



# **Section C:1**

## ***Nuclear Material Stabilization***

### **PROJECT MANAGERS**

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## SUMMARY

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

NOTE: The Safety, Conduct of Operations, milestone table and Cost/Schedule data contained herein is as of August 31, 2001. Other information is updated as noted through September 26, 2001.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that three milestones (42 percent) were completed on or ahead of schedule, three milestones (42 percent) were completed late, and one milestone (16 percent) is overdue. Further details can be found in the milestone exception report following the cost and schedule variance analysis.

## NOTABLE ACCOMPLISHMENTS

### Maintain Safe & Secure SNM

RL authorized resumption of operations in the afternoon of September 12, 2001 following the Hanford Site Evacuation the preceding day due to the terrorist attacks on the east coast. The annual inventory of Material Balance Areas (MBA) 218, 250, and 251 was completed and reconciled. For the ninety-sixth consecutive month (eight years) the monthly IAEA adhoc inspection was completed without any findings or observations. A shipment of VACCOS Seals was received from Austria in preparation for the October annual IAEA Inventory. The Remote Controlled Video Inspection system that will perform video inspections and inventories in radiation areas has been delivered and is being tested. As a result, radiation dose to personnel will be significantly reduced

### Maintain Safe and Compliant PFP

The Washington Department of Health approved the conditions and limitations letter for W-460, Rev 2. RL has approved the oxalate/direct discard Supplement Analysis. The non-radiation New Source Review (NSR) for Direct Discard of Low Pu Solutions was prepared and issued. A revised Tri Party Agreement Change Request, white paper, and regulatory compliance matrix for direct discard treatment and storage interim status was provided to Ecology along with Room 235-D description, Sampling and Analysis Plan, and Critical Mass Laboratory solution waste pre-designation. A desk instruction for maintenance of regulatory files, internal review of the annual permitting status report, HNF-RD-8703, ("Air Quality – Radioactive Emissions") and numerous Automated Job Hazard Analyses and other documents were also completed. . The update to the Integrated Project Management Plan (IPMP) was issued September 5, 2001. This IPMP sets forth the plans, organization and control systems for managing the Nuclear Material Stabilization Project (NMSP), and includes top-level scope, cost and schedule information.

### Stabilization of Nuclear Material

**Residues**  $\frac{3}{4}$  Hanford ash was packaged into 27 Pipe Overpack Containers (POCs) (27,955 grams bulk) during August. The upgrades for the first calorimeter obtained from Rocky Flats were completed.

**Oxides/Metals**  $\frac{3}{4}$  The repackaging of the remaining plutonium (Pu) metals inventory into 3013 outer cans was completed September 26, 2001. A new lighter weight Bagless Transfer Convenience Can (BTCC) solid temporary lid was put into use. The modification reduces the potential for BTCCs to tip over and the incorporated T handle aids in handling during glove box operations. All post-start actions related to the startup of packaging of oxides into welded bagless transfer cans were completed. Work was initiated by PNNL on the design, fabrication and testing of the high chloride oxide processing scheme. Procurements were placed and fabrication begun. Fabrication of the quench vessel is complete and piping is underway.

**Polycubes**  $\frac{3}{4}$  Concerns from Confederated Tribes of the Umatilla Indian Reservation (CTUIR) technical representative, Dr. John Cox, regarding the Notice of Construction (NOC) for Polycubes were resolved.

**Solutions**  $\frac{3}{4}$  A total of thirty-eight (38) liters of solution were processed through the magnesium hydroxide  $[Mg(OH)_2]$  hot plates during August, bringing the FYTD total to 631 liters. Feed type for the month continued to be product nitrate.

- **Oxalate Precipitation**  $\frac{3}{4}$  The change to the oxalate precipitation process was successfully implemented on August 22, 2001.
- **Direct Discard**  $\frac{3}{4}$  The notification letter for the Direct Discard process was transmitted from DOE-HQ to the Defense Nuclear Facility Safety Board (DNFSB) on September 19, 2000. This will allow authorization to proceed with the Direct Discard process. Startup of Direct Discard process is expected Thursday, September 27, 2001.

