



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: The Safety, Conduct of Operations, milestone table and Cost/Schedule data contained herein is as of May 31, 2001. Other information is updated as noted through June 21, 2001.

Fiscal-year-to-date milestone performance (EA, DOE-HQ, and RL) shows that three milestones (75 percent) were completed on or ahead of schedule and one milestone (25 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

New twenty position storage racks were installed for 3013 containers in Vault 1, which will reduce production congestion from Outer Can Welder (OCW) and thermal stabilization operations. Engineering design is 99 percent complete for the new Proximity Card Readers and the new Surveillance Camera installations (part of the Remote Monitoring Surveillance System Upgrade) in 234-5Z. Equipment procurement has been completed and installation activities are underway.

Plutonium Facility Deactivation

The Plutonium Finishing Plant (PFP) Accelerated Closure Team issued the Phase II Report. Additionally, the Nuclear Materials Stabilization project breakthrough planning has been completed and seven breakthrough initiatives were selected for incorporation as appropriate into the rebaselining deliverable due to RL June 30, 2001. The incorporation of these initiatives has the potential to reduce the life cycle cost of the Nuclear Materials Stabilization (NMS) Project by tens of millions of dollars and facilitates accelerated completion of the stabilization and packaging mission as well as other selected elements of the facility deactivation and dismantling mission.

Maintain Safe and Compliant PFP

The Facility Evaluation Board (FEB) on-site assessment was completed June 11, 2001. A final report is expected to be issued the week of July 23, 2001.

Stabilization of Nuclear Material

Residues $\frac{3}{4}$ Repackaging of the 31 plutonium/aluminum (Pu/Al) Alloys Group 1 was initiated on June 11, 2001, and completed on June 19, 2001. Resumption of Hanford Ash processing is expected the week of July 16, 2001.

Oxides/Metals $\frac{3}{4}$ Sixty-one metal items were brushed and canned into a Bagless Transfer Container (BTC) during the month of May 2001. As of June 21, 2001 a total 316 items have been processed this fiscal year. The Authorization Basis for packaging oxides into bagless transfer cans and 3013 outer cans was approved by RL in conjunction with its approval of the Justification for Continued Operation (JCO) of the 2736-ZB facility. The JCO included additional Limiting Conditions for Operations related to fire protection and prevention in the facility. A total of forty-two (42) plutonium alloys are to be dispositioned under the metals/oxides category. Processing of eleven (11) alloys identified for packaging as metal into the Bagless

Transfer System (BTS) began June 12, 2001, and is now complete. An additional eleven (11) have been brushed and repackaged and eleven (11) others have been stabilized but await final moisture measurement.

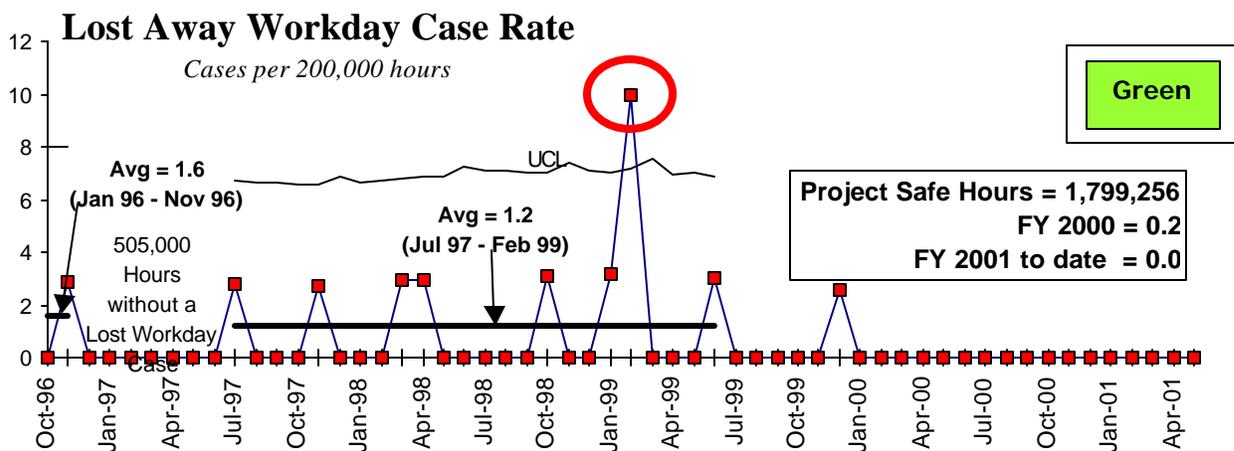
Solutions ¾ A total of 56 liters were processed through the magnesium hydroxide [Mg(OH)₂] process during the month of May. Approval by RL of the Facility Safety Analysis Report (FSAR) revision on May 24, 2001 contributed to the startup operation of the second, two-boat hot plate on June 19, 2001. There have been 32 liters processed as of June 21, 2001, bringing the Fiscal Year To Date (FYTD) total to 548 liters. Alternate disposition options continue to be evaluated.

