remotely dismantled, packaged, and shipped a highly contaminated two-story-high equipment rack from 324 B Cell
- Issued a special case waste assessment in support of 324/ 327 Building closures to the State of Washington Department of Ecology (Ecology)
- Issued 324/327 Buildings Stabilization and Deactivation Project Management Plan
- Teamed with Ecology and RL to prepare and issue closure plan for 324 facility Radiochemical Engineering Cells
- Packaged and shipped remaining cesium inventory to compliant storage
- Completed Phase II field closure actions and Phase III characterization work for the Waste Acid Treatment System (WATS)
- Focused on converting the 300 Area to a potential commercial industrial site

## B Plant/Waste Encapsulation and Storage Facility (WESF) Projects



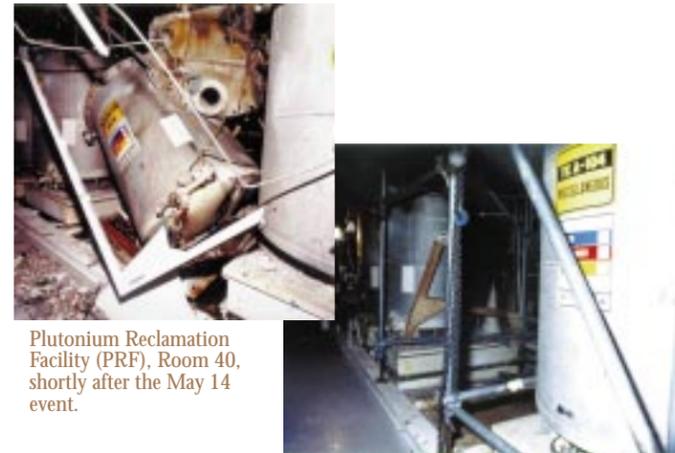
B Plant before and after



Photograph inside Cell 18 taken by gamma camera

- Closed four years ahead of original baseline schedule—saved \$100 million
- Closure reduces annual surveillance and maintenance cost by close to nearly \$20 million
- Documented and issued inventory of hazardous substances and dangerous wastes to Ecology
- Decoupled major joint operating systems to allow WESF to stand alone
- Used innovative technology (2-D Gamma camera) to reduce personnel entries and exposures
- Processes to reduce personnel contamination incidents featured in Nuclear News
- Sharing deactivation experience and success at Plutonium-Uranium Extraction Facility and B Plant throughout the DOE complex
- Implemented reengineered organization to manage WESF independent of B Plant

## Plutonium Finishing Plant (PFP) Transition Project



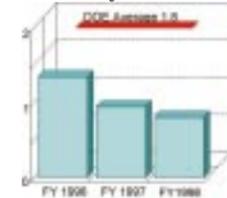
Plutonium Reclamation Facility (PRF), Room 40, shortly after the May 14 event.

Considerable work has been performed in PRF, Room 40, since the event.

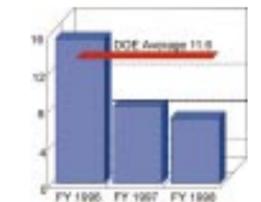
- Successfully completed Alert Level drill of upgraded emergency response capability
- Completed criticality safety review and initiated corrective actions
- Revamped procedures and retrained workforce
- Restarted unrestricted movement of fissile material in PFP vaults and labs
- Commenced PFP reengineering activities; established team to provide primary support for thermal stabilization activities and “reengineered” several work control processes
- Completed recovery from the PRF Tank A-109 incident through a series of extensive and aggressive actions
- Prepared for Operational Readiness Review for Phase II operations; restart scheduled for the first quarter of FY 1999
- Submitted PFP Strategic Vision Plan to RL
- Completed update of Plutonium Vulnerability Assessment Study
- Completed preparations for characterization of Tank 241-Z361 contents
- Completed the FY 1998 special nuclear material inventory ahead of schedule using a focused project approach

## Facility Stabilization Project Vital Statistics

Lost & Restricted Workday Case Rate



Safety Cost Comparison



The lost-restricted workday case rate and the cost index remain significantly below the DOE complex averages.

TPA Milestone Performance

100%

FY 1998 all TPA milestones completed early

## Challenge, Change, and Progress



Left to right: Art Clark (BWHC), Larry Olguin (FDH), Pete Knollmeyer, (DOE-RL) have worked to instill a teaming spirit toward problem solving within the Facility Stabilization Project.