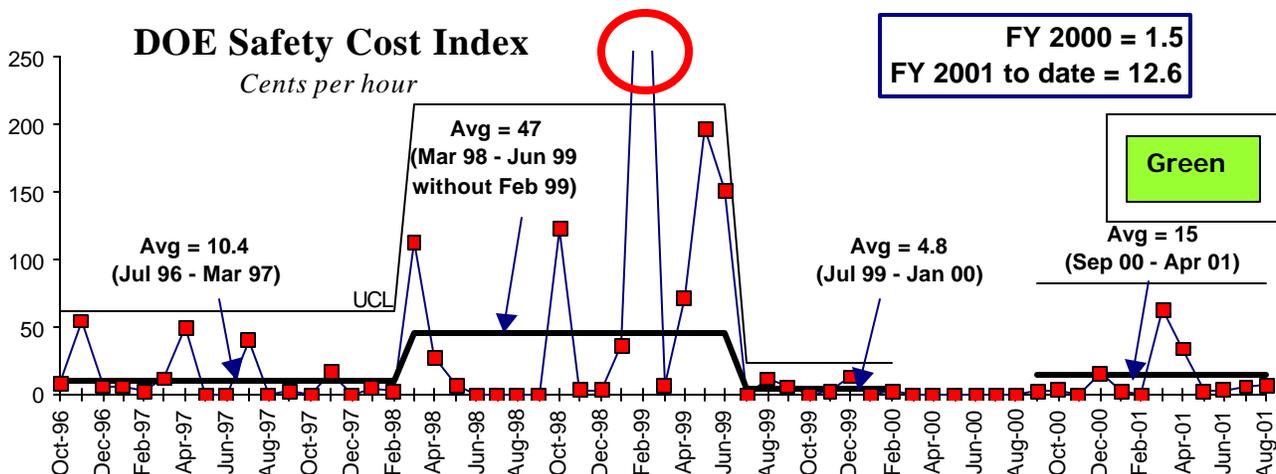
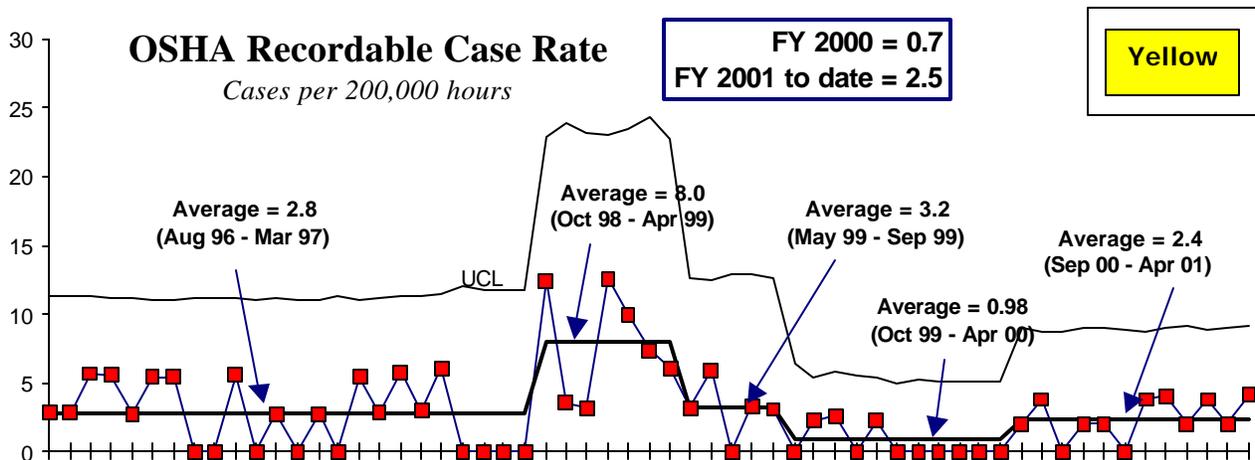
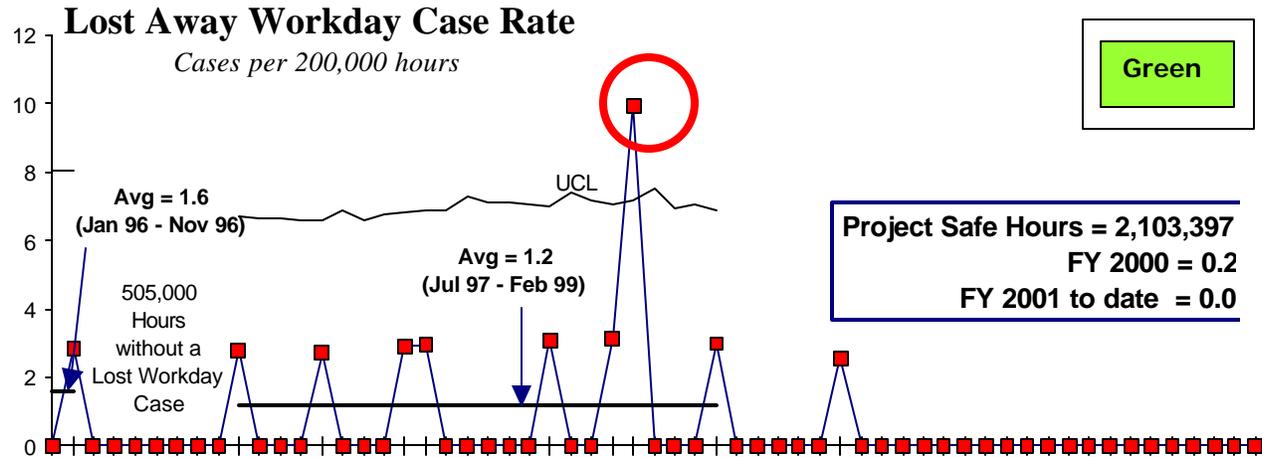
## Disposition of Nuclear Material