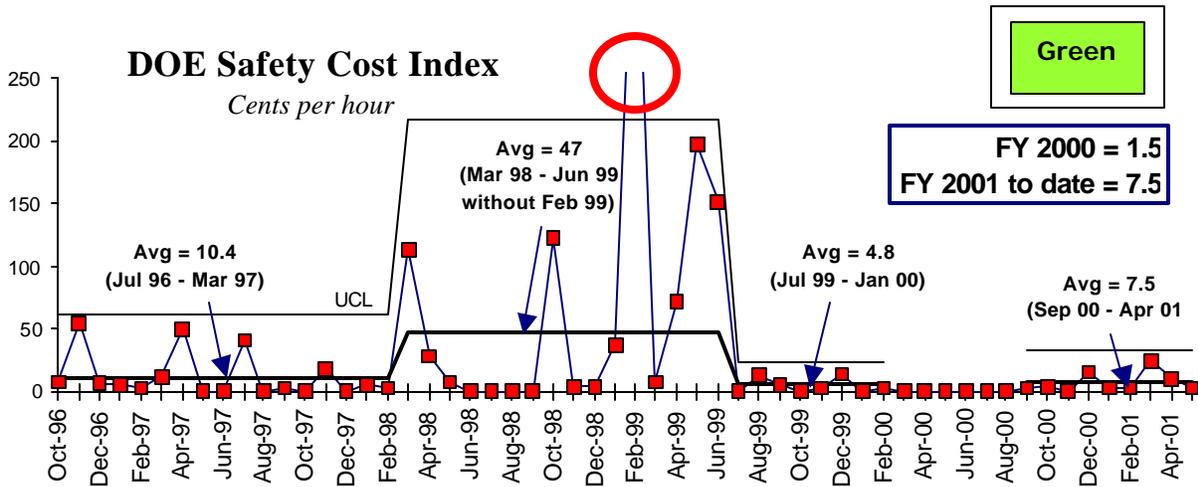
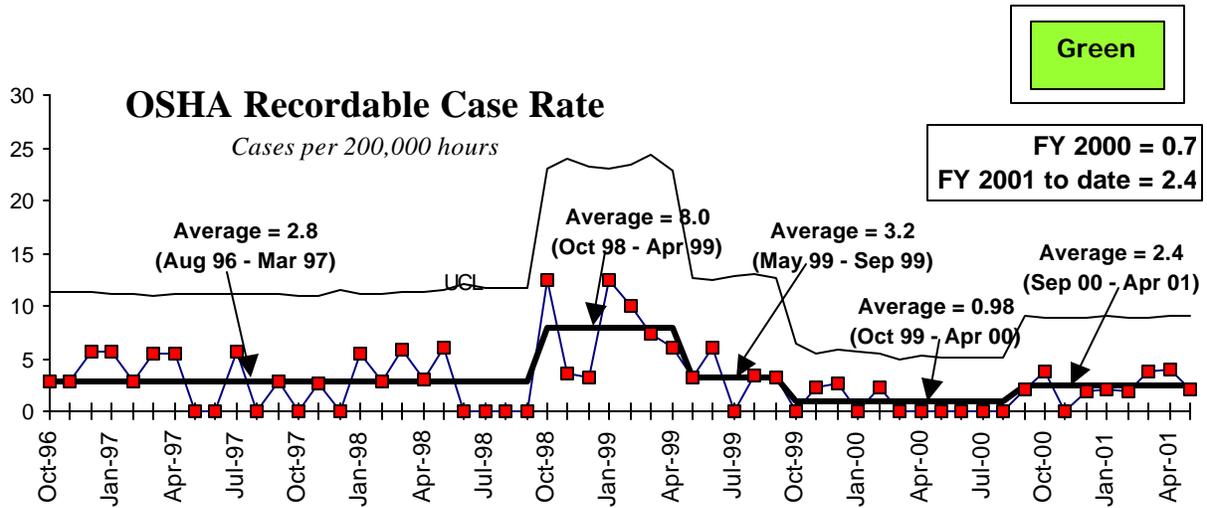
- **Oxalate Precipitation** ¾ The Notice of Correction (NOC) Application/Permit Revision was approved by RL and the Washington Department of Health (WDOH). Categorical Exclusion (CX) is pending approval at RL. Plutonium Process Support Laboratories (PPSL) one-quarter scale testing was completed. Good filterability and hot plate drying to a granular consistency were demonstrated during the test. The initial hazards analysis meeting was conducted on May 16, 2001, and a final report is currently in preparation. In addition, the planning for full-scale oxalate testing and startup review was initiated.
- **Direct Discard** ¾ A full time project manager and project team were assigned to manage the project. PPSL conducted testing on absorbents. Nondestructive Analysis (NDA) and real time radiography was conducted on drum mock-ups. The room location and design concept for the load-out station was finalized. The initial decision to proceed with the direct discard option will be made in June 2001.

Disposition of Nuclear Material ¾ Ninety-three DOE-STD-3013 containers were processed through the Outer Can Welder (OCW) during May 2001. As of June 13, 2001, a total of 146 containers have been processed since startup on April 10, 2001. The critical path to sustain outer can production will be vault modification. Installation of the first cubicle modification was completed May 24, 2001 and is now operational.

SAFETY

Through June 20, 2001, there were 567 calendar days (approximately 1.85 million staff hours) since the last recorded lost workday injury.





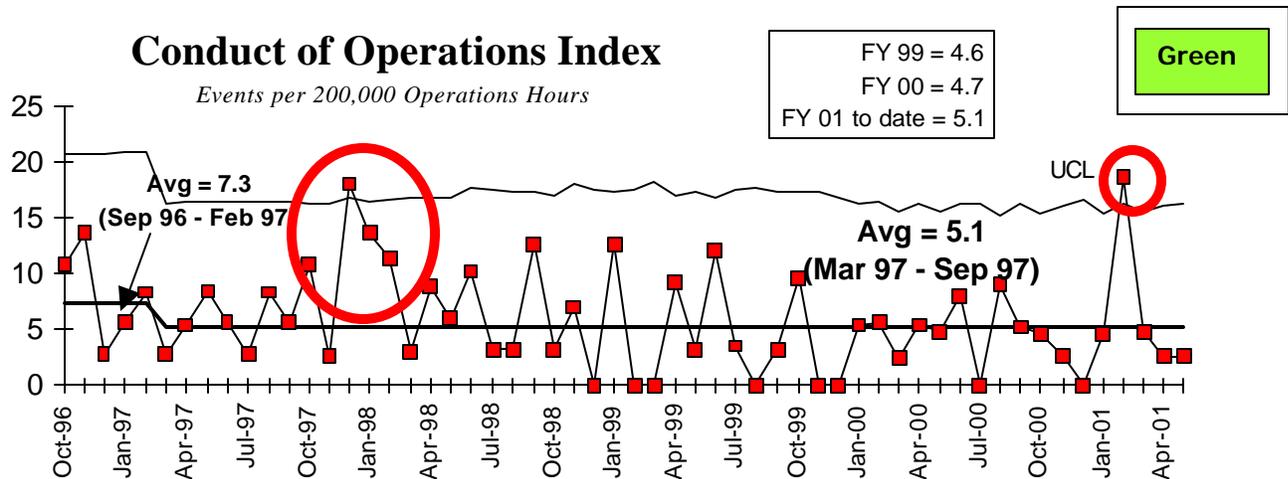
ISMS STATUS

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



CONDUCT OF OPERATIONS

Management staff has increased its presence in the field during all shifts to address the recent upward trend.



