



# **Section K**

## ***Plutonium Finishing Plant***

### **PROJECT MANAGERS**

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## INTRODUCTION

The Plutonium Finishing Plant (PFP) consists of Project Baseline Summary (PBS) RL-CP03, Work Breakdown Structure (WBS) 3.3.3.

NOTE: Unless otherwise noted, all information contained herein is as of the end of September 2002.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that four milestones were completed early, one milestone was completed two days late and one milestone is overdue. One FY 2001 milestone is also overdue. Further details can be found in the milestone list.

## TOP 5 ACCOMPLISHMENTS FOR FY 2002

### Safety

The DOE-HQ Voluntary Protection Program (VPP) review team completed their review and reported the results August 29. They concluded that we performed at the "STAR" level in 4 of the 5 Key Elements and "Merit" level for the other Key Element with an overall "Merit" status recommendation.

"I've witnessed the world's best people, dealing with some of the world's most dangerous hazards."

~ Marge Swint, M.D.

Former HEHF Physician

Current HAB Member

DOE VPP Assessment Team Member

"After closely examining the Lockout/tagout and Confined Space Programs, I found no problems with these often-difficult programs. I was able to examine equipment used for lockout/tagout and for confined space rescue. I also interviewed employees who used the programs as well as program supervisors. The employees were well trained and knowledgeable of their responsibilities under the programs. Supervisors are familiar with the program requirements and include them in AJHA meetings and pre-job briefings".~ Mike Bonkowski

Compliance Safety & Health Officer

Region X VPP Office

OSHA

DOE VPP Assessment Team Member

### Solutions

The final eight drums of direct discard material were shipped to the Central Waste Complex on March 11, resulting in completion of the March 31, 2002, TPA milestone (TRP-02-505) ahead of schedule.

Solutions Stabilization activities at PFP were officially completed Monday, July 29, 2002. This major stabilization activity was completed two days ahead of the DNFSB Milestone (TRP-01-500) and 2½ months ahead of the baseline schedule.

### Residues

All remaining Pipe Overpack containers (POCs) containing Hanford ash were shipped to the Central Waste Complex (CWC). The last shipment was completed on March 7, 2002 completing Tri Party Agreement (TPA) milestone M-83-09 nearly five months ahead of schedule.

## Project W-460

The final phase of Project W-460, construction of an enhanced security entrance into the 2736-ZB building, is complete, with occupancy of the facility. The contractor has been de-mobilized, final as-built field drawings are being completed and reviewed and punch list items are being closed. The final project Construction Closeout Documentation (CCD) is being prepared for sign-off with the project expected to be closed in April. This project was completed nearly one year early with a capital savings in excess of \$1.0M.

## Disposition PFP Facility

The dismantling of the first numbered structure in the PFP complex, a large gas cylinder storage dock, was safely completed in June utilizing existing resources. Demolition of 2734-Z is currently scheduled in the PFP baseline for FY 2014 but has been accelerated to meet several PFP decommissioning objectives, consistent with RL's plan to accelerate decommissioning of the complex. This work was completed without incident.

## ADDITIONAL FY 2002 ACCOMPLISHMENTS

### Safety

The OA-50 audit team completed their audit pertaining to Integrated Environment, Safety and Health Management System (ISMS) implementation. The preliminary report indicates positive performance in almost all areas and in the implementation of ISMS principles.

PFP has recorded 876,379 safe staff hours since the last recorded workday injury in December 2001.

### Residues

The second of three metric tons of plutonium-bearing residues has been successfully repackaged at the Plutonium Finishing Plant, more than half a year ahead of schedule. Repackaging prepares the nuclear waste for eventual shipment for disposal at the Waste Isolation Pilot Plant, the federally designated geologic repository in New Mexico.

## ACCOMPLISHMENTS DURING THIS REPORTING PERIOD

### Maintain Safe & Secure SNM WBS 3.3.3.1

Lawrence Livermore National Laboratory (LLNL) has agreed to the PFP shipping plan that outlined the criteria for packaging, shipment, and receipt of plutonium (Pu) from Fluor Hanford (FH) to Lawrence Livermore National Laboratory. The material being shipped consists of up to 126 un-stabilized items of Pu oxide for use in research and development studies.

### Maintain Safe and Compliant PFP WBS 3.3.3.2

The NEPA Categorical Exclusion (CX) for Deactivation of 241-Z has been prepared and submitted to RL.

### Stabilization of Nuclear Material WBS 3.3.3.3

**Metals, Alloys, Oxides and Polycubes** <sup>3</sup>/<sub>4</sub> Ten bagless transfer containers (BTCs) were completed during this reporting period. A fiscal year-end total of 678 BTCs have now been made in the 234-5Z and 2736-ZB facilities.

Pacific Northwest National Laboratory (PNNL) and Plutonium Process Support Laboratories (PPSL) continue with testing to support the washing of the high chloride oxides. The testing will continue into October. Preliminary test results are being used to develop system design modifications, detailed process plans and a Baseline Change Request (BCR).

**Residues** <sup>3</sup>/<sub>4</sub> During the reporting period, 152,067 grams of Sand, Slag and Crucible (SS&C) were packaged into 22 Pipe Overpack Containers (POCs). Processing of SS&C is exceeding the baseline schedule. Fifteen POCs were shipped to the Central Waste Complex (CWC). The startup plan for oxide/mixed oxide (MOX) was issued.

**Outer Can Packaging** —Twenty-four 3013 containers were produced during the reporting period with a fiscal year-end total of 420 containers.

### **Disposition of Nuclear Material WBS 3.3.3.4**

A draft of the 2001/2002 Chemical Hazard Vulnerability Review has been prepared. This report is designed to fulfill a December 2002 TPA milestone.