Startup of the Digital Radiography Unit used to perform baseline/periodic lid surveillances of 3013 containers was completed. The ACCESS database necessary to meet the electronic database requirements of DOE Order 1013 for Plutonium metal and Plutonium metal alloys has been completed and entry of data is progressing. No significant inconsistencies were discovered during a review of the program used to develop estimated self-heating wattage of containers containing Plutonium. An evaluation of the risks of storing non-3013 packaged material in the vault without the use of dry air atmosphere was completed.

**Alloys-** Stabilization and packaging of the oxide form of alloys will resume when a residual moisture measurement technology is available. Plans and schedules are being developed.

## SAFETY

Through August 31, 2001, there were 639 calendar days (exceeding 2.1 million staff hours) since the last recorded lost workday injury. A catered lunch for all PFP employees was held September 12, 2001 to commemorate this unprecedented achievement. There has however, been an increase in the OSHA recordable case rate. Management staff has increased its presence in the field during all shifts to address this recent trend.



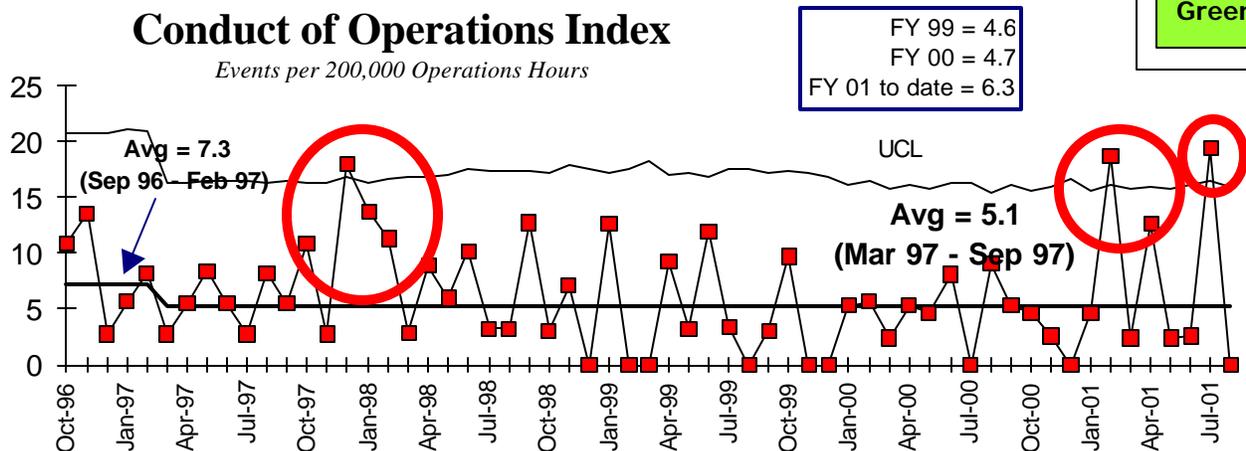
## ISMS STATUS

Preparations for the Voluntary Protection Plan "Star" status application are on going.

Green

## CONDUCT OF OPERATIONS

An all day production pause was held August 24, 2001 to reemphasize the Integrated Safety Management System (ISMS) theme in completing work safely.



Green

## BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

### Breakthroughs

- Alloys  $\frac{3}{4}$**  The Group 2 Pu/Al alloys environment document containing the Data Quality Objectives (DQO), Sample Analysis Plan (SAP) and Quality Assurance Plan (QAP) was completed and distributed for review. The document provides the technical discussion elimination for most of the sampling of the Group 2 alloys.

