



# Section C:1

## ***Nuclear Material Stabilization***

### **PROJECT MANAGERS**

P.M. Knollmeyer, RL  
(509) 376-7435

G.W. Jackson, FH  
(509) 373-6622

## SUMMARY

The Nuclear Material Stabilization (NMS) mission consists of the Plutonium Finishing Plant (PFP), WBS 1.4.5 (PBS TP05).

NOTE: Unless otherwise noted, the Safety, Conduct of Operations, Milestone Achievement, and Cost/Schedule data contained herein is as of December 31, 2000. All other information is as of January 23, 2001 unless otherwise stated.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that one milestone (100 percent) was completed ahead of schedule. Although eight additional milestones are scheduled for completion later this fiscal year, no milestones were scheduled for completion during this report period. Further details can be found in the milestone exception report following the cost and schedule variance analysis.

## NOTABLE ACCOMPLISHMENTS

### Maintain Safe & Secure SNM

- Completed and reconciled the bi-monthly SNM inventory on January 12, 2001. Approval to resume thermal processing was granted January 15, 2001.

### Maintain Safe and Compliant PFP

- Through January 23, 2001, there were 420 calendar days (over 1.34 million staff hours) since the last recorded lost workday injury that occurred on December 2, 1999.
- Completed aerosol testing of the 291-Z stack monitoring system. This test confirmed monitoring efficiency and capability to detect potential radionuclide releases. A formal test report is being developed.
- Installation and testing of backflow preventers within the PFP complex continues. To date, ten of twelve backflow preventers have been installed, tested, and are operating. This activity remains significantly ahead of schedule of the June 2001 RL milestone completion date for this task.
- The Defense Nuclear Facilities Safety Board recently visited the facility and stated they were generally impressed with the turnaround and momentum they had observed in the last two years. They also seemed particularly impressed with the ALARA program responsibilities to identify ways in which to reduce exposure and will promote this idea throughout the DOE complex.

### Stabilization of Nuclear Material

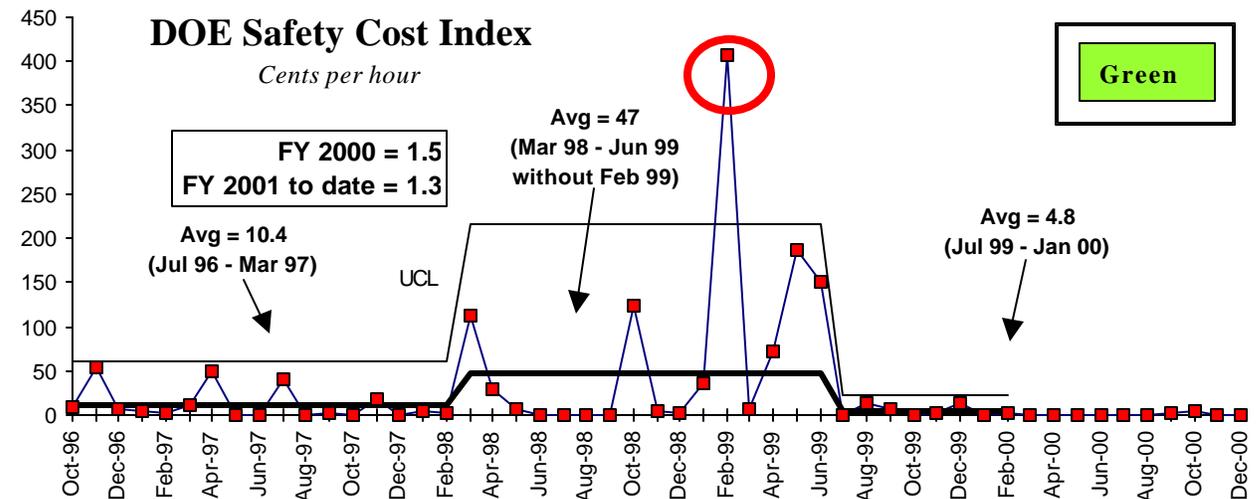
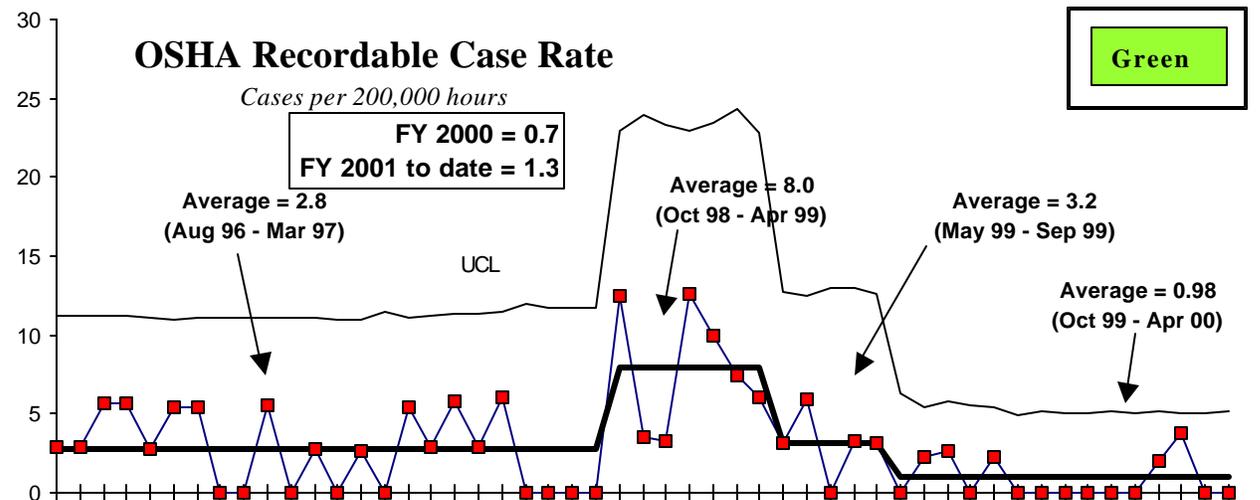
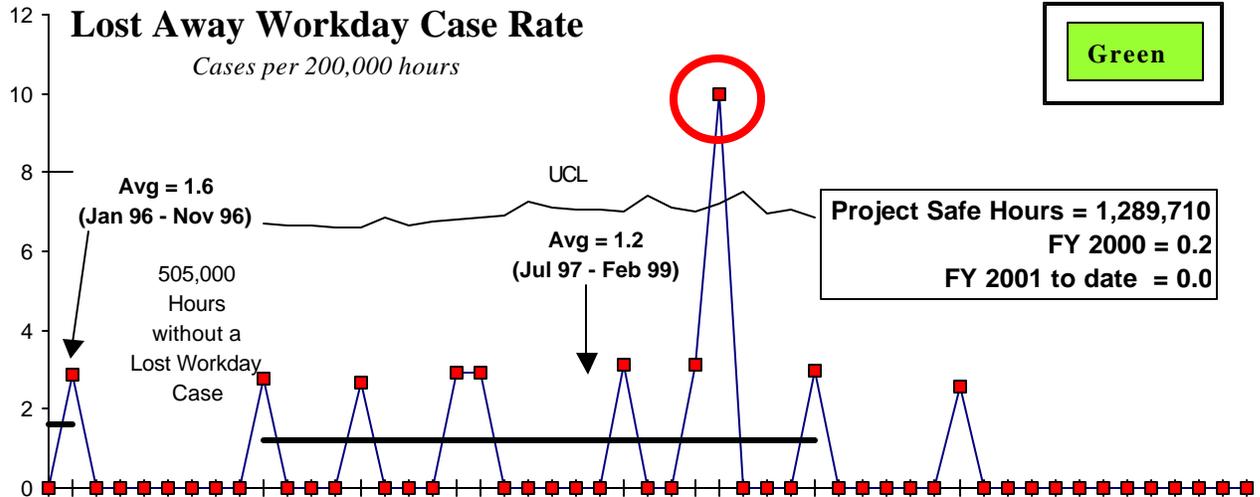
- Initiated planned second shift residue processing operations on January 8th to expedite packaging in support of semi-weekly shipments of Rocky Flats ash to the Central Waste Complex.
- Upgraded hardware has been installed (two-boat hot plate system) and is operational in glovebox #3 to support solutions processing. A second two-boat hot plate system is scheduled to be installed and operational in late February 2001 that will further increase throughput capacity.
- A plan for the disposition of Pu alloys was developed which divided the inventory into three groupings and could result in reduced processing requirements for lower level Pu items.