### **Disposition PFP Facility WBS 3.3.3.5**

Three reports, jointly funded by DOE-HQ (EM-20) National Facility Deactivation Initiative and RL, were issued by Project Enhancement Corporation in September in support of the Fluor Accelerated PFP Decommissioning Plan:

- An independent assessment of the conclusions reached by the joint FH-PNNL task team on disposition of large, contaminated equipment at PFP.
- An engineering assessment of the potential applicability of excess robotics and size reduction equipment at Rocky Flats Environmental Technology Site (RFETS) to PFP's accelerated decommissioning project.
- A peer review of PFP's initial detailed 2009 acceleration plan conducted by staff with extensive decommissioning experience at other DOE and commercial nuclear sites.

On September 5, 2002 the PNNL issued draft Curation and Mitigation Plans to RL for the D&D of historic buildings at PFP.

Fluor Hanford prepared and transmitted to RL the National Environmental Policy Act (NEPA) CX for Deactivation of 241-Z on September 24, 2002.

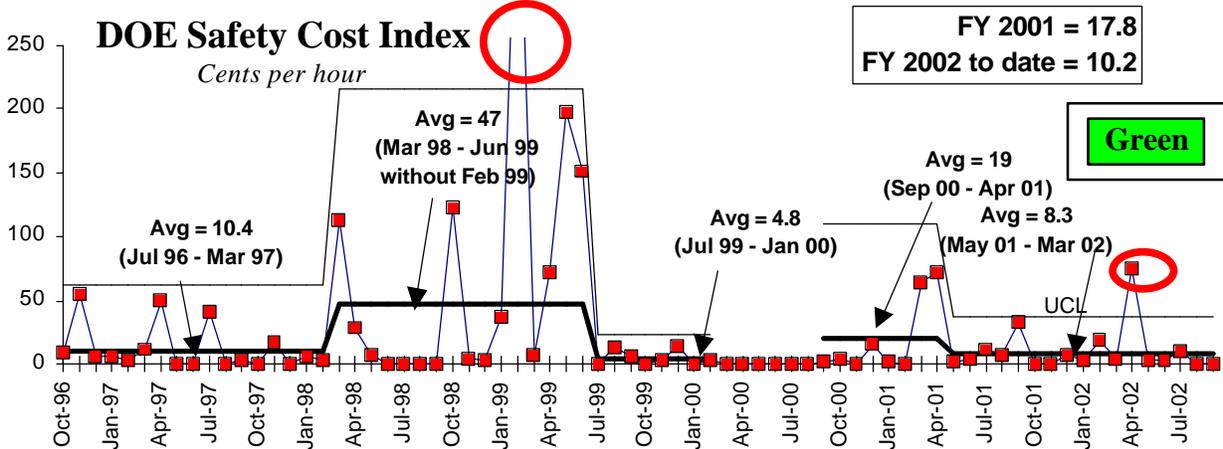
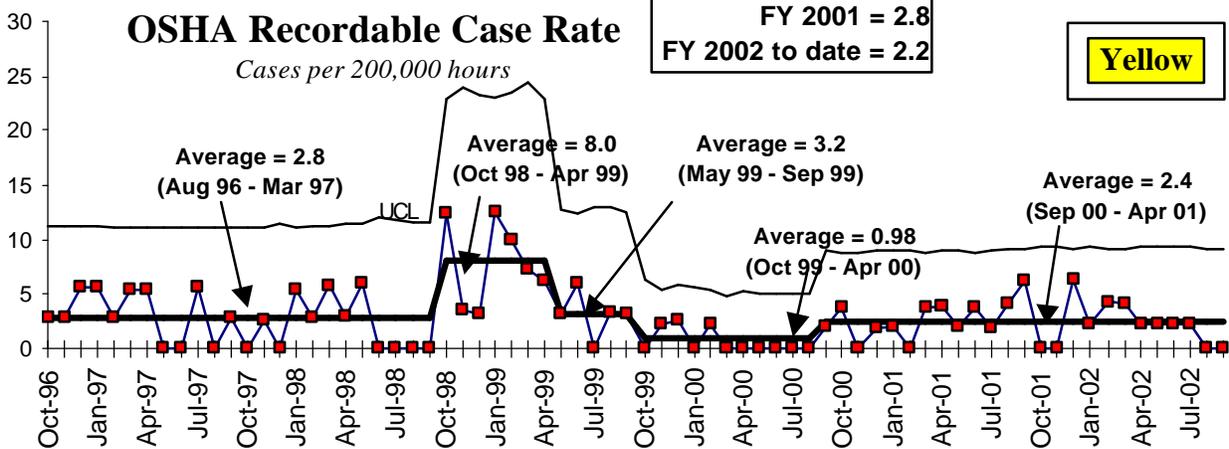
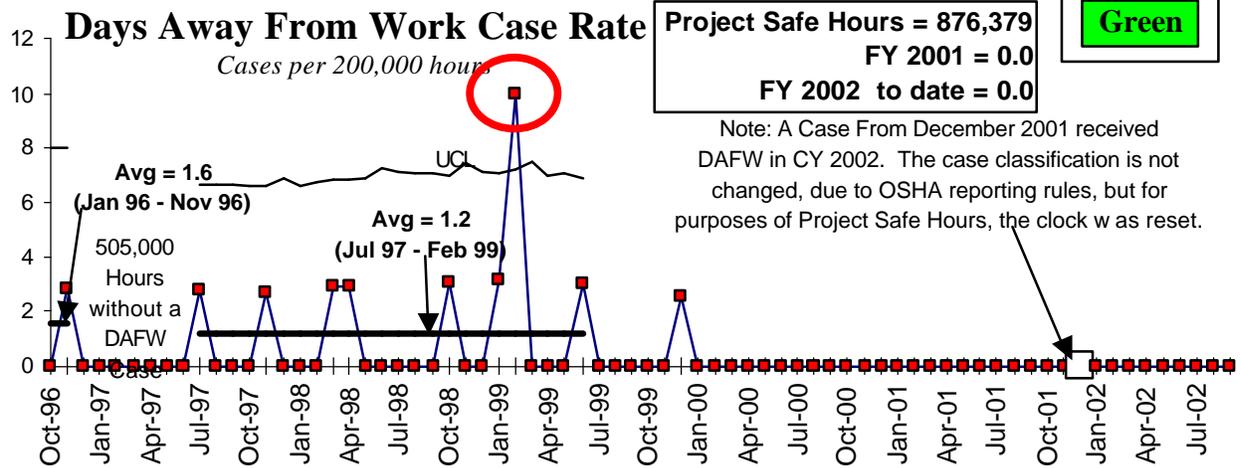
PNNL issued a notice of completion of the State Historic Preservation Officer's, (SHPO) 30-day review of Cultural Resource Review (CRR) for 232-Z and the lay-down yard area on September 24. The following day, PNNL issued a notice of completion of the Tribe's 30-day review of the CRR document.

