

# Spent Nuclear Fuel Project

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## ***K East Basins - Fuel Transfer System Operations***



## ***Canister Storage Building – Multi-Canister Overpack Welding***



## ***K West Basins***

### ***Fuel Retrieval System***



Canister Cleaner Operations



Loading Cask on Trailer at K West

## ***Sludge Retrieval and Disposition***

– Test loading large diameter container into casks at K Basins



## ***Cold Vacuum Drying Facility – Multi-Canister Overpack Processing***



## OVERVIEW

The Spent Nuclear Fuel (SNF) Project consists of Project Baseline Summary (PBS) RL-RS03, *Spent Nuclear Fuel*.

NOTE: Unless otherwise noted, all information contained herein is as of the end of September 2003.

## TOP FY 2003 ACCOMPLISHMENTS

**Fuel Movement Activities:** The SNF Project shipped 146 Multi-Canister Overpacks (MCOs) containing 801.21 Metric Tons of Heavy Metal (MTHM) from K West to the Cold Vacuum Drying Facility (CVDF) during FY 2003, for a cumulative total of 266 MCOs and 1,432.76 MTHM at fiscal year end.

**K West Scrap Removal:** The project completed installation of the SNF scrap removal equipment at the K West Basin in January, 2003. Scrap verification testing (Phase I) and preparation to begin loading scrap into baskets (Phase II) were completed in September, 2003.

**K East Sludge Retrieval and Disposition:** RL approved the SWS Design Safety Analysis to Support Construction that documented the Active Inert Ventilation System (AIVS) as Fluor Hanford's technical approach for SWS (September 12, 2003).

**K West Sludge Retrieval and Storage System (SRSS):** The statement of work and request for proposal for the design and fabrication of the K West SRSS, was issued in July 2003. The vendor was selected and the contract was awarded to British Nuclear Fuel Limited, Inc., on October 7, 2003.

**Deactivation:** The SNF Project developed and delivered the Alternative Deactivation Plan to RL on June 30, 2003. The plan described three alternative approaches for the deactivation and demolition of the K East and K West Basins. FH is planning to submit a baseline change request to RL recommending the Grout and Remove Approach for the deactivation and decontamination of the K Basins.

A contract was awarded to SA Robotics of Loveland, Colorado, to perform a phased underwater concrete hydrolazing demonstration to evaluate the effectiveness of hydrolazing technology in the removal of concrete. The first phase of this demonstration was performed September 10, 2003, at the vendor's location, and showed the technology to be effective. The second phase involves testing in the K East Sedimentation Basin to demonstrate effectiveness under field conditions. The final phase will involve decontaminating a portion of the K East Basin wall. DOE Technology Development Funding is supporting demonstration activities.

**Fuel Transfer System (FTS):** The project commenced FTS Operations on November 25, 2002, five days ahead of schedule. The project completed shipment of 1,720 canisters (172 shipments) from K East to K West Basin during fiscal year 2003.

**MCO Welding at Canister Storage Building (CSB):** Welding operations commenced on schedule at the CSB on February 3, 2003. A total of 83 MCOs were welded during fiscal year 2003 (six more than scheduled).

## **NOTABLE SEPTEMBER ACCOMPLISHMENTS**

**Site-wide Activities:** A total of six Shippingport Reactor SNF shipments from T Plant to the CSB were completed during FY 2003. The sixth and final NAC-1 Cask containing Light Water Reactor SNF from the 325 Building was received and placed into storage at the 200 Area interim storage area (ISA) in November 2002. The Neutron Radiography Facility (NRF) Training, Research and Isotope Production, General Atomics (TRIGA) fuel was received in casks from the 400 Area and placed into dry storage at the 200 Area ISA in October 2002.

**Fuel Movement Activities:** The SNF project completed shipment of seven MCOs containing 43.27 MTHM from the K West Basin to the CVDF during September. As of October 20, 2003, a cumulative total of 270 MCOs containing 1,456.39 MTHM have been shipped.

The project is implementing a process improvement, which reorganizes operations into product lines to provide singular focus and improved accountability for MCO production and FTS shipments.

**K East Sludge Retrieval and Disposition:** Fabrication and installation of equipment into the sludge canisters and large-diameter containers was completed in October, and operational testing is underway. The project is currently planning to resume the sludge and water system (SWS) Operational Readiness Review (ORR) in November 2003.

The Inert Gas Safety Program document supporting the installation of the AIVS was completed. The SNF Project Health and Safety Plan is also being modified to include the new inert gas system hazard and controls. Training was conducted to educate the work team on system hazards and worker protection controls.

The finalized Documented Safety Analysis (DSAs) and Technical Safety Requirements (TSR) for K East and T Plant were transmitted to RL. The K East DSA and TSRs were approved on October 16, 2003. The requested date for approving the T-Plant DSA is October 23, 2003.

**FTS:** The project completed eight FTS shipments (80 canisters) during September. As of October 20, 2003, a cumulative total of 173 FTS shipments (1,730 canisters) have been completed. The project completed its quarterly maintenance outage in October, focusing the majority of its resources on FTS equipment reliability and maintenance improvements.