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- Dose Reduction  $\frac{3}{4}$**  The Residues team successfully implemented an extremity dose reduction during the Group 1 Pu/Al alloys repackaging. The unmitigated extremity estimate was 20,646 mrem; the actual was 920 mrem. The use of the leaded surgeons' gloves, pewter cans, extension tools and process improvements resulted in the dose reduction. The largest reduction contributor was the leaded surgeons' glove.

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- Solutions Stabilization  $\frac{3}{4}$**  Testing of a new, re-designed hot plate (prototype), to improve the reliability of the hot plate and drying of the precipitate was delayed due to failure of the hot plate during laboratory testing. Testing will resume upon receipt of a production unit from the hot plate supplier.

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- Process Improvement  $\frac{3}{4}$**  A mechanical furnace loading/unloading system that couples two stabilization furnaces will soon be available to stabilize plutonium. This "hot-box" will allow continuous operation of the muffle furnaces thereby nearly doubling throughput. Currently the material has to be cooled down for several hours before it can be inserted or retrieved by workers. Hot testing of the "hot-box" equipment designed and fabricated by PNNL was initiated August 13 and appeared to operate flawlessly.

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## Opportunities for Improvement

Nothing to report.

## UPCOMING ACTIVITIES

**Disposition of Nuclear Material** – Complete Project W-460 construction activities by October 1, 2001.  
Complete hot startup of the 2736-ZB Stabilization and Packaging System (W-460) by November 12, 2001.

## MILESTONE ACHIEVEMENT

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	1	0	0	0	0	0	0	1
DOE-HQ	0	0	1	1	0	0	0	2
RL	2	0	2	0	0	0	0	4
<b>Total Project</b>	<b>3</b>	<b>0</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>7</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			
<b>M-083-07 (TRP-01-515)</b>	<b>“Complete Repackaging &amp; Shipping of Rocky Flats Ash to the CWC”</b>	<b>Due April 30, 2001</b> – Completed on April 3, 2001.	
<b>M-083-08 (TRP-01-516)</b>	<b>“Complete Requirements to Ship Rocky Flats Ash to WIPP”</b>	A change package has been approved that reschedules FH and RL negotiations with the regulators to begin November 2001. Efforts are underway to relocate this milestone with Waste Management.	

DNFSB Commitments			
M-IP-114 (TRP-01-501) R94-01	"Ship Alloys to SRS or Complete Stabilization of Alloys"	<b>Due June 30, 2001</b> – Packaging of metal alloys into 3013 containers was completed July 13, 2001. Additionally, all metal items were similarly packaged by month end. Pipe-n-go packaging of residue alloys was previously completed during June 2001. However, completion of this activity is currently on hold pending a new moisture measurement method.	
M-IP-110 (TRP-02-500)	"Complete Packaging of Metal Inventory"	<b>Due August 31, 2001</b> – The repackaging of the remaining plutonium (Pu) metals inventory into 3013 outer cans was completed September 26, 2001.	
M-IP-106 (TRP-01-500) (R94-01)	"Complete Stabilization & Packaging Plutonium Solutions"	<b>Due December 31, 2001</b> – Baseline Change Request FSP-2001-064 was approved that extends completion of this workscope from December 31, 2001 to July 31, 2002. The DOE-HQ DNFSB Recommendation 2000-1 Implementation Plan (IP) has now been revised to reflect the July completion. A BCR will be issued to formally change this DOE-HQ milestone date from December 2001 to July 2002.	

## MILESTONE EXCEPTION REPORT

### Overdue – 1

<u>Number/WBS</u>	<u>Level</u>	<u>Milestone Title</u>	<u>Baseline Date</u>	<u>Forecast Date</u>
TRP-01-501 1.4.5	HQ	Ship Alloys to SRS or Complete Stabilization of Alloys	06/30/2001	TBD