BREAKTHROUGHS / OPPORTUNITIES FOR IMPROVEMENT

Breakthroughs

- Project W-460** ¾ appropriation of additional funding may allow the project to be completed by September 30, 2001. Yellow
- International Atomic Energy Agency (IAEA)** ¾ Under the direction of the inventor, a new epithermal neutron multiplicity counter from Las Alamos National Laboratory (LANL) is undergoing extensive testing by the PFP and the International Atomic Energy Agency (IAEA) staff. If tests are successful, this counter may expedite neutron counting of 3013 containers. Negotiations continue with LANL regarding the duration of the test period. Yellow
- Residues** ¾ The documentation for the elimination of the requirement for the use of 85-gallon overpacks was issued. The elimination of the requirement reduces the shipment preparation time, eliminates the hazard of lifting the Pipe Overpack Containers (POCs) into and out of the overpacks, reduces dose by reducing shipment preparation time, and increases the number of POCs per shipment which in turn reduces the number of shipments and associated costs. A shipment of Hanford ash was made without the 85-gallon overpacks. *(No further status to be provided)* Green

Opportunities for Improvement

Solutions Stabilization ¾ Approval by RL of the FSAR revision on May 24, 2001 contributed to the June 19, 2001 startup operation of the second, two-boat hot plate. Thirty-two liters have been processed as of June 21, 2001. Alternate disposition options continue to be evaluated. *(No further status to be provided)* Green

UPCOMING ACTIVITIES

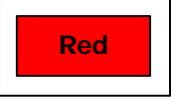
Disposition of Nuclear Material – Complete Project W-460 construction activities by August 31, 2001. Complete hot startup of the 2736-ZB Stabilization and Packaging System (W-460) by September 30, 2001.

Oxides/Metals – Complete stabilization and repackaging of Pu metals and oxides resulting from metals in 3013 outer cans by August 31, 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	1	0	2
DOE-HQ	0	0	0	0	0	1	1	2
RL	2	0	1	1	0	1	0	5
Total Project	3	0	1	1	0	3	1	9

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.

FY2001 Tri-Party Agreement / EA Milestones			
M-083-07 (TRP-01-515)	“Complete Repackaging & Shipping of Rocky Flats Ash to the CWC”	Due April 30, 2001 – Completed on March 29, 2001.	
M-083-08 (TRP-01-516)	“Complete Requirements to Ship Rocky Flats Ash to WIPP”	A change package has been approved that reschedules FH and DOE-RL negotiations for completion of this milestone to November, 2001.	
DNFSB Commitments			
M-IP-114 (TRP-01-501) R94-01	“Ship Alloys to SRS or Complete Stabilization of Alloys”	Due June 30, 2001 – BTS packaging of metallic alloys and pipe-n-go packaging of residue alloys were completed June 19, 2001. Alloy stabilization began June 11, 2001. Completion of this activity is on hold pending a new moisture measurement method. Group 3 alloys characterization and stabilization activities continue on schedule. 31 of 73 alloys still need to be thermally stabilized/repacked to DOE 3013 criteria to complete this milestone.	

M-IP-110 (TRP-02-500)	“Complete Packaging of Metal Inventory”	Due August 31, 2001 – On schedule. The Baseline Change Request (BCR) has been approved to modify the RL milestone completion date consistent with the DOE- HQ Implementation Plan date of August 31, 2001.	
M-IP-106 (TRP-01-500) (R94-01)	“Complete Stabilization & Packaging Plutonium Solutions”	Due December 31, 2001 – Several process improvements are underway including finalizing initial schedules for implementation of an oxalate precipitation process, direct disposition of a portion of the solutions, and installation of a second two-boat hot plate that will double the hot plate capacity for processing material through the magnesium hydroxide process.	

MILESTONE EXCEPTION REPORT

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

Overdue – 1

TRP-01-510	RL	Complete Annual IPMP Revision	05/31/2001	08/31/2001
------------	----	-------------------------------	------------	------------

1.4.5

Cause: Agreement between FH and DOE-RL allowed deferral of this milestone due to the June 30, 2001 Nuclear Material Stabilization Project (NMSP) rebaseline commitment.

Impact: None.

Corrective Action: None.

Forecast Late – 1

TRP-01-501	HQ	Ship Alloys to SRS or Complete Stabilization of Alloys	06/30/2001	TBD
------------	----	--	------------	-----

1.4.5

Cause: Completion of this activity is on hold pending a new moisture measurement method.

Impact: None.

Corrective Action: FH, DOE-RL, and other sites throughout the DOE complex are currently investigating alternate moisture measurement technologies.

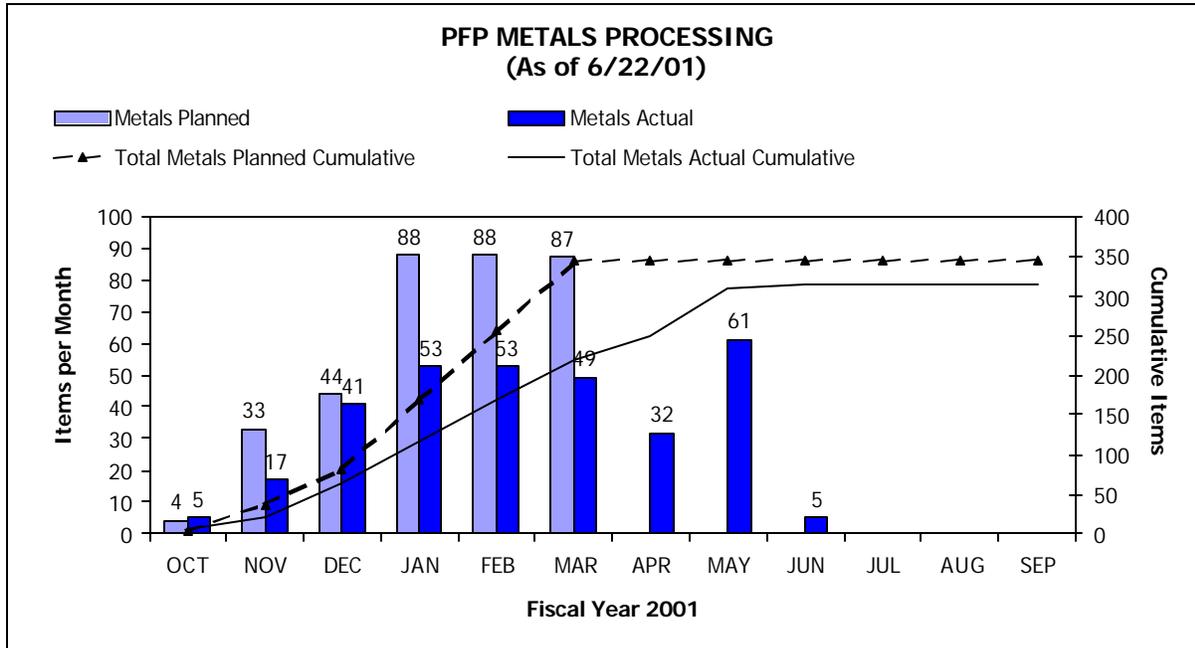
FY 2002 Tri-Party Agreement / EA Milestones

Number	Milestone Title	Status
	Nothing to report at this time.	

