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Report

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LANL Executive Summary

As part of a required Conduct of Operations review, on June 10, several key PF-4 Operation Procedures were paused halting most SNM operations in PF-4. On June 27, Laboratory Director Charlie McMillan issued a temporary pause of all programmatic activities in PF-4. Resumption criteria, prioritization of resumption activities, procedure walk downs, procedure revisions, and approval are in process and are expected to take several months to complete. In February, ADPSM produced a detailed baseline resumption schedule and is publishing a bi-weekly resumption status report.

In February of 2014 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

- 1) Revised Program Implementation Plan with NA123.1 program manager.
- 2) Established new exit and grading criteria for L2 milestones MRT 4961 and 4962 with NA123.1 program manager.
- 3) A scope swap arrangement was executed for FY14 moving small sample fabrication scope to Pu Sustainment and shifting a portion of equipment maintenance to the production support program. Small sample fabrication is now added as the fifth major LANL WBS element.
- 4) BCRs are in process for March for pit development (resumption) and pit equipment (b) (7)(F) to reflect the new milestone, resumption schedule, and budget/priorities.

All three NNSA Level 2 Milestones (MRT 4961, 4962 and 4963) associated with Plutonium Sustainment are now on track for success in FY14.

The earned value metrics overall for LANL are within acceptable thresholds, so no high-level recovery plan is required.

Each of the five major LANL WBS elements is discussed in detail below.

LANL Response to January NNSA Comments

none.

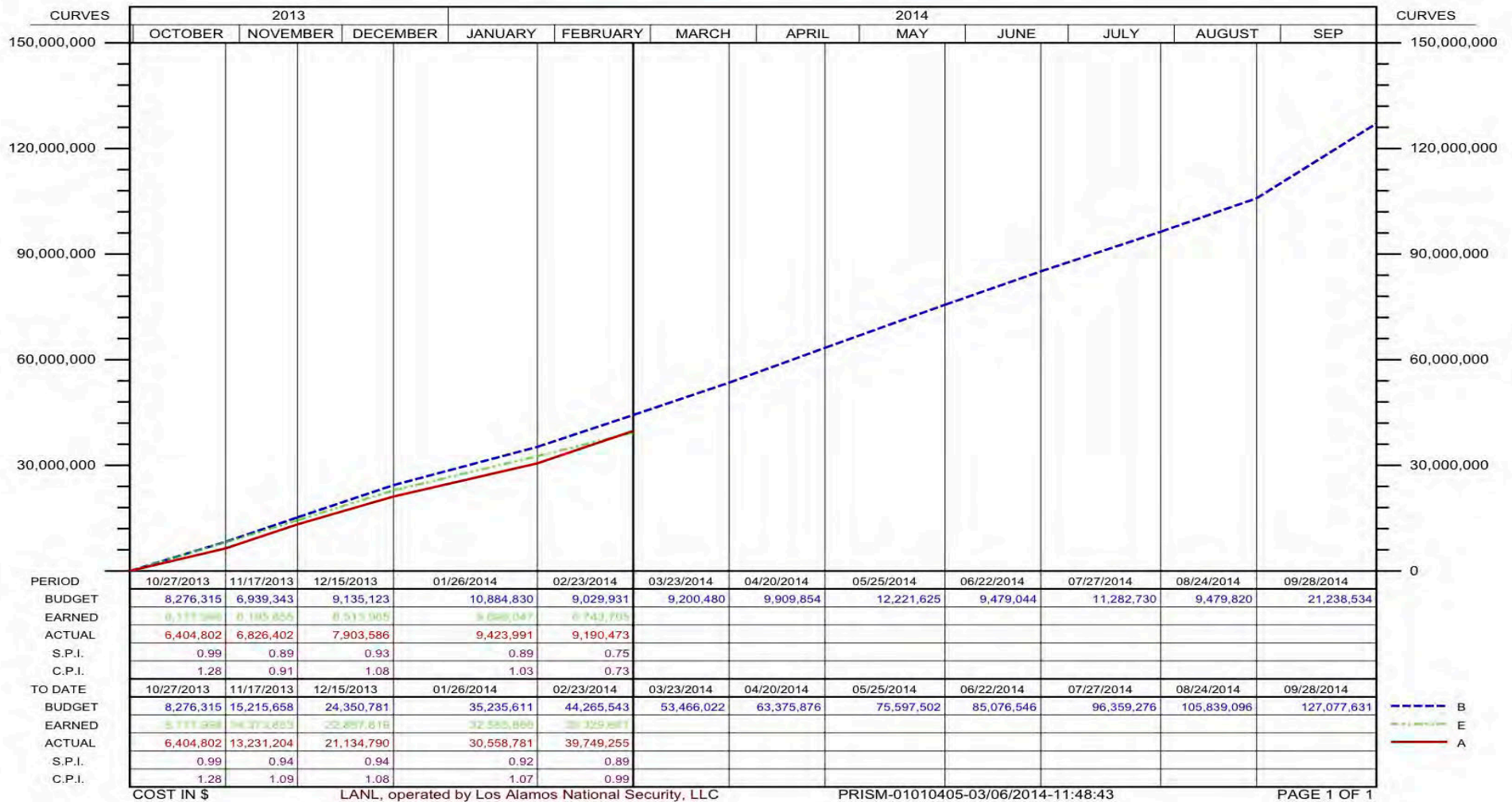
Table 1: February Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Pit Development /Program Support	PSM-14-028	Inspection Calibration Support/IPM Support	1/21/14	1/30/14	Scope and cost	\$100k	3
Program Support	PSM-14-044	Preventive & Corrective Maintenance Reduction	2/21/14	2/25/14	Scope and cost	\$1,783k	3
Program Support	PSM-14-045	IWEP Detail	2/21/14	2/25/14	Scope and cost	\$500k	3
Small Sample Fabrication	PSM-14-049	Science Sample Fabrication - Incorporate this scope into the Pu Sustainment portfolio.	2/24/14	pending	Scope and cost	\$1,524k	3

Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05 Plutonium Sustainment



[NOTE: September 2014 includes 6% FY15 carryover holdback of \$7.414M in addition to the five major WBS elements.]