## **Disposition of Nuclear Material**

- Recently completed a value engineering study that indicated significant project efficiencies could be realized by competitively bidding all remaining Project W-460 construction work. This recommendation is being implemented.
- A new daily high in the production rate for canning material was reached January 22, 2001 with the welding out of seven cans.
- Seven new transport wagons have been fabricated and delivered to the facility that will significantly improve the ability to transport and process materials.
- Hot startup of the Outer Can Welder (OCW) is currently scheduled for April 9, 2001. Efforts are underway however to accelerate startup to April 1, 2001.

## **SAFETY**

The Nuclear Material Stabilization Project (NMSP) has achieved 1.34 million safe work hours since the last new case with days away from work. The NMSP OSHA Recordable Case Rate is stable.

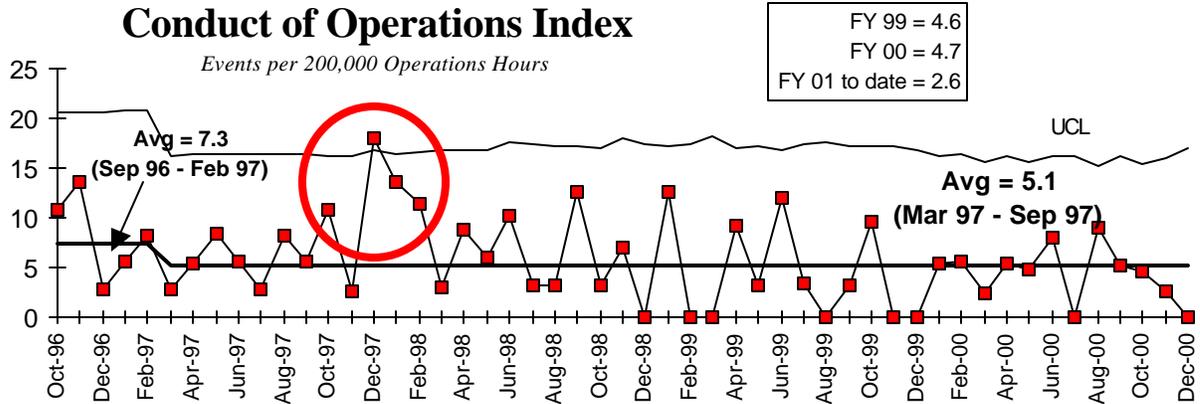


## ISMS STATUS

There were continued safety improvements at PFP through Integrated Environmental, Safety and Health Management System (ISMS).

### CONDUCT OF OPERATIONS

Green



### BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

#### Breakthroughs

Yellow

Plant management has identified, and will request DOE-RL concurrence, for direct disposal of a number of candidate low gram plutonium nitrate solutions currently scheduled for  $Mg(OH)_2$  processing. This modification, if approved, could potentially result in schedule acceleration of the solutions stabilization project and reduce processing, packaging, and storage costs.