PERFORMANCE OBJECTIVES

OXIDES/METALS/POLYCUBES STABILIZATION

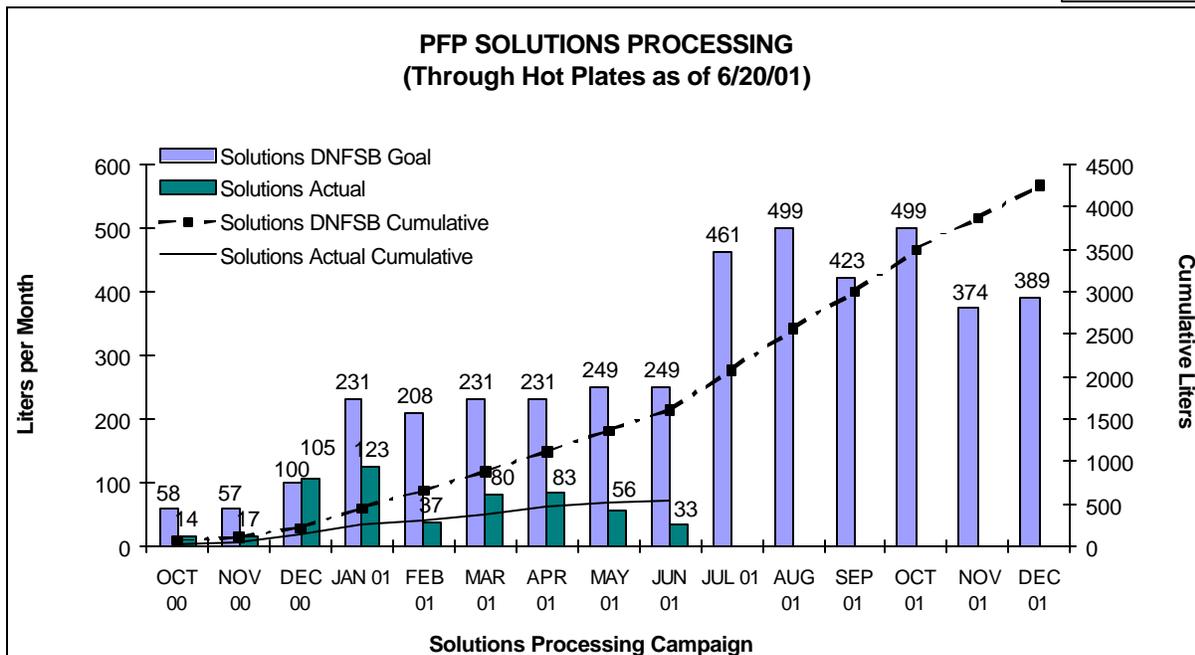
Green



Improved operational reliability of the Bagless Transfer System (BTS) during May, 2001 resulted in a monthly production record.