### **Project Management & Support WBS 3.3.3.6**

Excellent progress was made on the Accelerated Closure Plan baseline update during September. Internal reviews were concluded in early September. Each of the functional areas being updated as part of the accelerated rebaseline were reviewed in detail by a core review team composed of both Fluor and DOE representatives. Feedback from involved reviewers was positive.

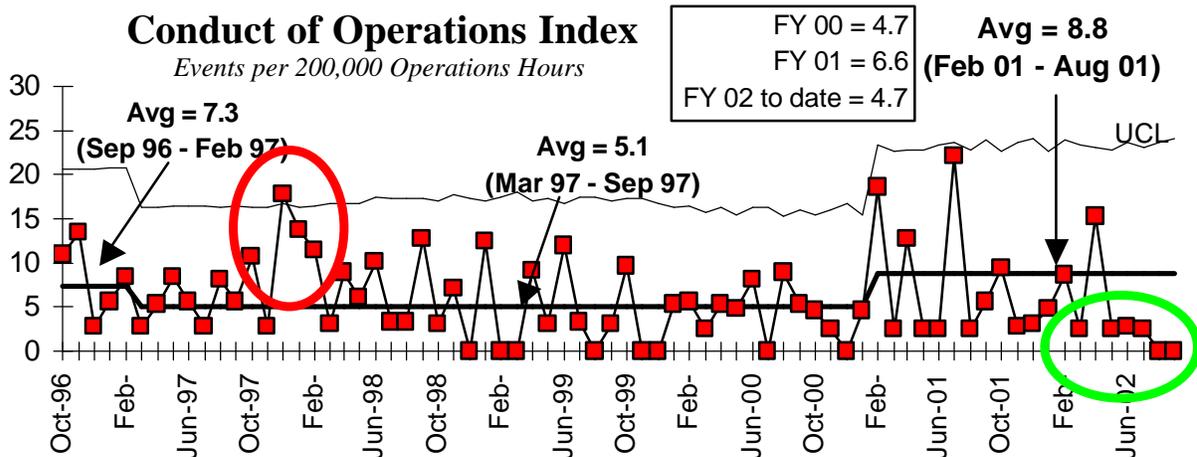
# SAFETY

There have now been 876,379 safe staff hours since the last recorded workday injury in December 2001.



## CONDUCT OF OPERATIONS

Green



## BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

### Breakthroughs

**Processing Improvement** — Over 400 items of oxides originally thought to require thermal stabilization and packaging have been selected for discard as a result of investigations into their plutonium content. The database from which the original stabilization inventory was developed did not list net weights for these items. However, a more in-depth investigation revealed them to contain less than 30wt% Pu. The Safeguards Termination Letter (STL) for the MOX material >10 and <30 Wt% Pu was issued to RL. DOE-HQ had reviewed the draft STL and their comments were incorporated.

**Processing Improvement** — FH has requested approval to terminate safeguards on 434 plutonium oxide-uranium oxide scrap items containing less than 10 percent plutonium with depleted uranium or natural uranium. If approved, the material will be process packaged in Pipe Overpack Containers (POC) and shipped to the CWC for storage until shipped to the Waste Isolation Pilot Plant (WIPP). FH has received notification that DOE-HQ has approved the request for termination of safeguards on the material. Approval from RL is expected soon.

### Opportunities for Improvement

**Processing Improvement** — The Stabilization & Packaging Equipment (SPE) process qualification plan revision 1 was submitted to RL on August 23, 2002 with a requested approval date of August 30, 2002. This plan will enable the SPE system, once qualified, to perform Loss on Ignition (LOI)/Thermogravimetric Analysis (TGA) on a representative sampling of canned items rather than on all canned items. Representative sampling is significant since the processing throughput is limited more by the LOI/TGA measurement throughput than either furnace or canning capacity. The Independent Panel review was completed in September and forwarded to DOE-HQ with recommendation for approval. Recommendation to DOE-HQ was expected the week of September 15. The delay impacted execution of accelerated schedule.