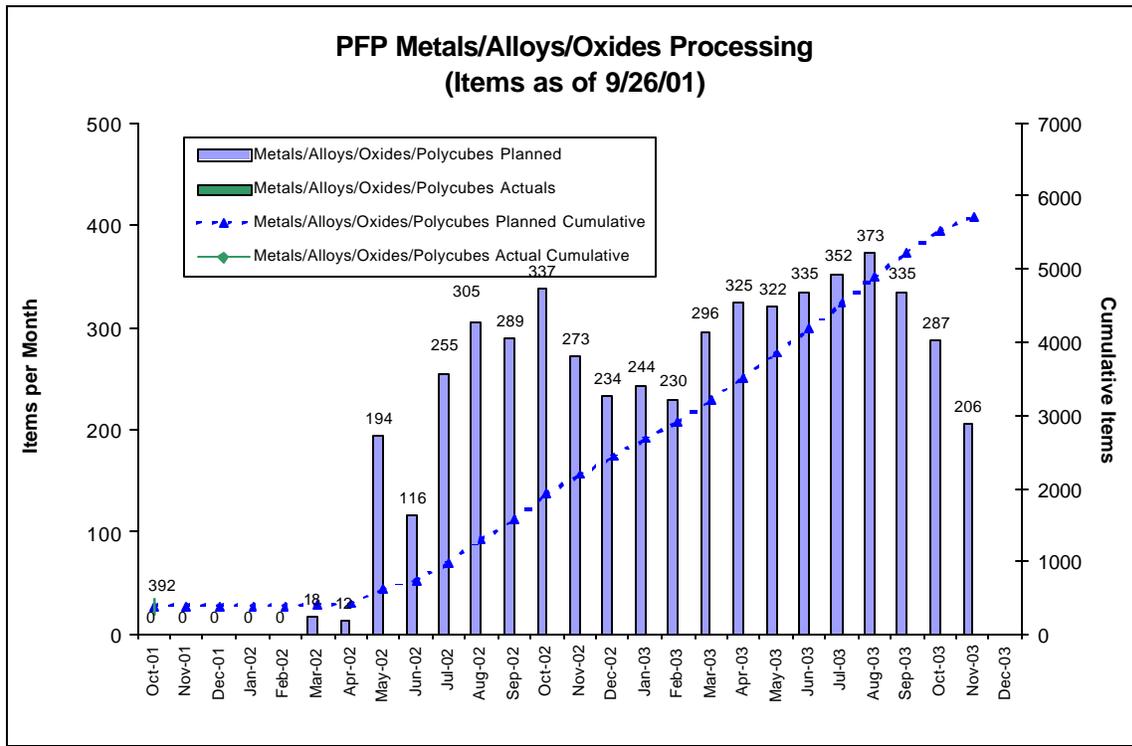
**Cause:** Completion of this activity is on hold pending a new moisture measurement method.  
**Impact:** Currently being evaluated. A lack of an approved moisture measurement system could be significant.  
**Corrective Action:** FH, RL, and other sites throughout the DOE complex are currently investigating alternate moisture measurement technologies.

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

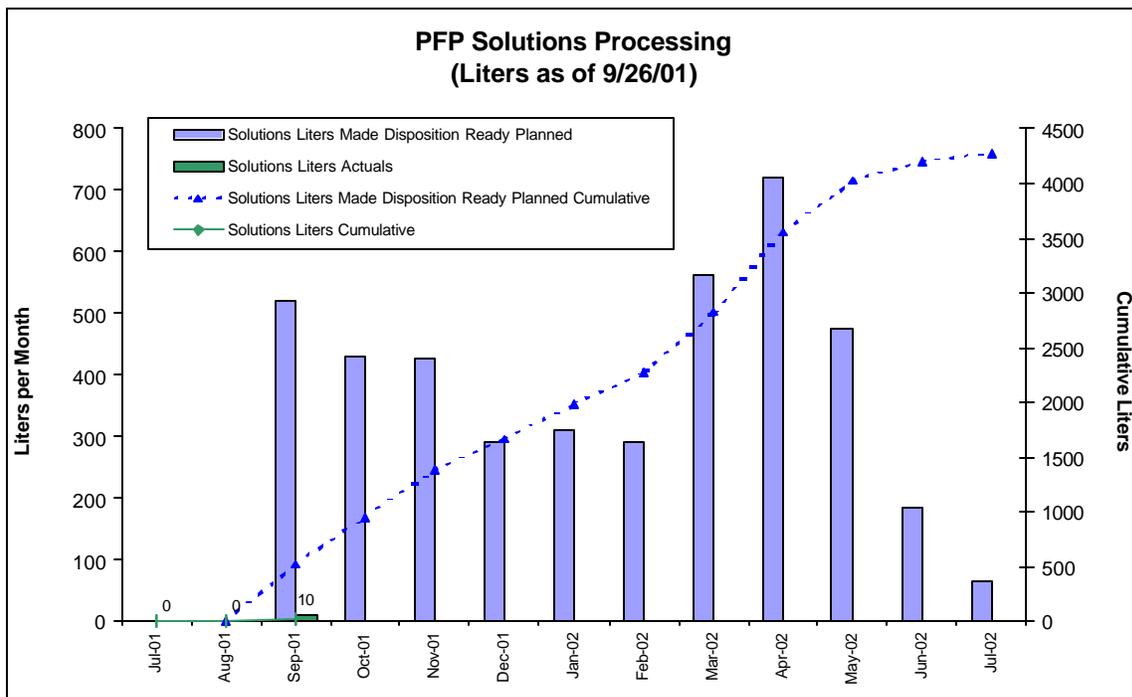
Number	Milestone Title	Status
	Nothing to report at this time.	