#### Opportunities for Improvement

Green

**Exposure Reduction** — Funding was approved, and procurement is underway, to purchase the remote controlled video camera that will reduce employee exposure in the 2736-Z vaults by performing remote video inspections and inventories. The equipment is expected to be delivered in March 2001. *(No further status to be provided.)*

**Oxides/Metals and Polycubes Stabilization** — Completed an ALARA evaluation and cost benefit analysis for dose reduction alternatives for the stabilization of the polycube inventory. A shielded can will be used for transport from the vaults into the glove box system and shielded tongs for handling the polycubes once the cans have been opened. *(No further status to be provided.)*

**Security and Operational Improvement** — Funding has been approved to procure and install nineteen (19) remote surveillance cameras and an automated access control system throughout the PFP complex. This upgrade enhances and satisfies RL security and fire protection requirements. *(No further status to be provided.)*

**Process Efficiency** — Continuing to identify alloys that can be stabilized early using potentially available muffle furnace capacity. The priority for Furnaces 1, 2 and 3 is thermal stabilization of solutions precipitate. For Furnaces 4 and 5, the priority is for the thermal stabilization of metals if they ignite and oxidize. If that doesn't happen, and if there are no solutions precipitate furnace charges available, then alloys are the next candidate for furnace charges. Having these backup material options ensures maximum use of available furnace capacity. *(No further status to be provided.)*

**Cost Savings** — Six (6) government excess calorimeters have been located and are being procured to support the alloys portion of the residues packaging project. Utilizing this approach significantly reduces lead time and results in a conservative cost savings of \$400,000. *(No further status to be provided)*

## UPCOMING ACTIVITIES

- Westinghouse Savannah River Company's delivery of the 2736-ZB Bagless Transfer System (BTS) and Outer Can Welder (OCW) is expected during the second quarter of FY 2001.
- Complete modifications to one vault cubicle by April 2, 2001. (Milestone TRP-99-412).
- Complete repackaging and shipping of Rocky Flats ash to the Central Waste Complex (CWC) by April 30, 2001. (Milestone TRP-01-515).
- Complete stabilization of plutonium (Pu) alloys by June 30, 2001 (Milestone TRP-01-501).
- Complete repackaging of Pu metal inventory in 3013 inner cans by March 31, 2001, and outer cans by August 1, 2001.

## MILESTONE ACHIEVEMENT

Green

MILESTONE TYPE	FISCAL YEAR-TO-DATE				REMAINING SCHEDULED			TOTAL FY 2001
	Completed Early	Completed On Schedule	Completed Late	Overdue	Forecast Early	Forecast On Schedule	Forecast Late	
Enforceable Agreement	0	0	0	0	0	2	0	2
DOE-HQ	0	0	0	0	0	1	1	2
RL	1	0	0	0	0	4	0	5
<b>Total Project</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</b>	<b>1</b>	<b>9</b>

Only TPA/EA milestones and all FY2001 overdue and forecast late milestones are addressed in this report. Milestones overdue are deleted from the Milestone Exception Report once they are completed. The following chart summarizes the FY2001 TPA/EA milestone achievement and a Milestone Exception Report follows. The last milestone table summarizes the first six months of FY 2002 TPA/EA milestones.

**FY 2001 Tri-Party Agreement / EA Milestones** as of January 26, 2001

Number	Milestone Title	Status
M-083-07 (TRP-01-515)	"Complete Repackaging & Shipping of Rocky Flats Ash to the CWC"	Due April 30, 2001 – Currently behind schedule but April milestone completion date will be met. 
M-083-08 (TRP-01-516)	"Complete Requirements to Ship Rocky Flats Ash to WIPP"	Due June 1, 2001 – On schedule. 
<b>DNFSB Commitments</b>		
M-IP-114 (TRP-01-501) R94-01)	"Ship Alloys to SRS or Complete Stabilization of Alloys"	Due June 30, 2001 - Currently redefining the milestone completion criteria with RL. 
M-IP-110 (TRP-02-500)	"Complete Packaging of Metal Inventory"	Due March 31, 2001 – Metal and corrosion Products items are scheduled to be brushed and packaged in inner Bagless Transfer System containers by March 31, 2001 and April 30, 2001 respectively. All material will be packaged in outer 3013 containers by August 1, 2001. 

## MILESTONE EXCEPTION REPORT

<u>Number/WBS</u>	<u>Level</u>	<u>Milestone Title</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
-------------------	--------------	------------------------	----------------------	----------------------

**Overdue – 0**

**Forecast late – 1**

TRP-02-500	HQ	Complete Packaging of Metal Inventory	03/31/2001	08/01/2001
------------	----	---------------------------------------	------------	------------

1.4.5

**Cause:** The Outer Can Welder, required for completion of this milestone, will not be operational in time to meet this milestone commitment.

**Impact:** This DNFSB Recommendation 2000-1 milestone will be delayed until August 31, 2001.

**Corrective Action:** Nothing to report at this time.

**FY 2002 Tri-Party Agreement / EA Milestones**

Number	Milestone Title	Status
	Nothing to report at this time.	