SOLUTIONS STABILIZATION

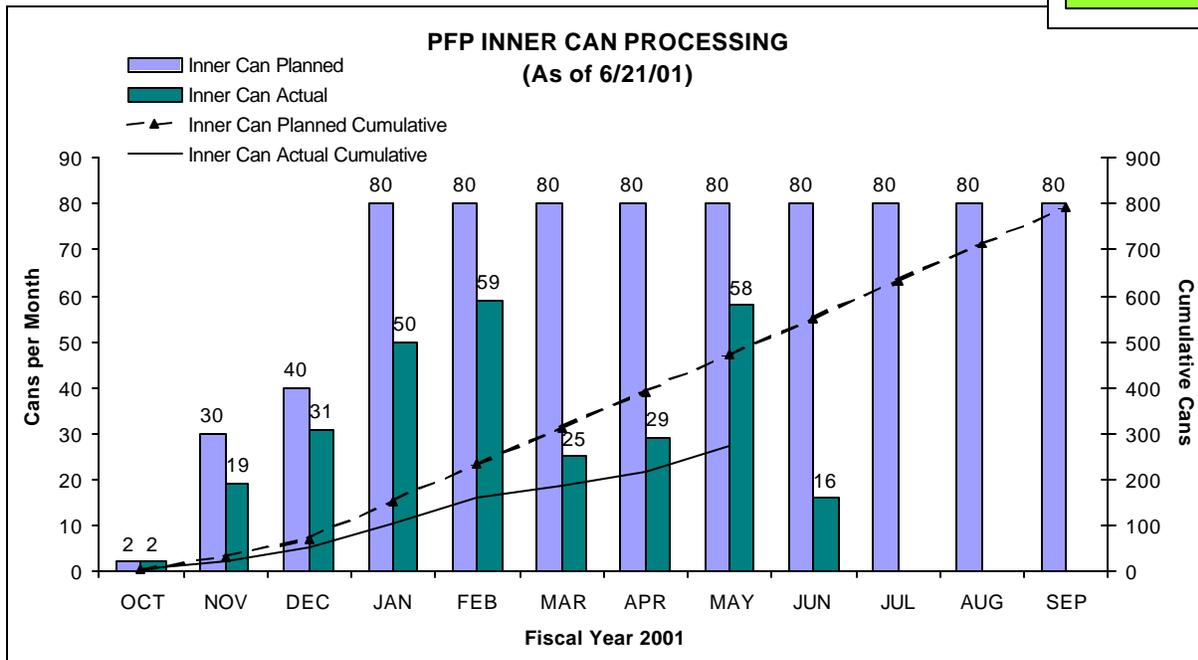
Red



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

Inner Can Processing

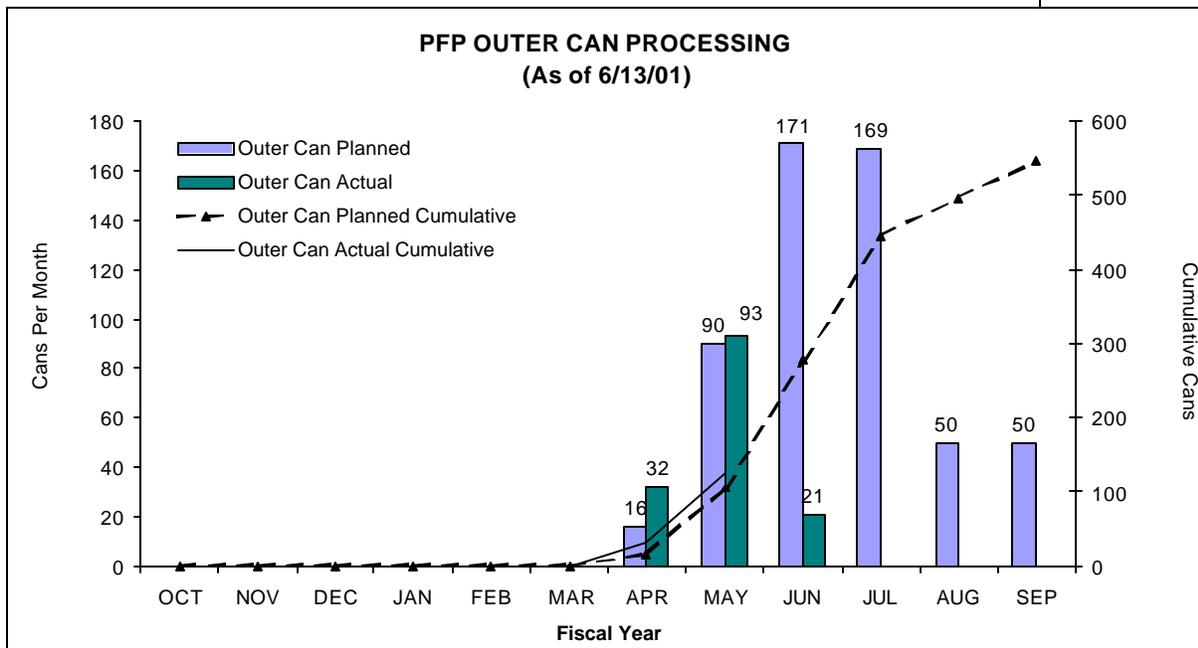
Green



Realignment and recalibration of the Bagless Transfer system has resulted in improved operational reliability.

PFP Outer Can Processing

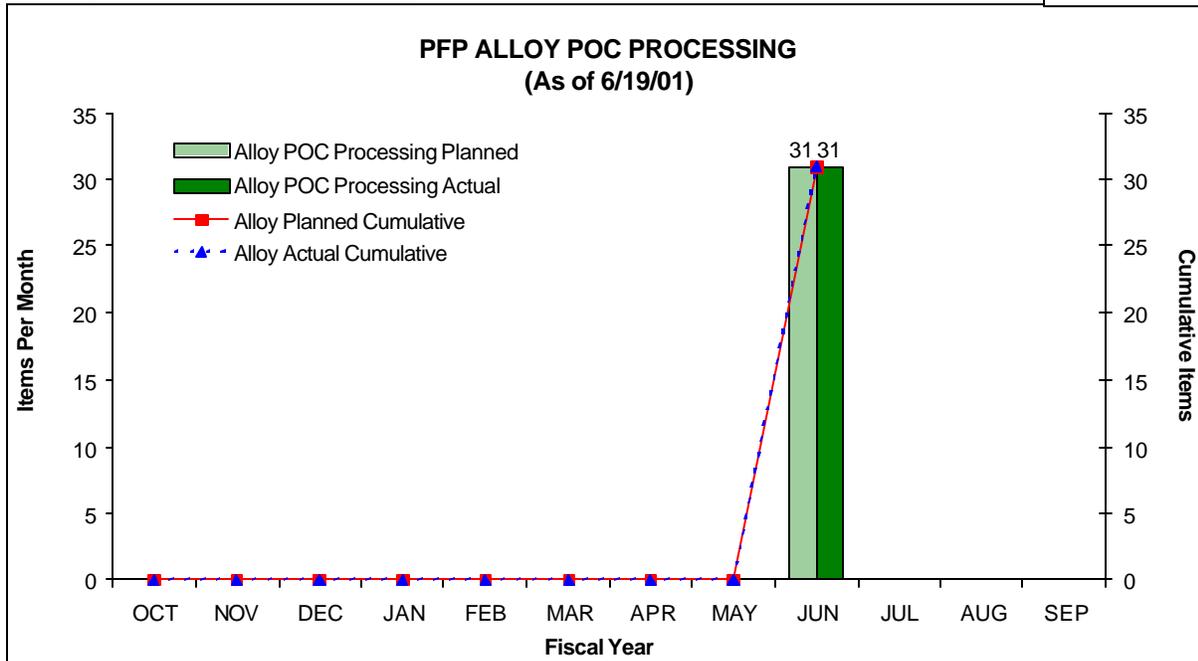
Green



Ninety-three (93) DOE-STD-3013 containers were processed through the Outer Can Welder (OCW) during May 2001. As of June 13, 2001 a total of one hundred forty-six (146) containers have been processed since startup on April 10, 2001.