## PERFORMANCE OBJECTIVES

### OXIDES/METALS/POLYCUBES STABILIZATION

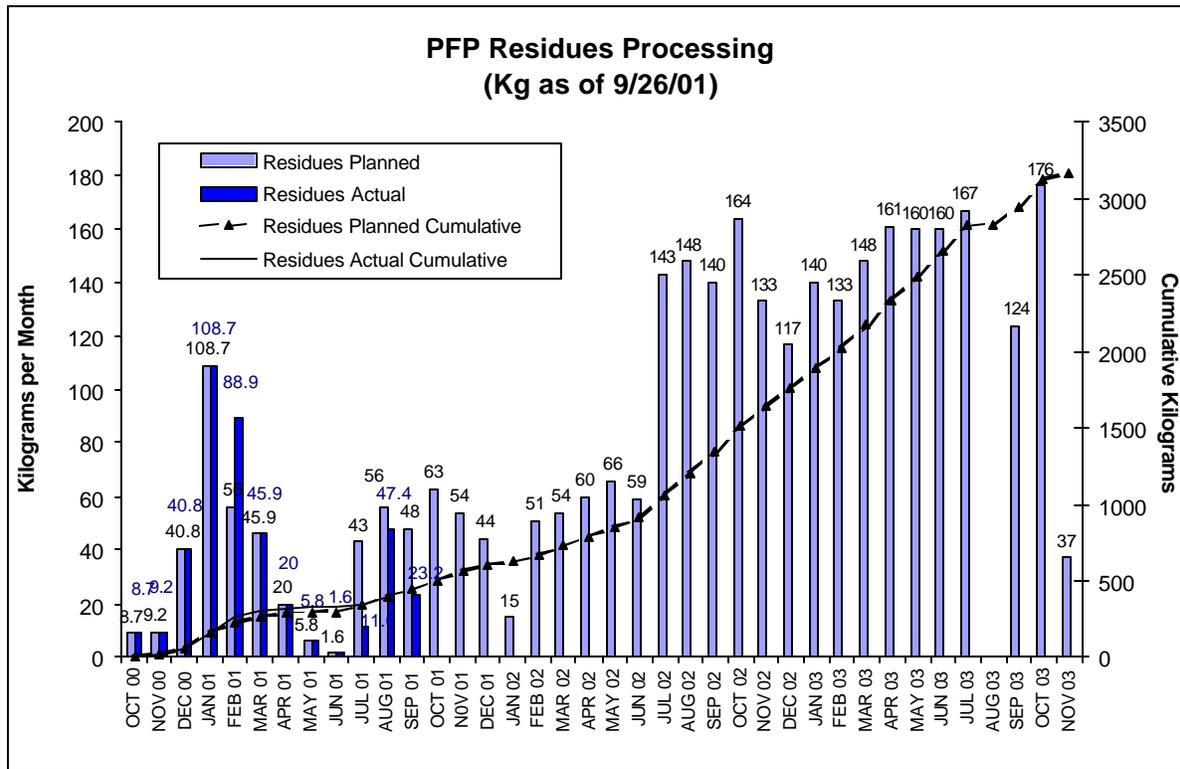


### SOLUTIONS STABILIZATION



BCR FSP-2001-064 was approved, extending completion of this workscope from December 31, 2001, to July 31, 2002. A letter was sent to RL requesting the milestone in the Implementation Plan be changed.

## RESIDUE STABILIZATION



Repackaging of Hanford ash is currently one month behind the baseline schedule due to recent problems with the Segmented Gamma Scan Assay System.

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

By PBS	FYTD									
	BCWS	BCWP	ACWP	SV	%	CV	%	BAC	EAC	
WBS 1.4.5 PFP	\$ 100,842	\$ 95,033	\$ 98,128	\$ (5,809)	-6%	\$ (3,096)	-3%	\$ 113,464	\$ 116,639	
PBS TP05 Deactivation										
<b>Total</b>	<b>\$ 100,842</b>	<b>\$ 95,033</b>	<b>\$ 98,128</b>	<b>\$ (5,809)</b>	<b>-6%</b>	<b>\$ (3,096)</b>	<b>-3%</b>	<b>\$ 113,464</b>	<b>\$ 116,639</b>	

## FY TO DATE SCHEDULE / COST PERFORMANCE

The current schedule and cost variances continue to remain relatively stable.