**DNFSB Commitments**

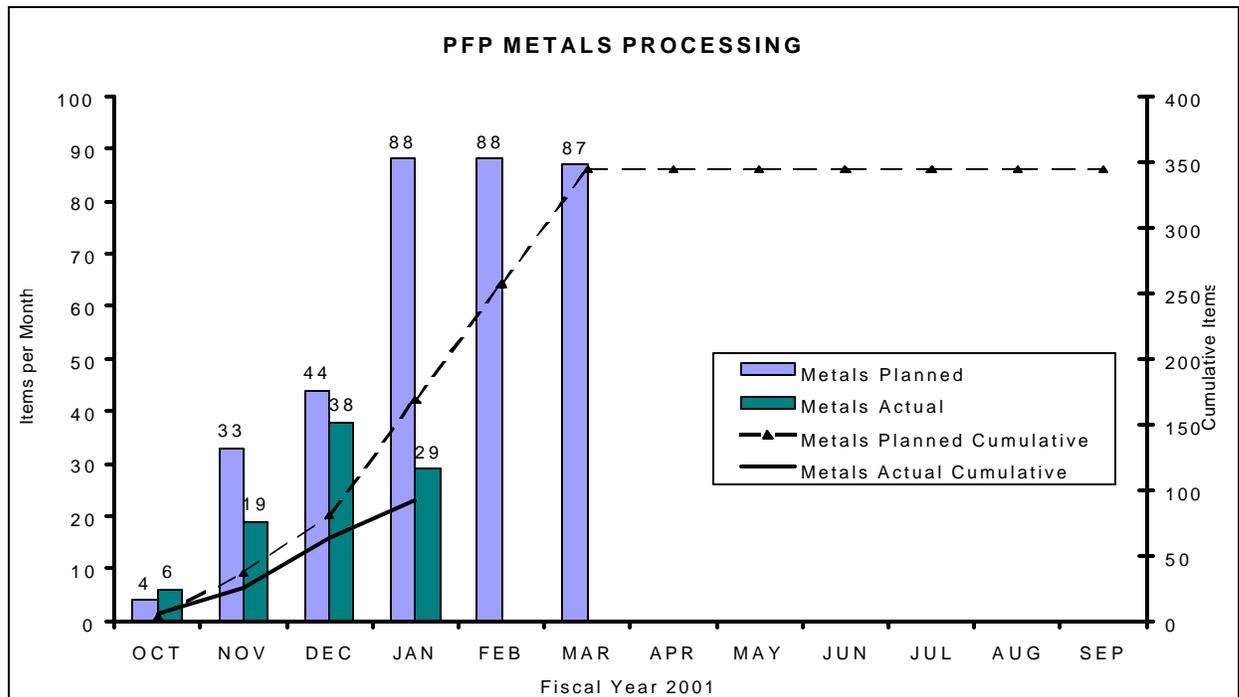
<b>R94-01 (TRP-01-500)</b>	<b>"Complete Stabilization &amp; Packaging Plutonium Solutions"</b>	<b>Due December 31, 2001</b> – Currently forecast to be 3 months behind schedule.
--------------------------------	---	--

Red

**PERFORMANCE OBJECTIVES**

**Oxides/Metals/Polycubes Stabilization**

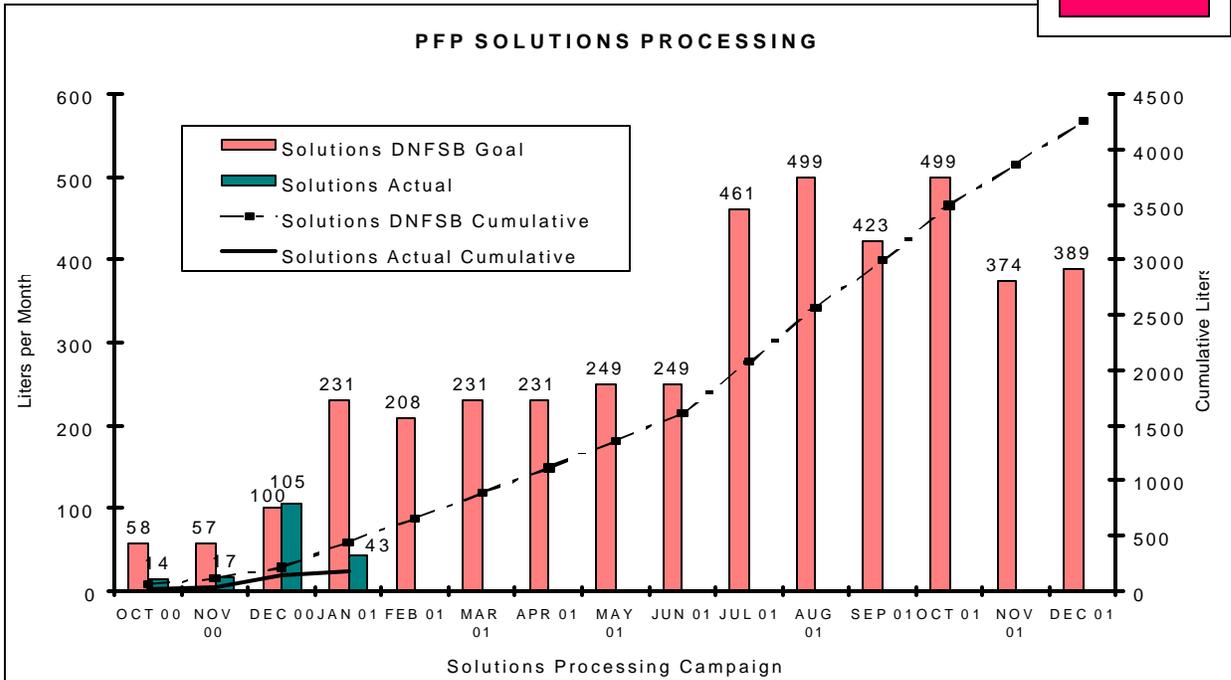
Yellow



Cutting wheel failures have impacted the schedule recovery effort.