Alloy POC Processing

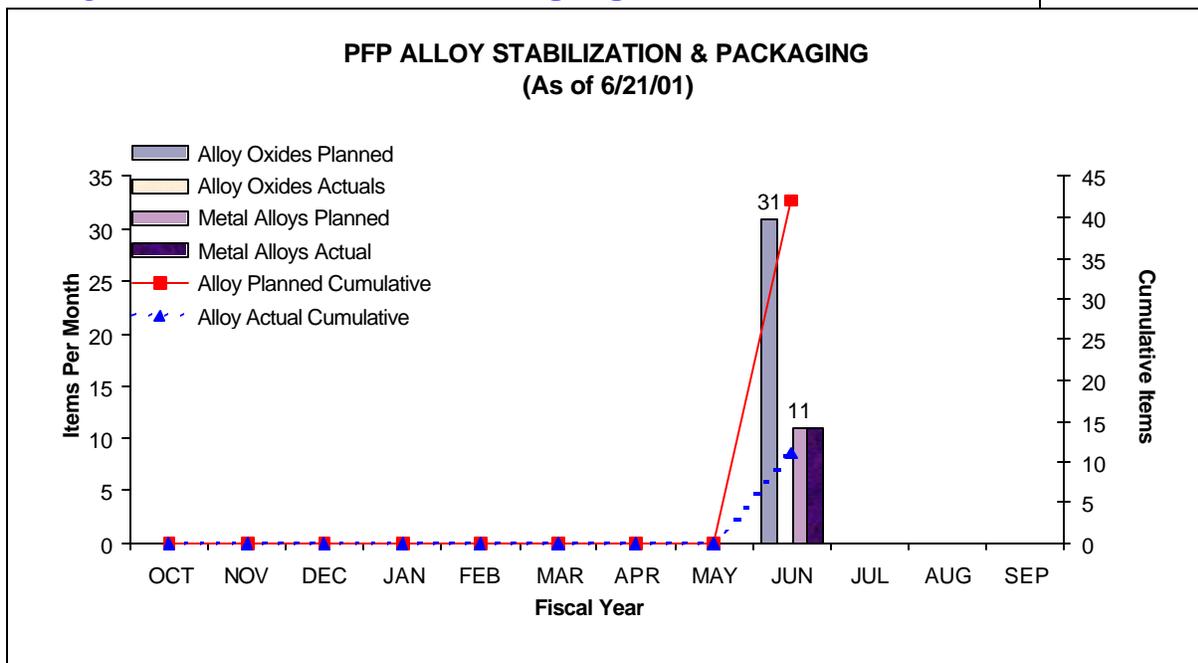
Green



Repackaging of the 31 plutonium/aluminum (Pu/Al) Alloys Group 1 was initiated on June 11, 2001, and completed on June 19, 2001.

Alloy Stabilization & Packaging

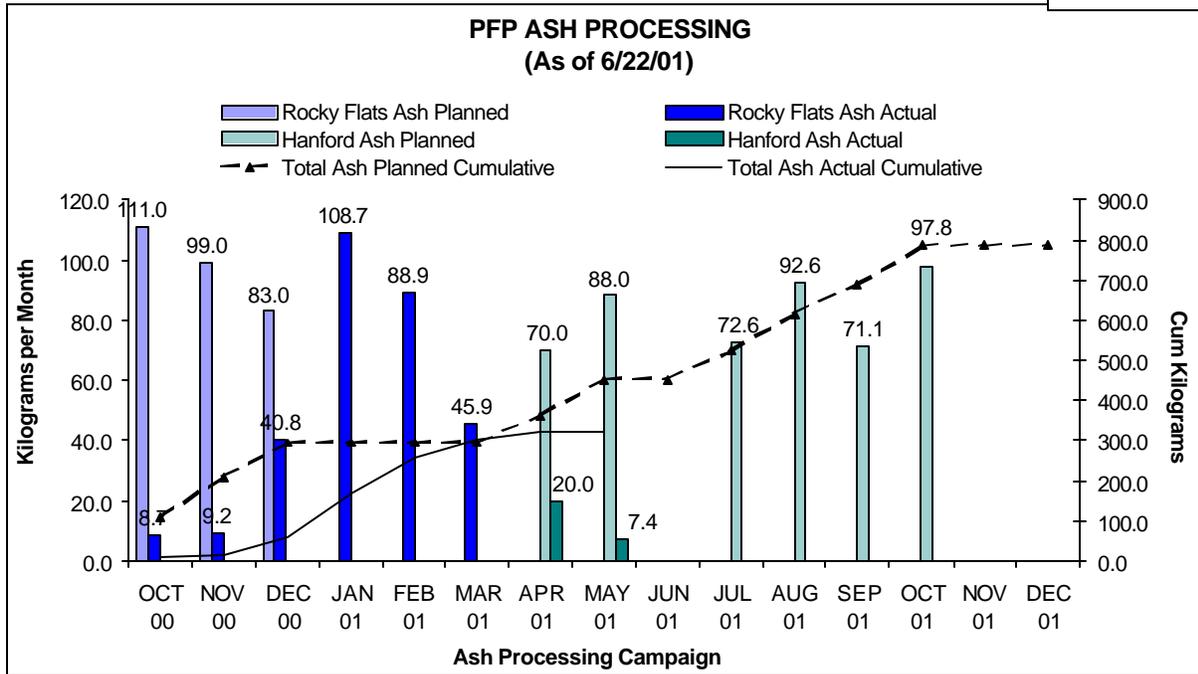
Red



Stabilization of alloys began June 11, 2001. BTS packaging of metallic alloys and pipe-n-go packaging of Residue alloys were completed June 19, 2001.

Green

Residues Stabilization



Through May, 2001 nearly twenty-seven and a half kilograms of Hanford Ash have been packaged for shipment to the Central Waste Complex (CWC)..

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

By PBS	FYTD									
	BCWS	BCWP	ACWP	SV	%	CV	%	PEM	EAC	
WBS 1.4.5 PFP PBS TP05 Deactivation	\$ 72,338	\$ 68,432	\$ 71,323	\$ (3,906)	-5%	\$ (2,891)	-4%	\$ 110,609	\$ 112,209	
Total	\$ 72,338	\$ 68,432	\$ 71,323	\$ (3,906)	-5%	\$ (2,891)	-4%	\$ 110,609	\$ 112,209	

FY TO DATE SCHEDULE / COST PERFORMANCE

Both the unfavorable schedule and cost variances are within established thresholds.

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: (-\$3.9M)

Nuclear Materials Stabilization Project- 1.4.5/TP-05

Description/Cause: The current unfavorable schedule variance has improved to 5 percent versus 9 percent in April (2001) as a result of schedule improvement in Project W-460 performance earned for work completed at SRS via the interoffice work order process. However, operational documentation and training in support of W-460 operations are behind schedule due to priority in the successful accelerated startup of the Outer Can Welder. Procurement of NDA Laboratory Equipment via SRS Interoffice Work Order has not yet been removed from the baseline (no progress claimed). Additionally, the ongoing issue of generation of higher than planned quantities of precipitate per liter of solution through the $Mg(OH)_2$ process continues to impede solution stabilization progress. Operational reliability of the BTS has further limited metal processing activities.