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: (-\$5.8M)

#### Nuclear Materials Stabilization Project- 1.4.5/TP-05

**Description/Cause:** The current six percent unfavorable schedule variance is primarily attributable to the disqualification of the Supercritical Fluid Extraction (SFE) system as a measurement of residual moisture in stabilized oxide materials, continuing problems with the Segmented Gamma Scan Assay System (SGSAS) that has impacted residue processing, and the delayed shift to use of the five furnaces for thermal stabilization of product from the  $Mg(OH)_2$  process due to a lack of an approved moisture measurement method.

**Impact:** Expedient resolution of the SFE issue is necessary to preclude further impure oxide, solutions and alloys processing impact.

**Corrective Action:** Shift to an oxalate precipitation process using high plutonium purity feed during August 2001. This will enable LOI method for moisture measurement technology and permits thermal stabilization through the furnaces rather than wait for a replacement moisture measurement method. Also implementation of direct discard processing is expected to improve solutions stabilization processing. The schedule variance caused by the SGSAS problems is expected to be recovered with additional processing efficiencies and limited overtime.

### COST VARIANCE ANALYSIS: (-\$3.1M)

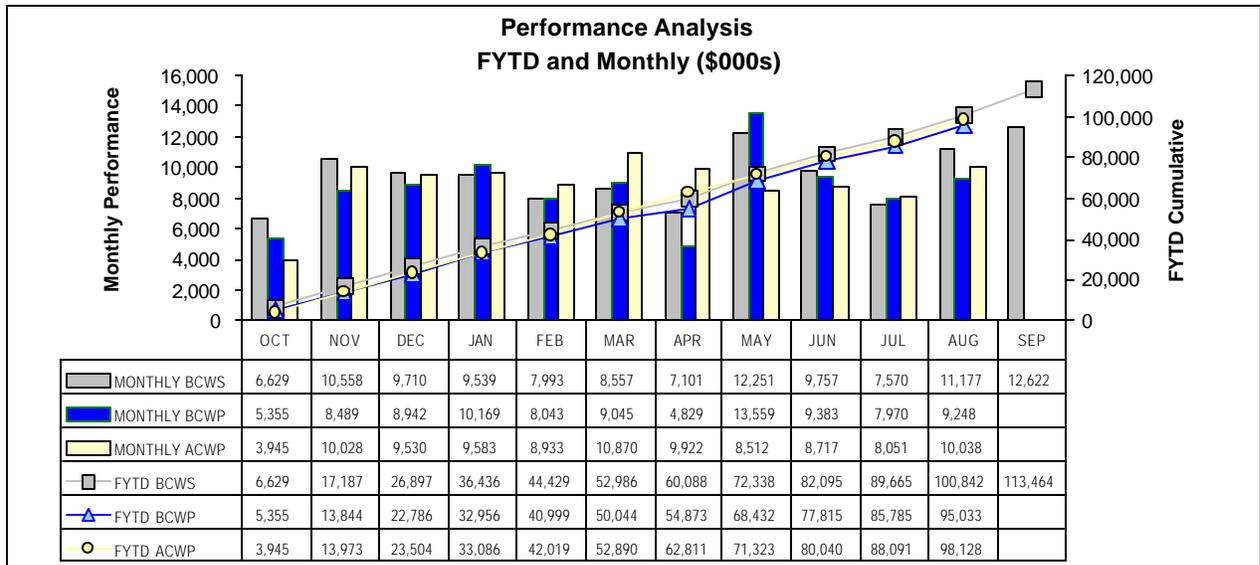
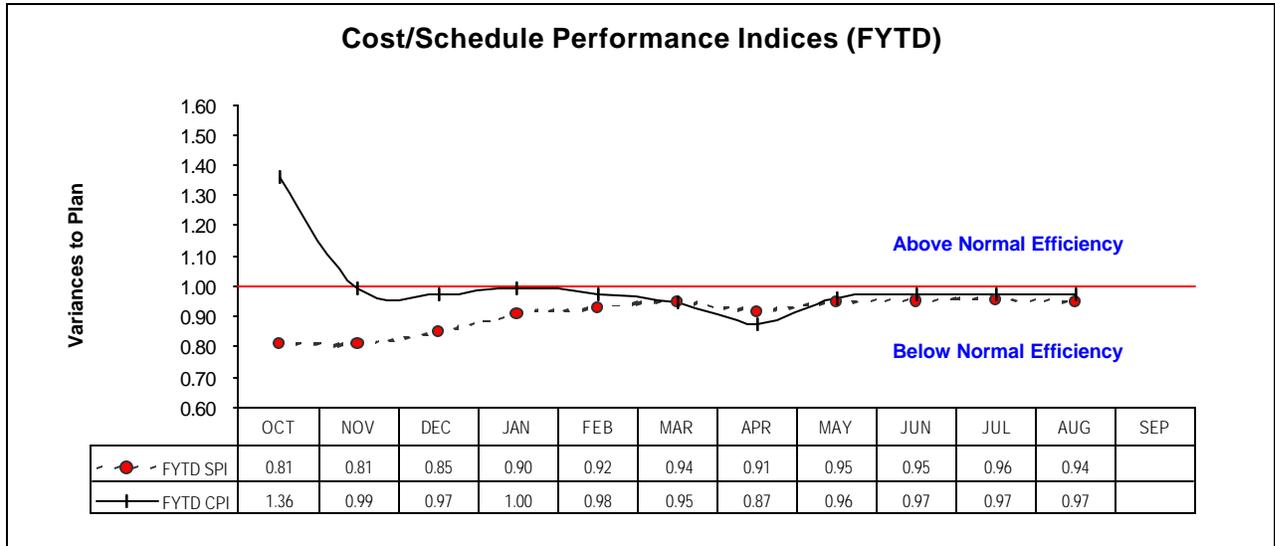
#### Nuclear Materials Stabilization Project- 1.4.5/TP-05