## Solution Stabilization

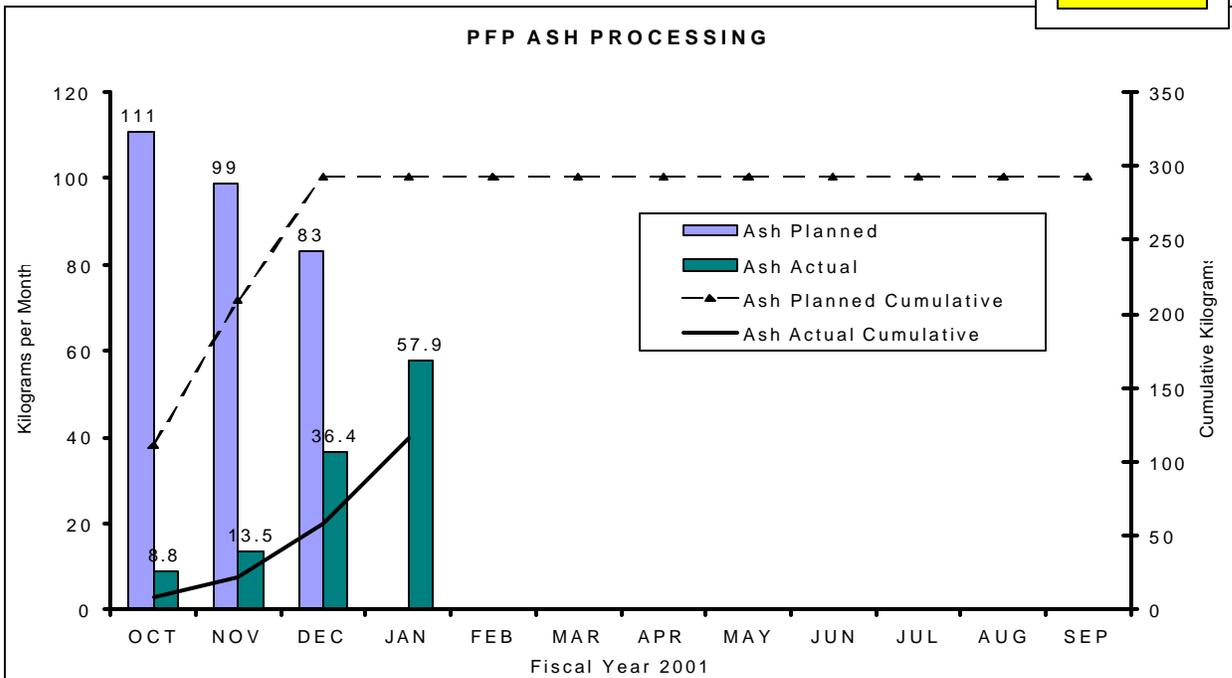
Red



The behind schedule status is due to the quantity of the boats generated per liter from the precipitation process being significantly higher than forecasted in the baseline estimates; hence schedule progress is impacted.

## Residues Stabilization

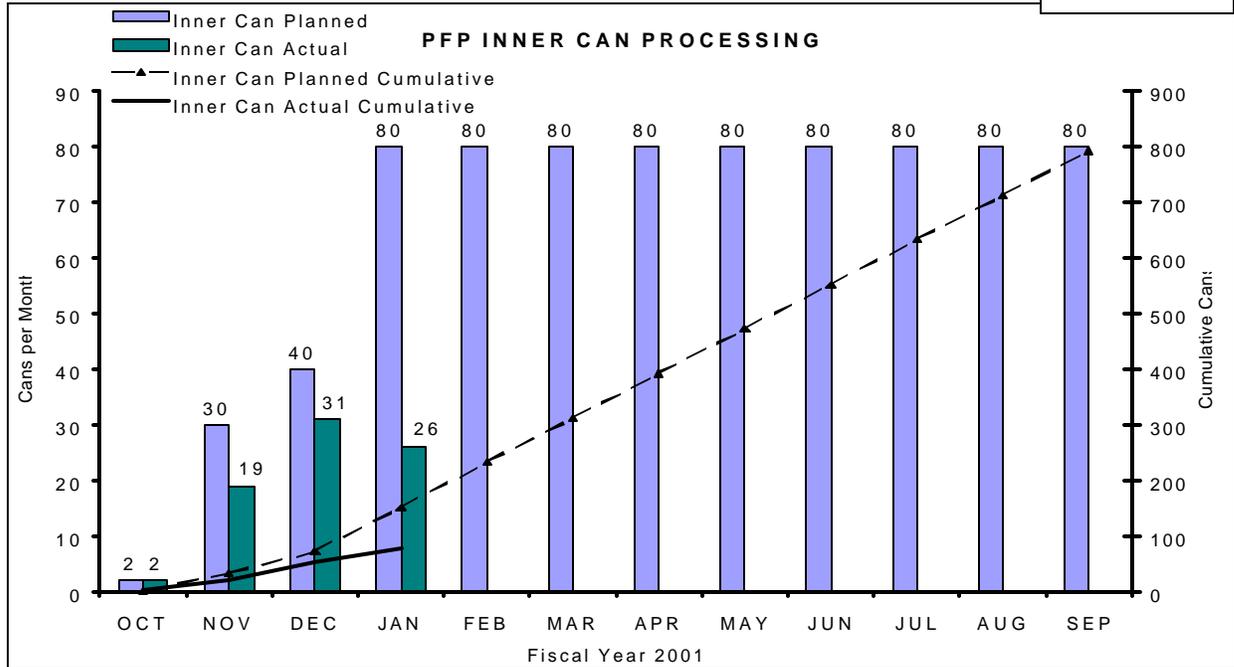
Yellow



Significantly behind schedule for anticipated target date, however the April Tri-Party Agreement Milestone (M-083-07) will be met.

## Inner Can Processing

Yellow



Metal and corrosion products items are scheduled to be brushed and packaged in inner Bagless Transfer System containers by March 31, 2001 and April 30, 2001 respectively. All material will be packaged in outer 3013 containers by August 1, 2001.