## UPCOMING ACTIVITIES

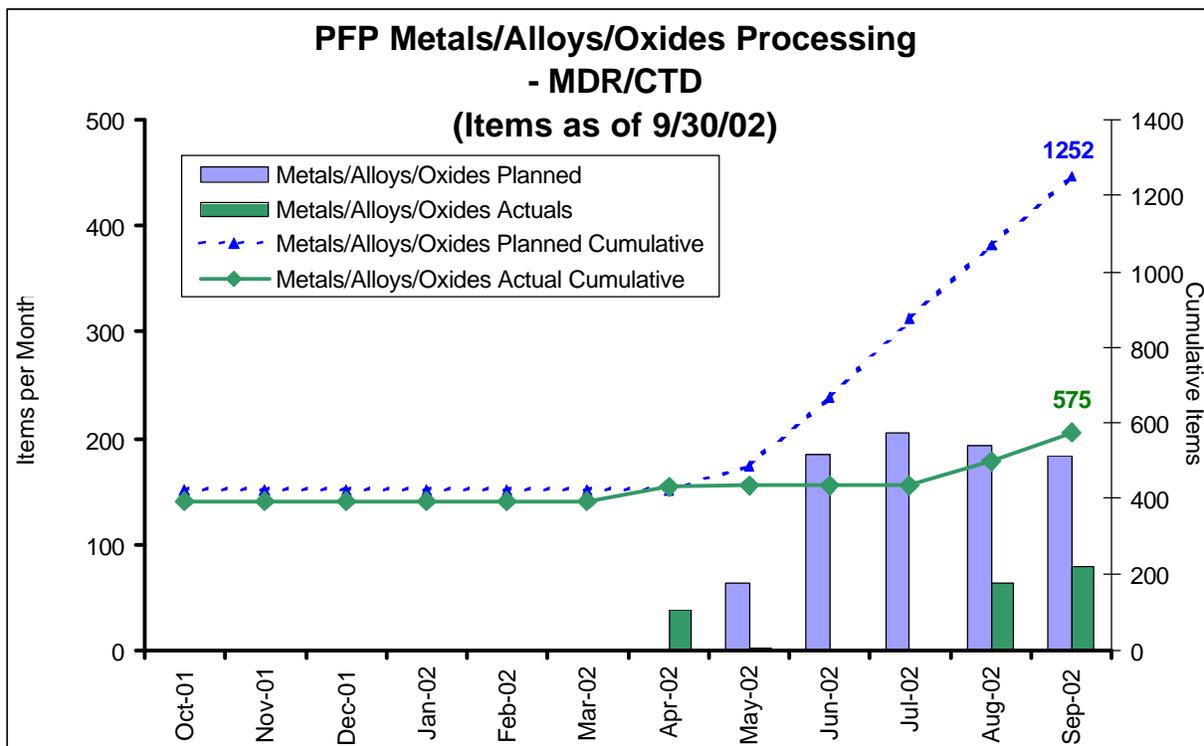
Nothing significant to report.

## MILESTONE ACHIEVEMENT

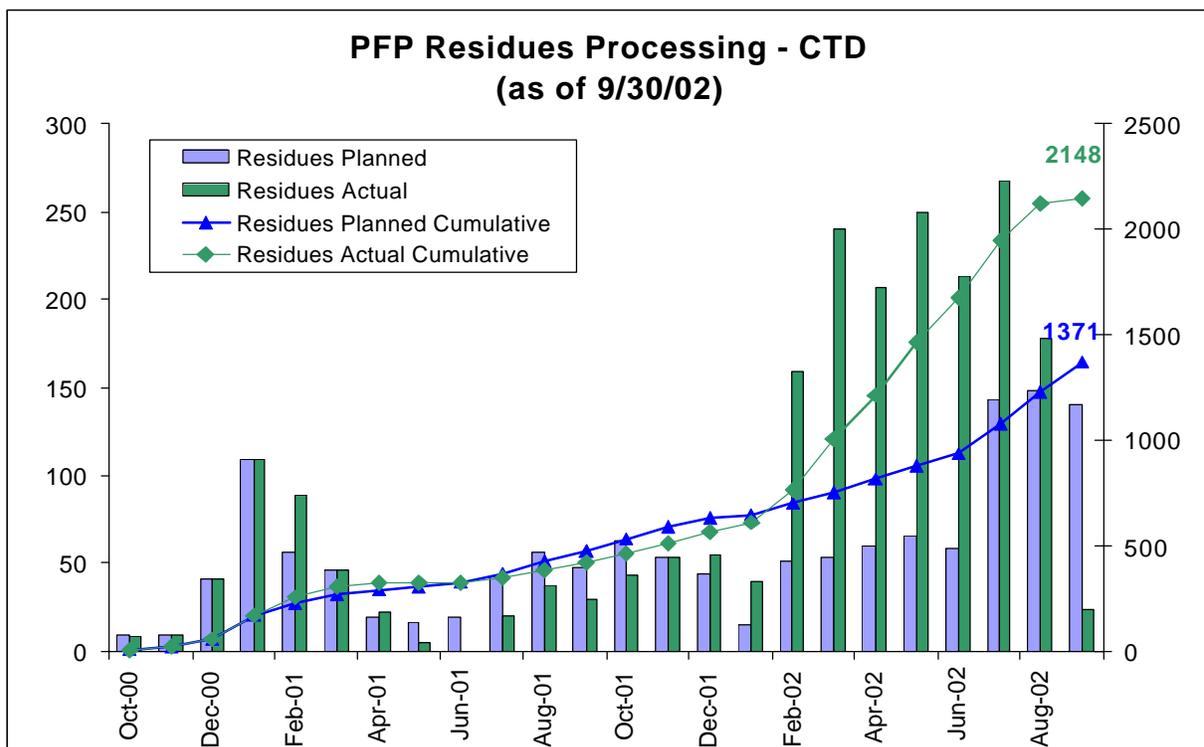
Milestone Title	Type	Due Date	Actual Date	Forecast Date	Status/ Comments
Package Alloys for disposition to WIPP or stabilize & package per DOE-STD-3013 criteria	DNFSB	6/30/2001		10/31/2002	On schedule to meet revised DOE IP date of 12/31/02
Complete Installation of the Bagless Transfer System	RL	10/1/01	8/29/01		Complete
Hot Startup of the 2736-ZB Stabilization & Packaging System	PI	11/27/01	11/29/01		Complete
Complete Direct Discard of Selected Solutions	TPA	3/31/02	3/11/02		Complete
Complete Stabilization & Packaging of Plutonium Solutions	DNFSB	7/31/02	7/29/02		Complete
Complete Stabilization & Packaging of Polycubes	DNFSB	8/31/02		3/21/2003	On schedule to revised DOE IP date of 3/2003
Complete Repackaging & Shipment of Hanford Ash to CWC	TPA	8/31/02	3/7/02		Complete
Completion of all PU Stabilization & Packaging	PI Stretch	2/18/04		5/31/04	Projected delay due to change in moisture measurement method.
Complete Repackaging & Shipment of Sand, Slag and Crucible to CWC	TPA	1/30/04		1/31/03	Ahead of Schedule
Complete Stabilization & Packaging of Residues	DNFSB	4/30/04			On Schedule
Complete Stabilization & Packaging of Oxides >30% Pu/U	DNFSB	5/31/04			On Schedule
Dismantlement NEPA/ CERCLA Decision Document Complete	RL	9/30/05			On Schedule
Complete 100% of Legacy Pu Holdup Removal & Disposition	PI Stretch	9/30/06			On Schedule
232-Z & PPSL Annex Demolished to Slab-on-Grade	PI Stretch	9/30/06			On Schedule
Protected Area Reduced to 2736-Z/ZB and Yard Storage	PI Stretch	9/30/06			On Schedule
Relocate SNM Required to Reduce the PFP Protected Area	PI Stretch	9/30/06			On Schedule