**MCO Welding at CSB:** The project welded and "N" stamped 13 MCOs during September. As of October 20, 2003, a cumulative total of 89 MCOs were welded, and the project is seven MCOs ahead of the contract schedule.

**K West Scrap Removal:** The project successfully completed the readiness self-assessment for scrap processing, and commenced operations in October. The first MCO loaded with scrap is poised for shipment the week of October 20, 2003.

**Radiological Improvements:** The following radiological improvements were implemented during September:

- Installed curtain barrier across K West Basin transfer bay, and implemented localized airborne postings to limit respirator need.
- Installed air-conditioning units in 105 K East and 105 K West Annexes to augment evaporative coolers and mitigate effects of summer heat on productivity.
- Systematically investigated sources of contamination in K West Basin South Load-out Pit for mitigation or elimination.

## Notable September Accomplishments (cont.)

- Installed Personnel Contamination Monitor-2 units in K East and K West.
- Installed a by-pass line that will route Integrated Water Treatment discharge water to the basin rather than the south load-out pit, which reduces the amount of radioactivity entering the south load-out pit during backwash and/or top sparge operations.

**Site-wide Activities:** One shipment of Shippingport Reactor SNF was received on October 1, 2003. A total of nine out of 18 shipments were received cumulatively through October 22, 2003.

## FY 2003 SCHEDULE/COST PERFORMANCE (\$000)

	Budgeted Cost of Work Scheduled	Budgeted Cost of Work Performed	Actual Cost of Work Performed	Schedule Variance \$	Schedule Variance %	Cost Variance \$	Cost Variance %	Budget At Completion
RL-RS03 Spent Nuclear Fuel	156,184	151,240	163,046	-4,943	-3%	-11,806	-8%	156,184

**NOTE:** Numbers are rounded to the nearest \$K.

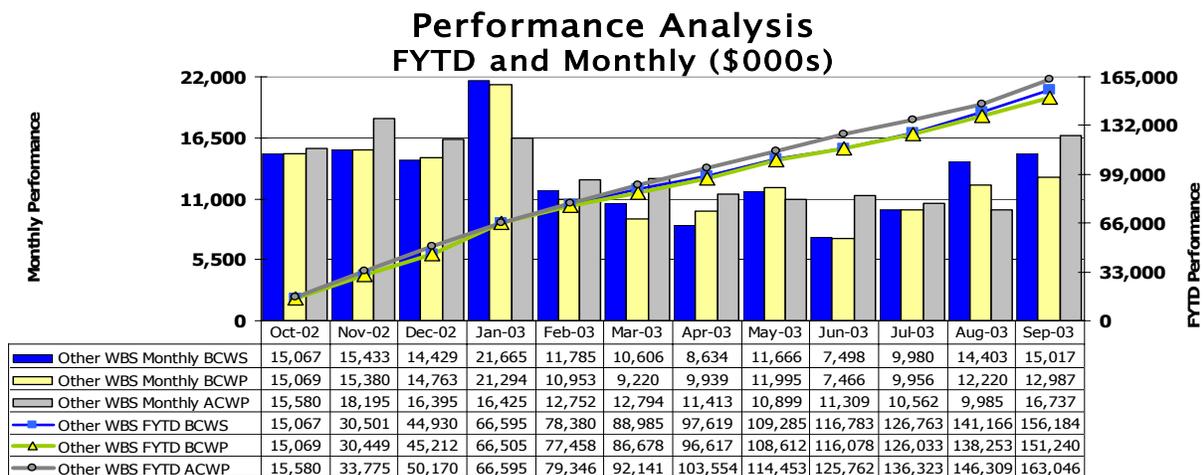
**Schedule Variance Analysis (-\$4,943K/-3%):** The unfavorable schedule variance is due to:

- Schedule delays in the FTS shipments from K East to K West;
- Schedule delays in the MCO and canister removal activity in the K West Basin; and
- Delayed start of K East sludge removal.

The K East SWS ORR is planned to commence in November 2003. The FTS and MCO delays do not impact the contract or Tri-Party Agreement (TPA) commitment dates.

**Cost Variance Analysis (-\$11,806K/-8%):** The unfavorable cost variance is due to the following:

- Cost increase associated with the design and operational readiness preparation for K East sludge removal;
- Cost increases associated with FTS startup and initial operations;
- Travel cost increases required to assist the MCO contractor with management of third-tier subcontractors;
- Cost increases to support startup/certification of welding contractor; and
- Retention of staff associated with sludge ORR delays.