## FY 2001 SCHEDULE / COST PERFORMANCE – ALL FUND TYPES CUMULATIVE TO DATE STATUS – (\$000)

Yellow

By PBS	FYTD								PEM	EAC
	BCWS	BCWP	ACWP	SV	%	CV	%			
WBS 1.4.5 PFP										
PBS TP05 Deactivation	\$ 26,222	\$ 22,111	\$ 23,504	\$ (4,110)	-16%	\$ (1,392)	-6%	\$ 106,644	\$ 106,644	
<b>Total</b>	<b>\$ 26,222</b>	<b>\$ 22,111</b>	<b>\$ 23,504</b>	<b>\$ (4,110)</b>	<b>-16%</b>	<b>\$ (1,392)</b>	<b>-6%</b>	<b>\$ 106,644</b>	<b>\$ 106,644</b>	

## FY TO DATE SCHEDULE / COST PERFORMANCE

The \$4.1M (16% percent) unfavorable schedule variance is primarily due to Project W-460 procurement delays, resolution of Residue Packaging and Solutions Stabilization operational issues, and resource limitations required to support planned special projects. (See detailed variance narratives)  
Excluding RL holdbacks for steam, laundry and internal work orders, the resultant \$0.2 million (1 percent) unfavorable cost variance is within the established reporting threshold guidelines.

Cost variance thresholds: Unfavorable cost variances greater than 5 percent, favorable cost variance greater than 10 percent. Schedule variance thresholds: Unfavorable schedule variances greater than 7.5 percent, favorable schedule variance greater than 10 percent.

## Schedule Variance Analysis: (-\$4.1M)

### Maintain Safe & Secure SNM (-\$78K) — 1.4.5.1.10

**Description and Cause:** The unfavorable variance is primarily attributable to a later than planned start of the Remote Material Surveillance System upgrade. (See "Opportunities For Improvement" section for additional information)

**Impact:** No impact at this time. Despite the delayed start, this project is expected to be completed as scheduled.

**Corrective Action:** None required.

### Maintain Safe & Compliant PFP (-\$443K) — 1.4.5.1.11

**Description and Cause:** The unfavorable schedule variance is due to a shortage of staff delaying the start of planned supply fan, 2736-ZB air conditioning, and continuous air monitor (CAM) upgrades.

**Impact:** No impact at the present time. Despite the delayed start, these projects are expected to be completed as scheduled.

**Corrective Action:** Efforts are underway to expedite the staff increase necessary to support the planned special project workscope.

### Stabilization of Nuclear Material (-\$900K) — 1.4.5.1.13

**Description and Cause:** Operational issues in the Residues Packaging project, now resolved, are primarily driving the unfavorable schedule variance. These included contamination problems during seal out activities, requalification of the Segmented Gamma Assay System, installation of a containment tent, and partial delivery of Pipe Overpack Containers (POCs).

Also contributing to this variance is the Solutions Stabilization Project that is processing material slightly behind the baseline schedule due to generation of higher than planned quantities of precipitate. Additionally, operation of the prototype vertical denitration calciner (PVDC) is scheduled but not currently supported. This system will be dismantled and the plutonium holdup will be retrieved and properly dispositioned this fiscal year.

**Impact:** Although the Residues Packaging is significantly behind schedule for the original December 2000 target date, the April 30, 2001 Tri-Party Agreement Milestone (M-083-07) commitment will be met. The DNFSB milestone (TRP-01-500) to complete solutions stabilization by December 31, 2001, is forecast to be 3 months behind schedule.

**Corrective Action:** Staffing to support second shift Residues Packaging Project operations has been implemented. Additional process improvements including increased lag storage, revision to the Operational Safety Requirement to allow increased inventory, and installation of upgraded hardware (two boat hot plate systems) are expected to increase the solutions stabilization processing throughput. Baseline Change Request (BCR) FSP-2001-014 is in process to extend the completion of the Solutions Stabilization Project.

### Disposition of Nuclear Material (-\$2,679K) — 1.4.5.1.14

**Description and Cause:** The unfavorable schedule variance is primarily due to delays in receiving Project W-460 equipment and material procurements and late approval of the Fire Hazards Analysis that has impacted 2736-ZB Bagless Transfer System construction. Shipments of packaged Rocky Flats ash to the Central Waste Complex are also behind schedule.

**Impact:** No impact is currently forecast for Project W-460 or completion of Rocky Flats residue packaging. Recovery actions have been developed and implemented that are expected to recover the current unfavorable schedule variance.

**Corrective Action:** A recent value engineering study concluded significant Project W-460 efficiencies could be realized by competitively bidding all remaining construction work. The new construction contractor is expected to be onboard in early February. Residue packaging second shift operations has been implemented and expedited transfer of Rocky Flats ash to the Central Waste Complex is underway.