## PERFORMANCE OBJECTIVES

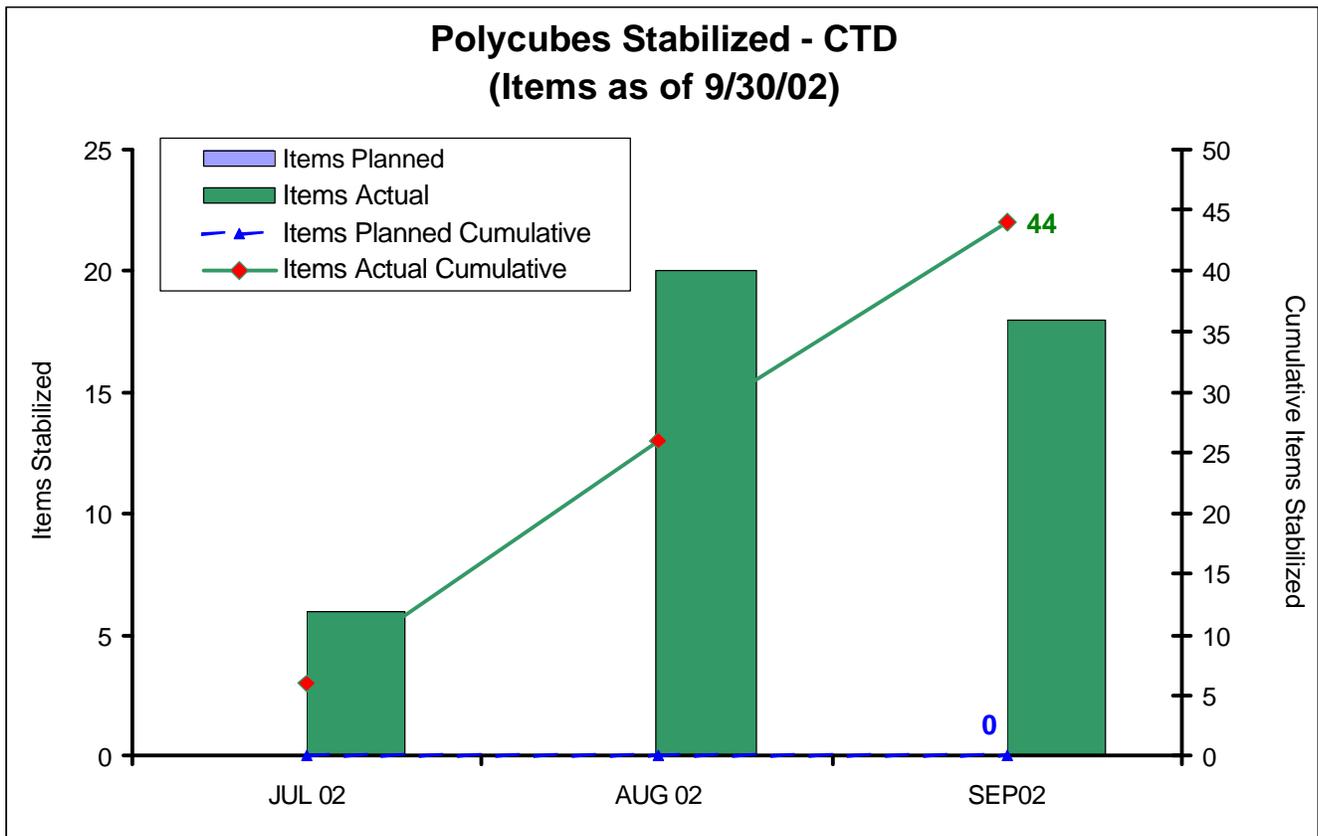
### METALS/ALLOYS/OXIDES STABILIZATION



### RESIDUE STABILIZATION



### POLYCUBE STABILIZATION



## FY 2002 SCHEDULE / COST PERFORMANCE – ALL FUND TYPES FISCAL YEAR TO DATE STATUS – (\$000)

		FYTD							
By PBS		BCWS	BCWP	ACWP	SV \$	SV %	CV \$	CV %	BAC
PBS CP03	Maintain Safe and Secure SNM	4,359.5	4,591.0	4,692.3	231.5	5.3%	(101.3)	-2.2%	4,359.5
WBS 3.3.3.1									
PBS CP03	Maintain Safe and Compliant PFP	26,698.6	26,953.7	26,602.3	255.1	1.0%	351.4	1.3%	26,698.6
WBS 3.3.3.2									
PBS CP03	SNM Stabilization	28,625.9	28,943.5	23,577.2	317.6	1.1%	5366.3	18.5%	28,625.9
WBS 3.3.3.3									
PBS CP03	Disposition SNM	4,245.0	4,326.0	3,372.1	81.0	1.9%	953.9	22.1%	4,245.0
WBS 3.3.3.4									
PBS CP03	Disposition PFP Facility	1,385.6	1,474.7	2,833.4	89.1	6.4%	(1358.7)	-92.1%	1,385.6
WBS 3.3.3.5									
PBS CP03	PFP Project Management and Support	12,371.8	12,641.4	18,486.5	269.6	2.2%	(5845.1)	-46.2%	12,371.8
WBS 3.3.3.6									
<b>Total:</b>		<b>\$77,686.4</b>	<b>\$78,930.3</b>	<b>\$79,563.8</b>	<b>\$1,243.9</b>	<b>1.6%</b>	<b>-\$633.5</b>	<b>-0.8%</b>	<b>\$77,686.4</b>
PBS CP03	W-460 PuSH Line Item Support	2,325.6	3,485.0	506.0	1,159.4	49.9%	2,979.0	85.5%	2,325.6
WBS 3.3.3.7									
<b>Total:</b>		<b>\$80,012.0</b>	<b>\$82,415.3</b>	<b>\$80,069.8</b>	<b>\$2,403.3</b>	<b>3.0%</b>	<b>\$2,345.5</b>	<b>2.8%</b>	<b>\$80,012.0</b>

## FY TO DATE SCHEDULE / COST PERFORMANCE

The favorable schedule variance continues to be primarily the result of higher than planned processing, completion of solutions stabilization and packaging, and completion of FY01 scope. The positive variance is partially offset by the behind schedule progress on Pu packaging operations, due primarily to equipment operability problems (welder), and alloys/oxides stabilization. The favorable cost variance is down from last month. A continuance of higher than planned performance within the Stabilization Project areas is the primary contributor to the positive status. Portions of the favorable cost variance are offset by increased costs in accelerated closure planning. While incremental accelerated closure planning is authorized, the baseline has not been changed to reflect the increased work scope

For all active sub-PBSs and TTPs associated with the Operations/Field Office, Fiscal Year to Date (FYTD) Cost and Schedule variances exceeding + / - 10 percent or one million dollars require submission of narratives to explain the variance.

### SCHEDULE VARIANCE ANALYSIS: (+ \$2.4M)

#### 3.3.3.1 Maintain Safe & Secure SNM

**Description and Cause:** The current five percent favorable schedule variance (+\$0.2M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

#### 3.3.3.2 Maintain Safe & Compliant PFP

**Description and Cause:** The current one percent favorable schedule variance (+\$0.3M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.3 SNM Stabilization

**Description and Cause:** The current one percent favorable schedule variance (+\$0.3M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.4 Disposition SNM

**Description and Cause:** The two percent favorable schedule variance (+\$0.1M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.5 Disposition PFP Facility

**Description and Cause:** The six percent favorable schedule variance (+\$0.1M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.6 PFP Project Management & Support

**Description and Cause:** The two percent favorable schedule variance (+\$0.3M) is within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.7 W-460 PuSH Line Item Support

**Description and Cause:** The 50 percent favorable variance (+\$1.2M) is attributable to construction and facility modification activities scheduled in FY 2001 being completed in FY 2002.

**Impact:** None. The project completed more than a year ahead of schedule.

**Corrective Action:** None.

## COST VARIANCE ANALYSIS: (+ \$2.3M)

### 3.3.3.1 Maintain Safe & Secure SNM

**Description and Cause:** The two percent unfavorable cost variance (-\$0.1M) continues to be within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.2 Maintain Safe & Compliant PFP

**Description and Cause:** The one percent favorable cost variance (+\$0.4M) continues to be within the reportable threshold.

**Impact:** None.

**Corrective Action:** None.

### 3.3.3.3 SNM Stabilization

**Description and Cause:** The 19 percent favorable cost variance (+\$5.4M) continues to be attributable to sustained higher than planned production within the Solutions Project that has provided the resources for second shift processing Sand, Slag, and Crucible material (SS&C). As a result processing of all planned FY 2002 SS&C material was completed in late May.

**Impact:** None. This favorable variance will be used to offset overruns elsewhere in the project.

**Corrective Action:** None.

#### 3.3.3.4 Disposition SNM

**Description and Cause:** The 22 percent favorable cost variance (+\$0.9M) is primarily attributable to efficiently completing work with less than planned staff.

**Impact:** None.

**Corrective Action:** Processing of clearances for additional staff was in final processing in July. However, this favorable variance is expected to continue and will be used to offset overruns elsewhere in the project.

#### 3.3.3.5 Disposition PFP Facility

**Description and Cause:** The 92 percent unfavorable cost variance (-\$1.4M) is the result of accelerated PFP closure scope being worked in advance of the BCR approval, per direction by RL.

**Impact:** None.

**Corrective Action:** Approval and implementation of the Accelerated Planning – PFP Decommissioning baseline change request is required to correctly reflect the NMS FY02 work scope and to enable accurate performance against actual costs.

#### 3.3.3.6 PFP Project Management & Support

**Description and Cause:** The 46 percent unfavorable cost variance (-\$5.8M) is the result of negative management reserve savings commitment recorded in the WBS element. Savings have been achieved elsewhere in the project to offset the commitment.