**Description/Cause:** The current three percent unfavorable cost variance is primarily attributable to late completion of Rocky Flats Ash processing, early operational difficulties with the reliability of the 234-5Z Bagless Transfer System (BTS) that extended metal stabilization and the recent RL disqualification of an approved residual moisture measurement method to support completion of the alloys stabilization campaign. Increased resource requirements to support the eighteen month acceleration of Project W-460 are also a contributing factor. Factors mitigating this unfavorable variance include less than planned costs for preparation of the safety analysis, environmental documentation and permitting in support of the polycube direct thermal stabilization plan.

**Impact:** Completion of alloys processing will be deferred to FY 2002 to allow identification and implementation of an alternative SFE technology for moisture measurement. The costs associated with late completion of Rocky Flats Ash are non-recoverable. Project W-460 is expected to complete within the established funding level. Work scope carry over to complete alloys processing is estimated at approximately \$350K.

**Corrective Action:** Repair and alignment of the 234-5Z BTS unit has demonstrated improved operational reliability. Cost control actions limiting overtime, subcontract costs and material purchases continue to show positive results. Funds management at the project level will be utilized to offset overruns at the lower levels of the WBS.

## SCHEDULE / COST PERFORMANCE (MONTHLY AND FYTD)





## BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS

BCR NUMBER	DATE ASSIGNED	BCR TITLE	FY 01 IMPACT	SCH	TECH	TO FH	FH APPROVAL	DOE-RL APPROVAL
FSP-2001-069	18-Jul-01	TGA Moisture Measurment	\$235	X	---	30-Jul-01	31-Jul-01	17-Aug-01
FSP-2001-070	16-Aug-01	SRS Acceptance Criteria	TBD	X	X	27-Sep-01		

## KEY INTEGRATION ACTIVITIES

- Fluor Hanford, Bechtel Hanford and the Department of Energy Richland Operations Office (DOE) are working together to resolve questions regarding the NMSP provided calculation of plutonium concentration in packaged waste from two Hanford facilities undergoing deactivation in the 200 West Area.
- PFP met with General Electric (GE) Vallecitos representatives on September 20, 2001 and finalized a plan for transporting a fuel pin to Hanford later this fall. This will assist GE Vallecitos with the final step in their nuclear material deinventory.
- PFP coordination with Lawrence Livermore National Laboratory (LLNL) to ship requested oxide material (81 kg) to that facility continues. Meetings between DOE, LLNL and PFP to finalize transportation, container, and shipping agreements have resulted in agreement to tentatively ship this material in June 2002.
- A change request has been approved that to relocate milestone TRP-01-516 with Waste Management. This DOE-HQ milestone provides for the completion of requirements to ship Rocky Flats Ash to the Waste Isolation Pilot Plant.