## Cost Variance Analysis: (-\$1.4M)

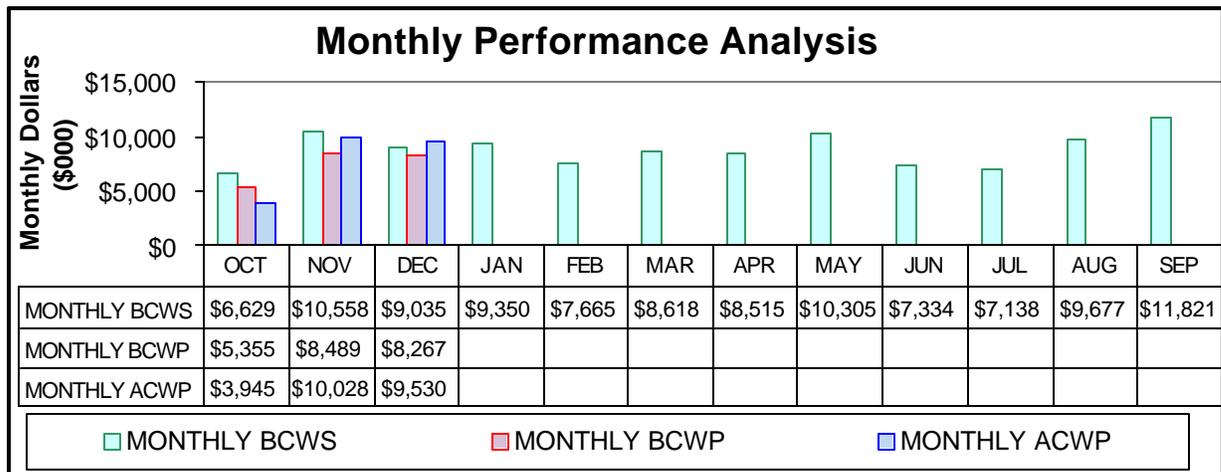
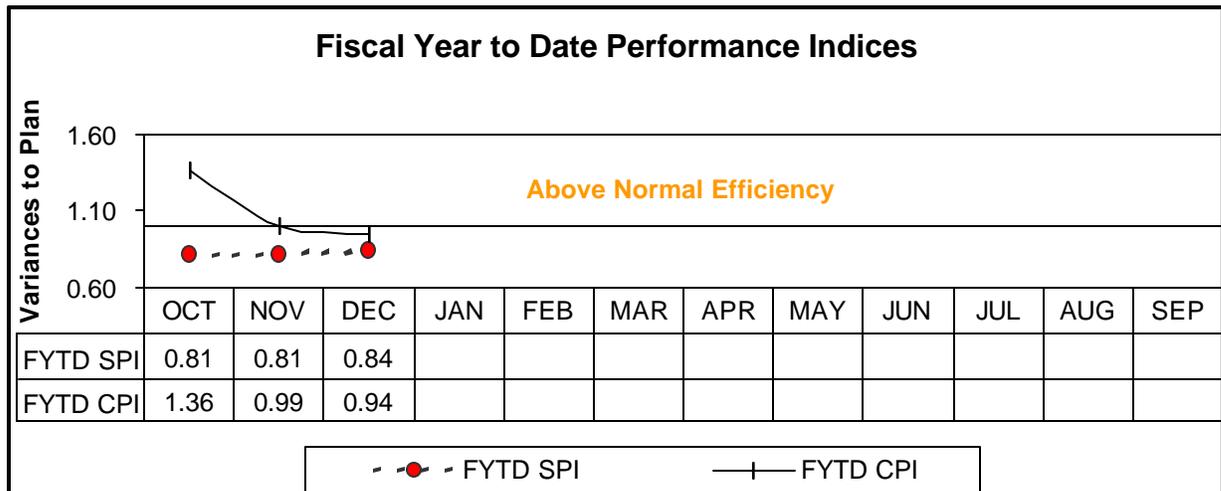
### PFP Deactivation — 1.4.5/TP05

**Description and Cause:** Although the Project is within the authorized baseline reporting threshold, the Project W-460 unfavorable variance (-\$1.1M) is noteworthy. This variance is primarily attributable to less than planned construction progress due to an aggressive project ramp-up and delays in approval of the Fire Hazards Analysis.

**Impact:** No impact projected.

**Corrective Action:** A new subcontractor has been identified and is expected to be on board in early February. The positive cost variances in the remaining WBS elements have been identified as savings from delay in staffing rampup. A Baseline Change Request has been submitted to the Fluor Hanford Change Control Board for approval to document these savings as part of the overall FH savings goal of \$30M.

## SCHEDULE / COST PERFORMANCE (MONTHLY AND FYTD)



## FUNDS MANAGEMENT FUNDS VS SPENDING FORECAST (\$000) FY 2001 TO DATE

	Project Completion *			Post 2006 *			Line Items *		
	Funds	FYSF	Variance	Funds	FYSF	Variance	Funds	FYSF	Variance
The Plateau									
1.4.5 Nuclear Materials Stabilization									
TP05 Operating	\$ 91,466	\$ 91,624	\$ (158)				\$ 13,484	\$ 13,284	\$ 200
Line Item									
<b>Total Nuclear Mat. Stab. Operating</b>	<b>\$ 91,466</b>	<b>\$ 91,624</b>	<b>\$ (158)</b>						
<b>Total Nuclear Mat. Stab. Line Item</b>							<b>\$ 13,484</b>	<b>\$ 13,284</b>	<b>\$ 200</b>

\* Control Point

## ISSUES

### Technical Issues

**Issue:** The quantity of boats per liter of solution from the precipitation process is higher than expected or forecasted in the baseline estimates and schedules.

**Impacts:** Extends project completion date beyond the Defense Nuclear Facilities Safety Board 94-1/2000-1 commitment.

**Corrective Action:** Processing estimates and production schedules have been revised based on results of the characterization processing task. One two-boat hot plate has been installed and the operational testing of the second two-boat hot plate began in mid-January. Preliminary results are favorable. Additional lag storage and increased glovebox inventory items are in work. Baseline Change Request FSP-2001-014 (extending the completion date to March 31, 2002) was submitted to RL for approval.

**Issue:** The rate of throughput for polycube processing was determined to be less than planned during the latest Integrated Project Management Plan (IPMP) update.

**Impacts:** The processing method change will provide a recovery of the schedule delay. However, the completion of polycube stabilization may still be impacted up to two months because of the increased amount of precipitate to be stabilized, limiting furnace availability.

**Corrective Action:** The change to the processing method has been implemented which will accommodate the original rate of throughput and will permit significant schedule recovery, but a late completion is still forecast. *(No further status to be provided)*

**Issue:** Portions of the oxides to be processed contain fairly high levels of chloride.

**Impacts:** Completion of oxide stabilization could be delayed.

**Corrective Action:** A meeting was held with PNNL to select the characterization and material pretreatment methods to remove chlorides prior to processing. A report from PNNL is expected by the end of January.