**Impact:** None.

**Corrective Action:** None.

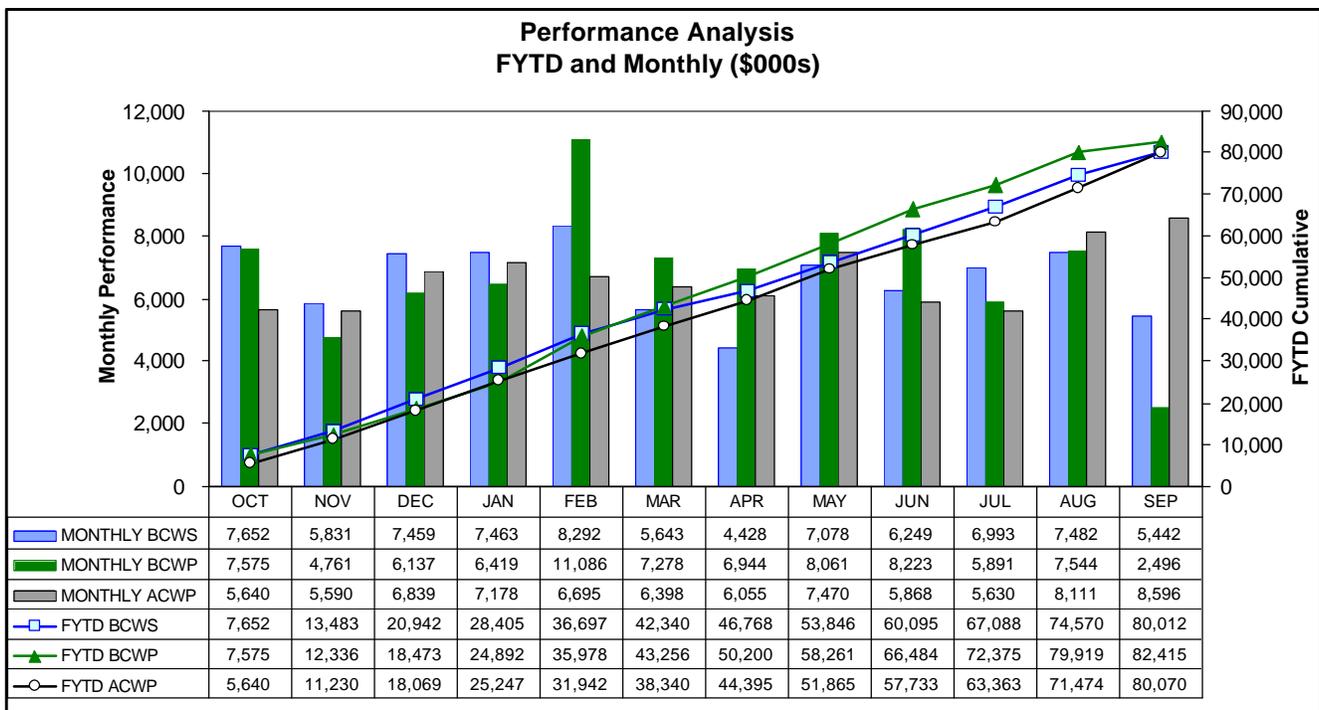
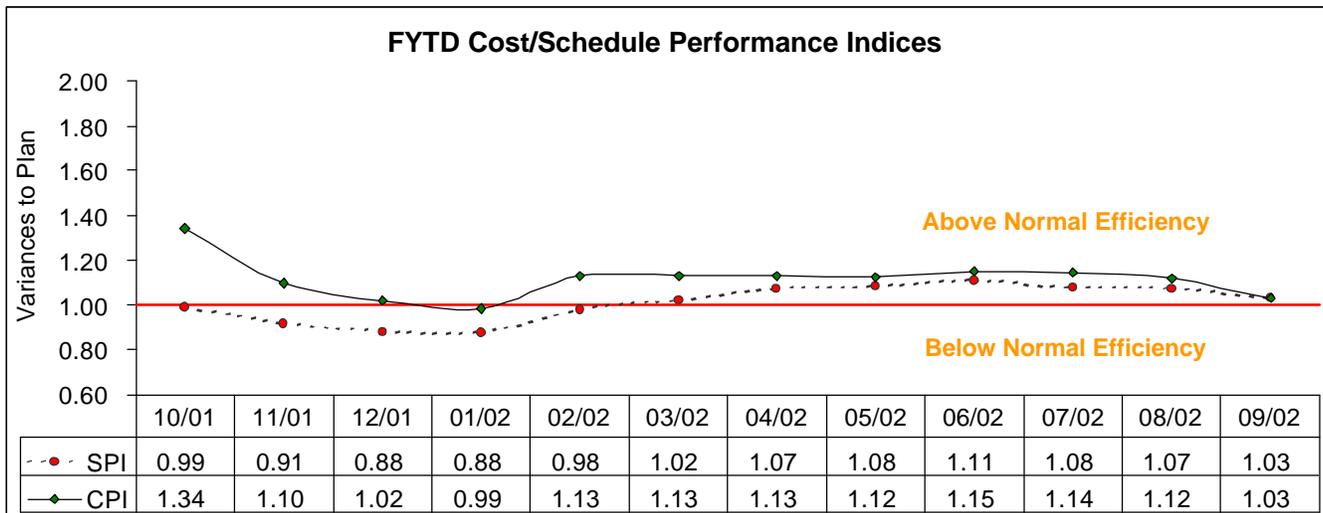
#### 3.3.3.7 W-460 PuSH Line Item Support

**Description and Cause:** The 86 percent favorable variance (+\$3.0M) is attributable to efficient management of the project resulting in completing the project under budget.

**Impact:** None.

**Corrective Action:** Savings have enabled the funding to be reprogrammed to support other workscope.

## Schedule / Cost Performance (MONTHLY AND FYTD)



## FUNDS MANAGEMENT FYTD FUNDS VS ACTUALS (\$000)

	FH Funds Reallocation	September Actuals	Variance
<b>3.3.3 Plutonium Finishing Plant</b>			
CP03			
Project Completion - Operating	\$ 84,937	\$ 79,564	\$ 5,373
- Line Item	\$ 570	\$ 506	\$ 64
<b>Total</b>	<b>\$ 85,507</b>	<b>\$ 80,070</b>	<b>\$ 5,437</b>

[Status through September 2002]

## ISSUES

### Technical Issues

**Issue:** Oxide items with high levels of chloride salts are currently identified in the baseline as being processed via direct thermal stabilization.