## Milestone Achievement

<b>Number</b>	<b>Milestone Title</b>	<b>Type (TPA/ DNFSB/PI)</b>	<b>Due Date</b>	<b>Actual Date</b>	<b>Forecast Date</b>	<b>Status/ Comments</b>
M-34-29 (S15-02-001)	Complete K East Basin and K West Basin facility modifications for Alternate Fuel Transfer System casks transportation system	(TPA)	3/31/02	9/12/02		Complete
M-34-12-T01 (S15-02-001)	Complete construction of SWS (Construction Completion Document Section IIA)	TPA	09/30/02	3/4/03		Complete
M-34-17 (S00-02-901)	Initiate K East to K West fuel transfer	TPA/Performance Incentive (PI)	11/30/02	11/25/02		Complete
M-34-18A (S03-03-068)	Complete removal of 957 MTHM of SNF from the K West Basin	TPA/DNFSB/PI	12/31/02	1/7/03		Complete
M-34-08 (S04-02-205)	Initiate full scale K East Basin sludge removal	TPA/DNFSB/PI	12/31/02		11/2003	Missed. ORR targeted by 11/03/03
M-34-27-T01 (S03-03-069)	Complete removal of 1,252 MTHM of SNF from K West Basin	TPA	5/31/03	5/28/03		Completed 5/28/03, 3 days ahead of schedule
M-34-28 (S03-03-070)	Complete removal of 1,619 MTHM from the K West Basin	TPA	12/31/03		12/31/03	Production schedules reworked; letter drafted notifying RL of actions being taken to achieve milestone.
M-34-25-T01 (S03-04-001)	Complete transfer of K East Basin SNF to K West Basin	TPA/PI	5/31/04		3/2004	Forecast for completion by March 2004.
M-34-18B (S00-00-902)	Complete removal of all K-Basin SNF	TPA/DNFSB/PI	7/31/04		6/2004	Forecast for completion by mid-June 2004.

## MILESTONE ACHIEVEMENT (CONTINUED)

Number	Milestone Title	Type (TPA/ DNFSB/PI)	Due Date	Actual Date	Forecast Date	Status/ Comments
S04-00-205, CD4	Complete ORR sludge transfer from K Basins	PI			12/2003	Target is to declare readiness to commence Contractor ORR by November 2003
M-34-10 (S04-01-215)	Complete sludge removal from K Basins	TPA/DNFSB/ PI	8/31/04		8/31/04	K East Basin sludge removal planned for completion by 8/31/04. FH submitted a recommended change request for K West SWS to be completed by 6/30/05.
M-34-23 (S10-99-953)	Start K East water removal	TPA	9/30/04		9/30/04	On schedule
S07-04-005	Consolidate spent fuel in the 200 Area	PI	9/30/04		9/30/04	On schedule
M-34-09-T01 (S04-05-516)	Complete K-Basins rack and canister removal	TPA	1/31/05		1/31/05	Potential changes to milestones due to alternate deactivation strategy submitted on 6/30/2003
M-34-24 (S10-99-954)	Complete K East Basin Water removal	TPA	9/30/05		9/30/05	* (see note below)
M-34-22 (S10-99-952)	Complete K West Basin water removal	TPA	8/31/06		8/31/06	* (see note below)
M-34-21-T01 (S10-99-951)	Initiate full-scale K West Basin water removal	TPA	10/31/05		10/31/05	* (see note below)
S06-06-005	Transfer of K-Basins to the River Corridor Contractor	PI	10/30/05		10/30/05	On schedule
M-34-00A (S10-99-955)	Complete removal of K-Basin fuel/sludge/debris/water from K Basins	TPA (Major)	7/31/07		7/31/07	* (see note below)

**\*NOTE:** Milestone may be completed early, if proposed deactivation plan changes are approved.

## FY 2003 FH FUNDS VS. FORECAST (\$000)

	Funding Received	Actual Cost	Variance
<b>RL-RS03</b> Spent Nuclear Fuel			
<b>Project Completion - Operating</b>	\$ 170,257	\$ 163,046	\$ 7,211

## ISSUES

**Sludge Retrieval and Disposition:** The TPA milestone (M-34-08) to begin K East sludge movement by December 31, 2002, is late. The finalized DSAs and TSRs for K East and T Plant were transmitted to RL. Approval of the K East DSA was requested by October 7, 2003, in order to maintain the critical path schedule. However, it was not approved until October 16, 2003. The current forecast to resume the contractor ORR is November 2003.

**Fuel Production – FTS Shipments:** Removal of all K Basin fuel by March, 2004, is based upon the completion of FTS shipments by March 2004. As of October 20, 2003, the project completed 173 FTS shipments (1,730 canisters) and is 102 shipments (1,020 canisters) behind the contract schedule. The October maintenance outage work-scope is focused on improvements to FTS maintenance and equipment reliability. The following maintenance activities were completed to improve system operations and correct deficiencies:

- Adjusted limit switches and verified they are operational;
- Leveled K East and K West lift tables with respect to the straddle carriers;
- Replaced both lid-winch grabbers in both basins;
- Addressed the K East tub monorail wobble;
- Repaired the K West lid-winch oil leak;
- Completed annual planned maintenance for K West and K East Annex crane; and
- Pumped out and cleaned the Cask Transfer Over-pack.

The following maintenance activities are in process to improve system operations and correct deficiencies:

- Replacing the K West Shielded Transfer Cask lift-air compressor;
- Performing operational checks on the K West and K East FTS using an empty cask; and
- Organizing FTS as a project with all resources necessary to provide immediate operational support.