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

**Issue:** Nothing to report.

**Impacts:** None at this time.

**Corrective Action:** None at this time.

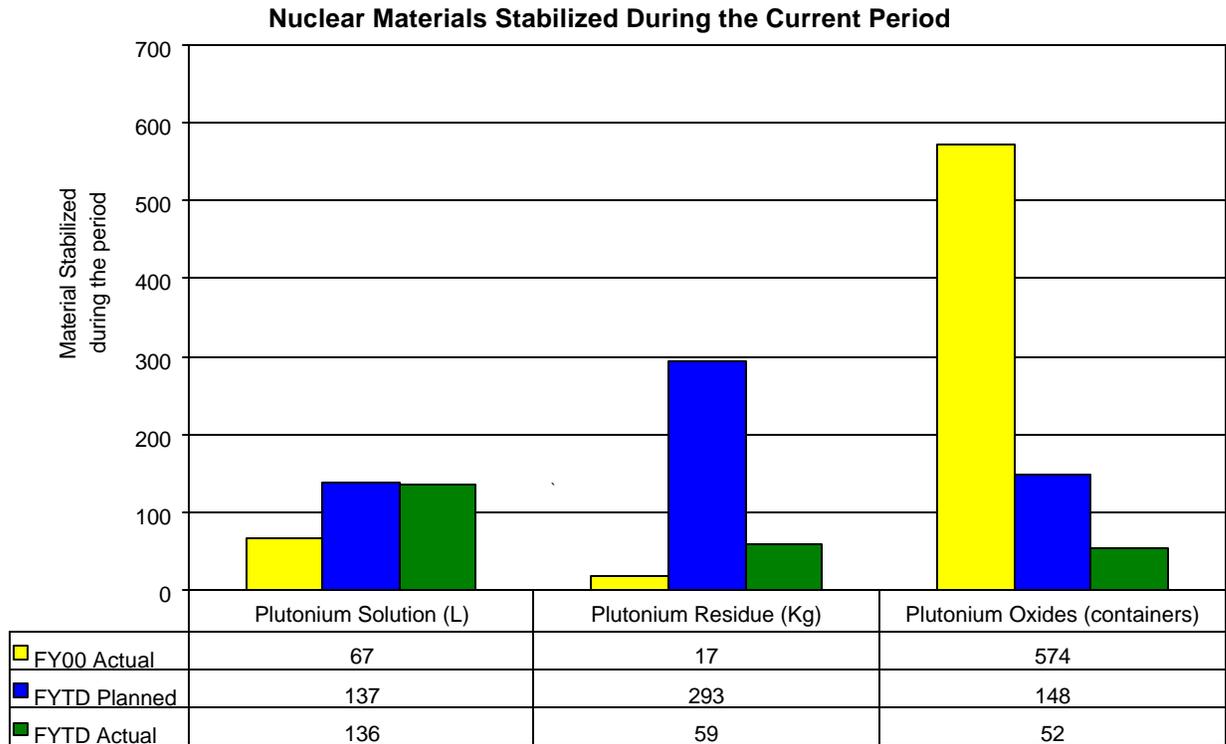
## BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS (\$000)

PROJECT CHANGE NUMBER	DATE ORIGINAL	BASELINE CHANGE REQUEST TITLE	FY 01 COST IMPACT (\$000s)	S C H	T E C H	DATE TO FHI CCB	CCB APR'VD	RL APR'VD
FH-2001-001	12-Sep-00	Base Operations Reduction	<\$6790>	X	X	25-Oct-00	25-Oct-00	28-Dec-00
FH-2001-002	25-Sep-00	FY 01 Fee Reduction to 90%	<\$600>			25-Oct-00	25-Oct-00	28-Dec-00
FH-2001-003	25-Sep-00	Addition of High Priority Workscope	\$9,707	X	X	25-Oct-00	25-Oct-00	28-Dec-00
FSP-2001-014	29-Nov-00	Extend Solutions Campaign	<\$407>	X	X	11-Dec-00	18-Dec-00	In Process
FSP-2001-020	18-Dec-00	MYWP Phase I Adjustments	\$554	X	X	23-Jan-01	24-Jan-01	N/A
FSP-2001-021	13-Dec-00	Additional Cost Savings	<\$1672>			29-Dec-00	9-Jan-01	In Process
FSP-2000-022	19-Dec-00	Parking Lot Enhancements	\$150	X	X	29-Dec-00	9-Jan-01	N/A
FSP-2001-024	29-Dec-00	Rebaseline Alloy Stabilization	TBD	X	X			
FSP-2001-030	18-Jan-01	Transfer Rocky Flats GFE to PFP	\$0	X		Approved by Geo. Jackson on 1/23/2001		

### KEY INTEGRATION ACTIVITIES

- Reliability testing of the 2736-ZB Outer Can Welder (OCW) will be completed in mid February at the Westinghouse Savannah River Company. This testing will demonstrate the reliability of the OCW to consistently produce 3013 containers. In parallel the NMSP will develop procedures and conduct training. This approach optimizes resource availability and is expected to support the required delivery date.
- Coordinating with Lawrence Livermore National Laboratory (LLNL) to ship oxide material to their facility this spring at no cost to the NMS Project.
- Delivery of the 2736-ZB Bagless Transfer System (BTS) and Outer Can Welder (OCW) is scheduled for February and March 2001, respectively.

## NUCLEAR MATERIALS STABILIZED DURING THE CURRENT PERIOD



**Plutonium Solution:** On schedule.

**Plutonium Residue:** Technical and operational issues, now completed, impacted production during the first quarter of FY 2001. A recovery plan has been implemented and is expected to recover the schedule loss.

**Plutonium Oxides:** Higher than planned spontaneous oxidation rates and late delivery of the Outer Can Welder (OCW) has impacted stabilization. Delivery of the OCW is expected in early March with startup operation scheduled in April.