**Impact:** Recent testing by PNNL indicates that the approach isn't feasible.

**Corrective Action:** A follow-up study recommended washing the chloride salts in the existing solutions precipitation equipment to remove the salts. Laboratory testing of high chloride oxides resumed after inventory. One item was found to contain soluble Pu carbonate complexes, which would cause problems during chloride washing. Alternate washing methods are being explored. PNNL has completed 26 furnace cycles and corrosion rates appear manageable. Hastelloy X boat lost 12 percent of original weight after 15 cycles. Furnace element failed after 16 cycles, believed due to sides of boat bowing out and arcing to furnace element. Inconel 600 off gas tubing running through furnace wall corroded through after five furnace cycles during cold testing. Line through furnace wall was replaced with Inconel 690 pipe which has been through 11 furnace cycles and holding up well. Chloride salts plugged ten micron off gas filter. A knockout pot and other filters are being tested. PNNL surrogate testing of washing and draining hardware indicate standard cubic feet per minute of sparge air at three pounds per square inch (gauge) is sufficient. Documenting functional design requirements is in progress. Detailed design is beginning.

### Regulatory, External, and DOE Issues and DOE Requests

**Issue:** Need approval so Loss on Ignition (LOI)/Thermal Gravimetric analysis (TGA) analysis may be performed on a sampling of canned items.

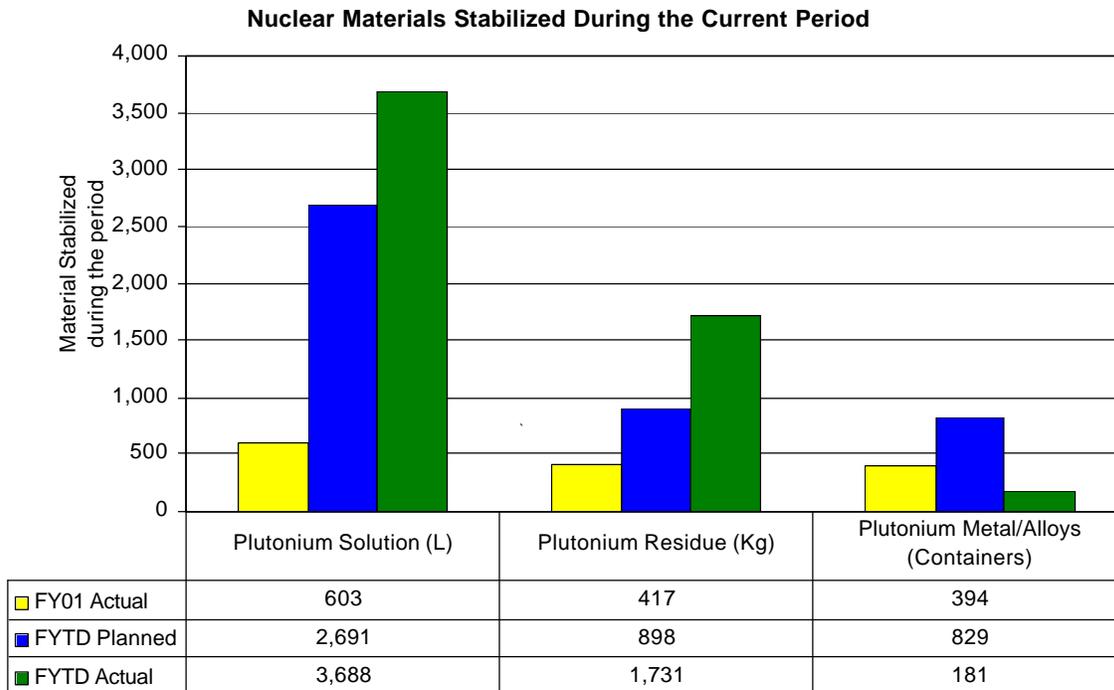
**Impact:** Impacts execution of accelerated schedule.

**Corrective Action:** Requested approval date from RL: August 30, 2002. Approval was expected from RL by September 16, 2002. Delay impacts execution of accelerated schedule. Independent panel review, completed in September, recommended DOE-HQ approval.

## BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS

BCR No.	Date Originated	Description	Impact		Date Action Taken	Status
			Days	Dollars (\$000s)		
FH-2001-008	8/13/01	MYWP Bridge		N/A	10/10/02	Conditional Approval
FH-2002-010	2/28/02	Revise Labor Rates		2590	8/22/02	Partial Approval
CP03-02-030, R1	5/20/02	Accelerate D&D Planning		\$3,000		At RL
CP03-02-032	6/30/02	Transfer FY 2003 Solutions Scope		- 0 -	9/24/02	Approved
CP03-02-034	7/1/02	Revise Stabilization Schedule		- 0 -		At RL
CP03-02-036	8/7/02	Min Safe Changes		- 0 -	9/26/02	Approved
CP03-02-038	8/12/02	Polycubes/Alloys DNFSB Milestone		- 0 -		At RL
FH-2002-020	7/11/02	Document FY 2002 Cost Savings		\$1,111	9/12/02	Approved

## NUCLEAR MATERIALS STABILIZED DURING THE CURRENT PERIOD



**Plutonium Solution:** Solutions stabilization completed two and 1/2 months early. The early completion was possible due to several operational improvements, such as applying direct discard to additional solution feed types and improved throughput efficiency on the oxalate precipitation process. Furthermore, furnace stabilization and inner canning systems performed well and did not become a limiting factor. Also, outer can packaging/welding priority was given to solution materials packaging over oxides.

**Plutonium Residues:** A second shift was made available through process efficiencies made in solutions stabilization, which allowed significant Sand, Slag and Crucible (SS&C) progress in FY 2002. Use of a second shift coupled with other processing efficiencies (i.e., packaging more items/POC than planned per unit time) resulted in the increased throughput.

**Plutonium Metal/Alloys:** Stabilization and packaging of oxides was delayed due primarily to equipment problems with the inner and outer can packaging/welder systems. Also, the weld porosity technical issue, associated with outer can welding, impacted progress in FY 2002. As stated above, priority for outer can packaging was given to solutions materials over oxides when the outer can welder was operational.