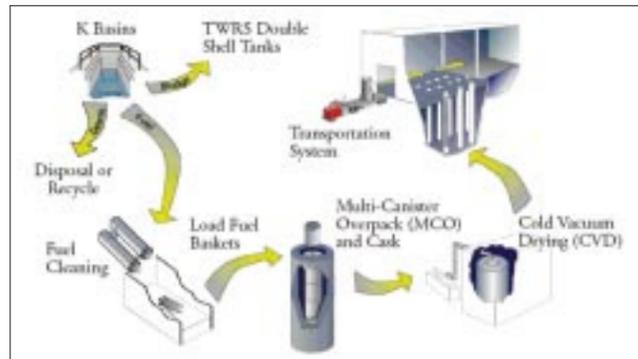
It has been a time of great challenge and change since the PHMC was put in place in October 1996. There are still many issues that must be resolved if the PHMC Team is to achieve the mandate of cleanup that the public expects. These issues should not overshadow the significant progress that has been made already. Whether it be the accelerated schedule to close B Plant, removal of radioactive material from the 300 Area, or improvements to the safe operation of the PFP, the objectives are to reduce the risks posed by Hanford's aging facilities and reduce the cost to taxpayers.

# Spent Nuclear Fuel • *Protecting the Columbia River*

The Spent Nuclear Fuel Project applied standard commercial practices in risk identification, risk management, and contingency planning to the replanning effort and the initiatives established to improve project control. Project leadership and processes were improved through substantial organizational changes. To date, improvements have been made in the preparation of nuclear safety documentation, safety management, subcontract management, project controls, work planning, and quality assurance.

## Spent Nuclear Fuel Project Technical Focus

Once Hanford Spent Nuclear Fuel Canister Storage Building and conditioning facilities are complete, fuel will be removed from the K Basins, cleaned, repackaged, dried, and transported to the CSB for safe interim storage for up to 40 years.



## K Basins Project

*2100 Metric Tons of Spent Nuclear Fuel only  
400 Yards from the Columbia River*



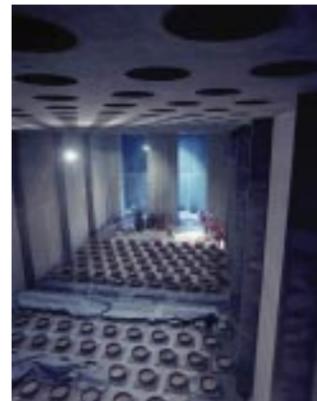
The Spent Nuclear Fuel Project is focused on protecting the Columbia River by safely moving more than 2100 metric tons of deteriorating spent nuclear fuel from the aging K Basins to safe, dry, interim storage in the center of the Hanford Site.

- Developed the initial chemical process to treat the radioactive sludge
- Began testing and operator training on the remotely operated fuel retrieval system
- Gained a better understanding of the technical issues through fuel element characterization and sludge testing
- Finished aluminum hydroxide testing in K West Basin to close the technical issue
- Worked to better understand the reaction between uranium metal and water within the fuel canisters
- Evaluated alternatives to resolve the significant technical issues associated with fuel movement

## Project Execution

*Established an Integrated Project Team and Baseline*

- Developed a defensible, integrated technical, cost, and schedule baseline, that was validated by the RL and used in successful negotiations with U.S. Environmental Protection Agency.
- Established a new integrated project organization that provided the leadership necessary to successfully manage the project
- Assisted DOE in renegotiating the Tri-Party Agreement milestones, which establish the start of fuel movement in November 2000
- Applied standard commercial practices in risk identification and risk management and contingency planning as part of the baseline development
- Developed the technical basis for sealing the fuel canisters and eliminating the venting capabilities
- Made significant improvement in Occupational Safety and Health Administration (OSHA) recordable and lost work-day case rates



Canister Storage Building Vault

- Implemented corrective measures that caused the number of activities on critical path, started late, or completed late, to trend downward
- Developed consolidated commitment control system
- Established a technical basis for the elimination of a second drying process step

## Fuel Retrieval, Cleaning And Transportation *Reducing Urgent Risks*

- Fabricated 30 fuel and scrap storage baskets
- All five first-of-a-kind shipping casks were delivered ahead of schedule
- Completed a test of the cask loading system
- Began testing of fuel retrieval hardware in the 300 Area



Operator training and equipment testing were started in the 300 Area before equipment was installed in the K Basins.

## Canister Storage Building Project

*Safe, Interim Storage for up to 40 Years*



Workers guide the Canister Storage Building exhaust stack into place. The stack is part of the passive ventilation system that will use naturally circulating air to cool the spent fuel canisters.

- Completed construction of the structure
- Completed construction of adjacent interim fuel storage pads ahead of schedule
- Constructed and began pre-operational testing of facility systems
- Received and assembled multicanister handling machine

## Cold Vacuum Drying Process *Preparing the Spent Fuel for Long-term Storage*

- Constructed the Cold Vacuum Drying facility structure
- Received and successfully tested the process skid, which provided the basis for fabricating the final units



During tests that proved the effectiveness of the spent nuclear fuel drying process, Engineering Technician Mike Dahl checks instrumentation on the first cold vacuum process unit

## Challenge, Change, And Progress

FY 1998 was a year of major change for the Spent Nuclear Fuel Project. Through difficult measures, the project team took revolutionary steps to correct significant problems and position itself to perform reliably through the rest of the project.