Impact: At this time there is no impact to Project W-460 with completion of the operating documentation, training, or the equipment delivery schedule. Limited progress in reducing the generation of precipitate per liter of solution has jeopardized the current Defense Nuclear Facilities Safety Board (DNFSB) commitment, "Complete Solutions Stabilization" by December 31, 2001, and DNFSB commitment for completion of Polycubes Stabilization due in August 2002. Despite the projected delays in these two DNFSB interim commitments, no impact is anticipated at this time to the DNFSB commitment to have all Pu stabilized and packaged by May 2004. Sustained operations of the 234-5Z BTS is necessary to complete the metals stabilization campaign that has now been extended to August 31, 2001, via Baseline Change Request (BCR) FSP-2001-046.

Corrective Action: Project W-460 Project schedule recovery is expected when the NDA laboratory equipment from SRS is delivered. Schedules for evaluating and implementing alternate disposition pathways for the solutions, such as an oxalate precipitation process and direct disposition of solutions, have been developed and are being updated on a weekly basis. Installation of new generation cutter wheels and weld tips from the SRS have improved operational reliability of the BTS that has subsequently improved metals packaging processing.

COST VARIANCE ANALYSIS: (-\$2.9M)

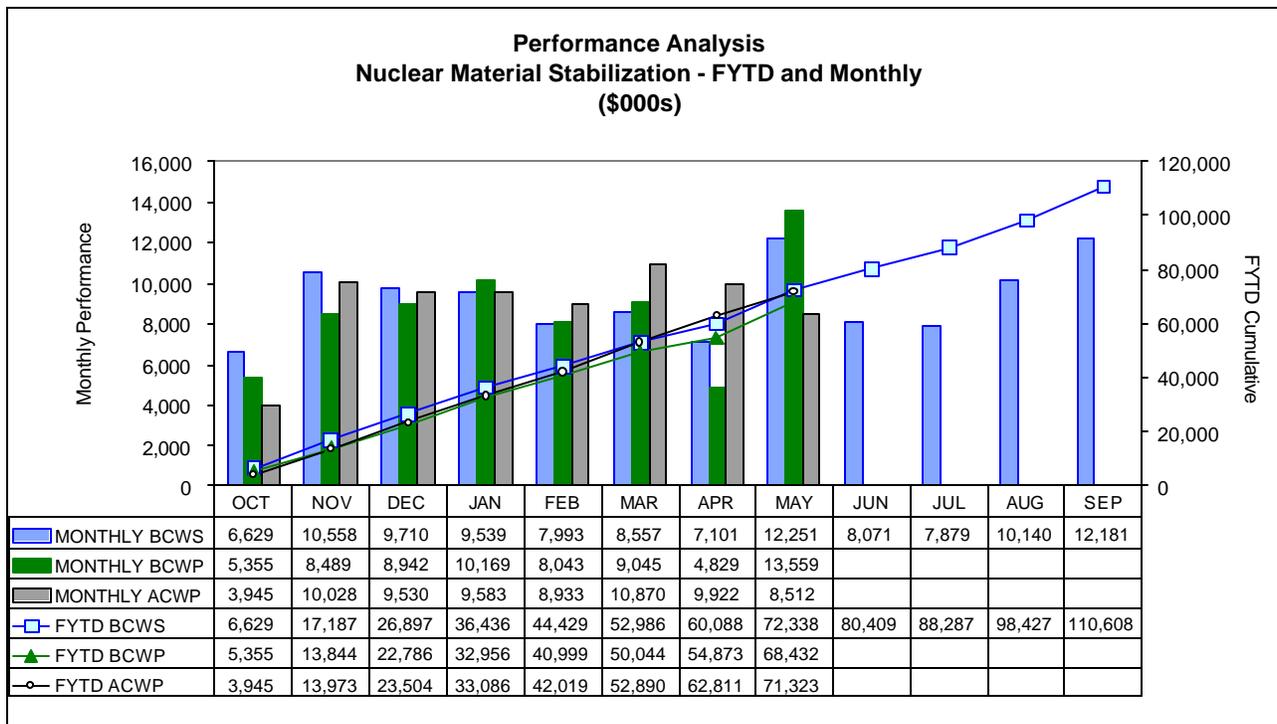
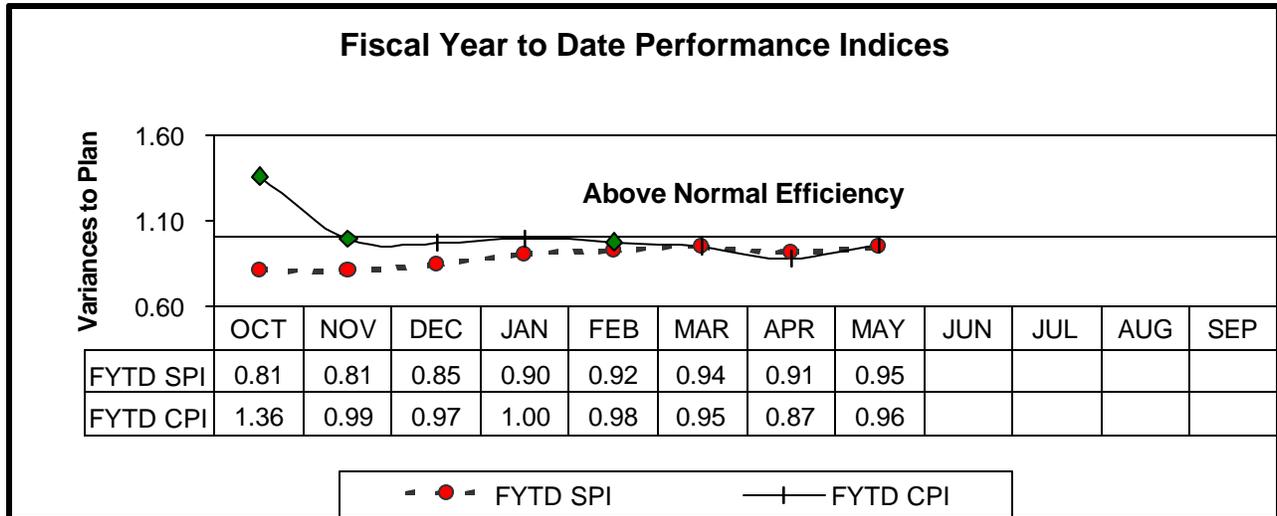
Nuclear Materials Stabilization Project- 1.4.5/TP-05

Description/Cause: The unfavorable cost variance represents a 10 percent (from -14 percent in April to -4 percent in May), or nearly \$5.0 M improvement, from April 2001. The primary driver for this improvement is the credit variance distribution related to FY 2000 unearned fee allocation and performance earned for work completed at SRS via the interoffice work order process. Actual costs have been incurred against this work during the last several months but performance had not been recorded. Notwithstanding this marked improvement, significant cost issues remain with accelerated Project W-460 construction, continued delay in completion of metals stabilization due to operational reliability of the 234-5Z BTS and late completion of Rocky Flats Ash processing and costs incurred for Hanford Ash stabilization which is being worked under an Advance Work Authorization.