# Tank Waste Remediation System (TWRS) • *Reducing Risks . . . Safely*

## Reinforce A Strong Safety Culture



Achieved one million hours of work without a lost-time accident

- Successfully completed Integrated Safety Management System Phase I verification by DOE (Fall 1998)
- Improved OSHA recordable case rate by 35% over FY 1997
- Implemented first DOE-approved Safety Authorization Basis at Hanford



TWRS workers installed hydrogen monitoring systems and other safety devices to gather key data on flammable gas behavior

## Reduce Urgent Risks and Protect the Columbia River



Installed "saltwell screens", along with pumps and associated equipment, and pumped wastes from three single-shell tanks; four more such starts are currently scheduled in FY 1999



TWRS workers finalized preparations to transfer radioactive sludges from World War II-era single-shell Tank 241-C-106 to a safer double-shell tank; actual transfer will occur in FY 1999

- Based on supporting studies performed, recommended that DOE remove 18 tanks containing organic wastes from the Congressional Watch List
- Completed borehole action plan and supported integrated DOE/multi-contractor effort to characterize groundwater and vadose zone under single-shell tank farms

## Make Real Progress on Cleanup



Completed an ambitious program of core sampling for FY 1998 one month early



Achieved operational readiness for a 10.14 km (6.2-mile) long, double-walled, regulatory compliant Cross-site Transfer Line to move tank wastes from the 200 West Area to the 200 East Area

- Developed program logic to lay out the path for the entire TWRS mission: storage, retrieval, treatment by a private contractor, interim and final storage, and tanks closure. The program logic was praised by the Defense Nuclear Facilities Safety Board and the State of Washington Department of Ecology
- Completed construction and began operation of a new compliant ventilation system for aging waste tanks

## Cut Costs

- Achieved more than \$13 million in cost savings through characterization efficiencies in sampling and field activities and project management and design efficiencies in construction projects

## Improve Operational Performance

- Visibly improved physical condition of TWRS facilities through the use of an employee-based Facility Excellence Program



TWRS workers initiated construction upgrades in the East Area tank farms to support private contract waste feed delivery

## Major Challenges



Remove pumpable liquid from the single shell tanks

- Remove waste sludge from Tank 241-C-106 to resolve high-heat safety issue
- Support feed delivery and infrastructure requirements for the TWRS Privatization Contract

# Waste Management • *Providing Safe, Compliant, and Cost-Effective Waste Management Services for the Hanford Site and DOE Complex*

## ***Project Execution***

*Improving operations and service delivery while cutting costs*



- Played a key role in the complex-wide Environmental Management Integration effort to accelerate cleanup and reduce costs which received the “1998 Superior Award” for achievement from the American Academy of Environmental Engineers (the first for a government agency)
- Improved the Facility Evaluation Board (FEB) scores of all Waste Management projects, and received the Hanford Site’s first #1 rating for the safety program at the 300 Area Treated Effluent Disposal Facility (TEDF)
- Managed costs so that \$5.7 million of previously unfunded work scope, including all activities required for operability of the Waste Receiving and Processing Facility (WRAP), was accomplished
- Received “Project of the Year” recognition from the local chapter of the Project Management Institute for the 222-S Facility High-Level Waste Secondary Containment Upgrades
- Accelerated \$1.8 million of FY 1999 work scope into FY 1998 including the pumping of T Plant Canyon tanks and replacement of the ion exchange column in the pressurized water reactor fuel pool
- Issued the Hanford Waste Management Project Strategic Plan
- Reduced OSHA recordables by 50% and achieved one million safe work-hours

## ***Waste Treatment, Storage and Disposal***

*Safe and Expeditious Disposal of Waste*



- Received startup authorization for WRAP, Hanford’s first major solid waste processing plant, from the DOE in September 1998 (WRAP provides a pathway for shipment of transuranic waste out of the state for permanent disposal)
- Disposed of a wide variety of low-level waste (4,900 m<sup>3</sup>) supporting Hanford Site and DOE complex cleanup missions
- Increased the throughput of 200 Area liquid effluent facilities
- Protected the Columbia River by treating 82 million gallons of industrial wastewater at the 300 Area TEDF
- Lowered the 300 Area TEDF treatment cost from 6 cents per gallon in 1995 to 3.5 cents per gallon in 1998
- Protected Site groundwater by treating 30 million gallons of radioactive/hazardous wastewater at 200 Area Effluent Treatment Facility
- Established the Hanford Site Transuranic (TRU) Program Office
- Issued the Hanford Site TRU Waste Certification Plan

## ***Cross-Cutting Services***

*Analytical Services*

*Generator Services*

*Transportation and Packaging*



- Completed more than 23 analytical equivalent units at 222-S Laboratory for the Tank Waste Remediation System characterization program
- Analyzed more than 9,700 environmental samples at the Waste Sampling and Characterization Facility (WSCF)
- Supported disposition of waste from on-site and off-site generators using commercial approaches
- Revised the Solid Waste Acceptance Criteria and placed on the Internet
- Converted the Annual Dangerous Waste Report for electronic submittal
- Completed more than 1,100 outbound and 600 inbound shipments of wastes (a 40% increase over recent years)