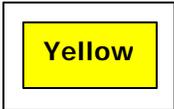
Impact: Early May 2001 operational difficulties with the 234-5Z BTS, now resolved, initially limited processing and packaging of stabilized metal items and resulted in a significant per unit cost increase, therefore the negative cost variance in metals stabilization will continue to increase. The costs associated with late completion of Rocky Flats Ash are non-recoverable. These areas will be partially offset by projected underruns in other areas of the project.

Corrective Action: Corrective action options currently under joint FH and RL review to sustain accelerated completion of Project W-460 include securing additional funding and review of line item charges for appropriateness as capital costs. Repair and alignment of the 234-5Z BTS unit has been completed and has demonstrated improved operational reliability. Additionally, cost control actions are being enforced to further limit overtime, subcontract costs and material purchases for the remainder of the fiscal year.

SCHEDULE / COST PERFORMANCE (MONTHLY AND FYTD)



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



	Project Completion *			Line Items *		
	Funds	FYSF ⁽¹⁾	Variance	Funds	FYSF	Variance
The Plateau						
1.4.5 Nuclear Materials Stabilization						
TP05 Operating	\$ 90,957	\$ 92,784	\$ (1,827)			
Line Item				\$ 12,140	\$ 12,066	74
Total Nuclear Mat. Stab. Operating ⁽²⁾	\$ 90,957	\$ 92,784	\$ (1,827)			
Total Nuclear Mat. Stab. Line Item ⁽²⁾				\$ 12,140	\$ 12,066	74

* Control Point

⁽¹⁾ FYSF based on April month-end adjusted for FY00 unearned fee and indirect variance distribution

⁽²⁾ Reflects FH managed scope only

ISSUES

Technical Issues

Issue: The quantity of boats from the precipitation process continues to be above the estimate established during baseline characterization.

Impact: An evaluation of the impact to the original project completion date of December 31, 2001 is expected in June.

Corrective Action: Approval by RL of the FSAR revision on May 24, 2001 contributed to the startup operation of the second, two-boat hot plate on June 19, 2001. There were 32 liters processed as of June 21, 2001, bringing the FYTD total to 548 liters. Alternate disposition options continue being evaluated.

Issue: The Super Critical Fluid Extraction (SFE) method does not accurately measure the moisture content from stabilized product such as Mg(OH)₂.

Impact: Project W-460 schedule will be delayed by approximately four weeks. In addition, installation of Inert Atmosphere for TGA testing and modification(s) of procedures will be required.

Corrective Action: A final decision not to use the SFE method was issued by RL. Currently the Loss On Ignition (LOI) method will be utilized for high purity oxides, and inert atmosphere testing will be installed for other oxides.

Issue: A portion of the oxides to be processed contains fairly high levels of chloride. The corrosive properties of the chloride off-gases will cause problems during thermal stabilization.

Impact: Completion of oxides stabilization could be impacted.

Corrective Action: Various efforts are continuing with Pacific Northwest National Laboratory (PNNL) and Rocky Flats to resolve the chloride issues (e.g., characterization and pretreatment, as well as other methods). PNNL is requesting funding from the Nuclear Material Focus Area for testing. The Nuclear Material Focus Area has provided \$100K funding for this testing.

Regulatory, External, and DOE Issues and DOE Requests

Issue: No other issues identified at this time.

Impacts: None at this time.

Corrective Action: None at this time.

BASELINE CHANGE REQUESTS CURRENTLY IN PROCESS

PFP Baseline Change Request Status									
BCR NUMBER	DATE ASSIGNED	BCR TITLE	FY 01 IMPACT	SCH	TECH	DRAFT COPY	TO FH	FH APPROVAL	DOE-RL APPROVAL
FSP-2001-021	13-Dec-00	Additional Cost Savings	(\$1,672)	---	---		10-Jan-01	10-Jan-01	3-May-01
FSP-2001-037	9-Feb-01	Accelerate Hanford Ash	\$2,750	X	X	21-Mar-01	29-Mar-01	6-Jun-01	Not Required
FSP-2001-043	15-Mar-01	291-Z-1 Stack Monitor	\$363	X	X	23-Apr-01	27-Apr-01	2-May-01	Not Required
FSP-2001-045	23-Mar-01	10 CFR 830, Phase 1	\$138	X	X	28-Mar-01	29-Mar-01	2-May-01	Not Required
FSP-2001-046	4-Apr-01	Revise Metals Completion Date	-----	X	---	4-Apr-01	27-Apr-01	7-May-01	1-Jun-01
FSP-2001-047	4-Apr-01	3013 Monitoring System, Phase 1	\$442	X	X	18-Apr-01	27-Apr-01	2-May-01	Not Required
FSP-2001-054	15-May-01	Interoffice Work orders				5-Jun-01			

KEY INTEGRATION ACTIVITIES

- Techniques for improving the precipitate processing continue to be worked jointly by staff members of the PPSL and PNNL.
- PFP coordination with Lawrence Livermore National Laboratory (LLNL) to ship requested oxide material (81 kg) to that facility at no cost continues. PFP awaits a final determination of the material LLNL is requesting.
- Thermal stabilization of high chloride oxides will likely require a pretreatment to remove the chlorides. PNNL had been reviewing treatment methods and has presented a cool air quench recommendation for the off-gas. The Nuclear Material Focus Area has provided initial funding to PNNL to begin testing.
- Under the direction of the inventor, a new epithermal neutron multiplicity counter from LANL is undergoing extensive testing by PFP and IAEA staff. If tests are successful, this counter may expedite neutron counting of 3013 containers. Negotiations continue with LANL regarding the duration of the test period.