1.0 LANL - Pit Development

MRT 4961		GREEN	Perform Activities to Sustain Base Pit Material	
			(b) (7)(F)	
1. (b) (7)(F)				
2. No later than September 30, 2014, start fabrication of (b) (7)(F).				
Activity	Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)	December 30, 2013	Issued	December 24, 2013	BLUE
Resume (b) (7)(F) Operations	September 1, 2014	Operations currently paused		GREEN
Resume (b) (7)(F)	September 15, 2014	Operations currently paused		GREEN
MRT 4962		GREEN	Continue Key Equipment Upgrade and Replacement Activities	
1. Complete ER Line Upgrades construction punchlist and execute successful cold test.				
2. Complete Pu Foundry GB 1 mechanical and electrical construction.				
3. Foundry GB 2 upgrade approved for installation.				
4. Complete CMM GB 30% design review and GB installation 30% design review.				
5. Complete CDS installation 60% design review.				
6. Finish installation (not including FCRs) on PML – Phase 2.				
ER Line Dry Run/Cold Test Complete	April 26, 2014	Material Transfer System Dry Run Completed		GREEN
ER Line Punchlist Complete	August 15, 2014			GREEN
Foundry GB1 Cooling Power Supply Received	June 2, 2014			GREEN
Foundry GB1 Cooling Furnace Housing Installation Complete	July 3, 2014	GB1 furnace housing cold tested and moved into PF-4		GREEN
Foundry GB2 Approved for Installation	September 30, 2014			GREEN
Complete location study for New GB & CMM	April 15, 2014	On schedule		GREEN
Complete 30% CMM GB Utilities Installation Design Review	July 31, 2014			GREEN
Complete 30% CMM GB Fabrication Design Review	September 30, 2014			GREEN
Start CDS Engineering Development	October 1, 2013		October 1, 2013	BLUE
CDS Engineering Contract Awarded	February 16, 2014		January 9, 2014	BLUE
CDS 30% Installation Design Complete	June 1, 2014	Not required	N/A	BLUE
CDS 60% D&D Design Complete	August 11, 2014			GREEN
PML DCP Re-Activation Complete	January 10, 2014		December 12, 2013	BLUE
PML Construction Planning Complete	May 22, 2014			GREEN
PML Cold Testing Complete	July 3, 2013			GREEN

1.1 Technical Progress

- Established new exit and grading criteria for L2 milestones MRT 4961 and 4962. Milestone MRT 4961 will be successfully completed when (b) (7)(F) are resumed and machining of the parts for (b) (7)(F) can begin again. Completion of this milestone is scheduled for mid-fourth quarter. MRT 4962 has been modified slightly by removing the CMM factory acceptance testing complete. This reflects the design requirements change.
- The majority of pit manufacturing development is focused on resumption related activities. Accordingly, most of the budget and scope through January is captured in a "level of effort" activity. With the publishing of the prioritized resumption schedule in February, Earned value tracking has been temporarily suspended for the pit development flowsheet pending a BCR to create a resource loaded, prioritized schedule for resumption and resumed activities for the remainder of the FY. Completion of this BCR is expected in mid-April.

1.2 Equipment

- The plan to meet the grading criterion L2 milestone MRT 4962 includes the following by September 30, 2014:
 - Complete ER Line Upgrades construction punch list and execute successful cold test.
 - Complete Pu Foundry GB 1 mechanical and electrical construction complete.
 - Foundry GB 2 upgrade approved for installation.
 - Complete CMM GB 30% design review and GB installation 30% design review.
 - Complete CDS installation 60% design review.
 - Finish installation (not including FCRs) on PML – Phase 2.
- Electro-Refining Line Upgrade
 - Cold testing of ER (furnace) Control System (ERCS) software continues.
 - Installation of O2 Analyzers and Regulators on mounting plates has started.
- Foundry Upgrade
 - Power supply Request for Quote was issued.
 - Completed review of metallographic data for cold foundry testing.
 - Fabrication of quadrupole water-cooled feed through continues. Scheduled completion in mid-March.
- Coordinate Measuring Machine
 - Completed engineering evaluation of CMM location environments. Presentation of findings scheduled for March.
 - Development of 3-D ergonomic model of the proposed glovebox continues.
 - Revision of project scope of work and costs to procure the Infinity PMM with enhanced sensitivity. Definition of machine upgrades to facilitate operation, calibration, and maintenance continued.
- Chlorine Distribution & Detection System
 - 30% design is not required because additional conceptual design efforts for internal PF-4 gas cabinets with double containment piping will not be necessary.
- Precision Machining Line
 - Fabrication of the airlock door control box continues.
 - Construction planning continues.
 - Cable tray modifications started.

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

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1.5 BCRs

- PSM-14-028: This BCR revises the funding required for CMM calibration support. The cost savings (\$100k) is used to fund IPM staff (new scope requirement-see section 3.5).

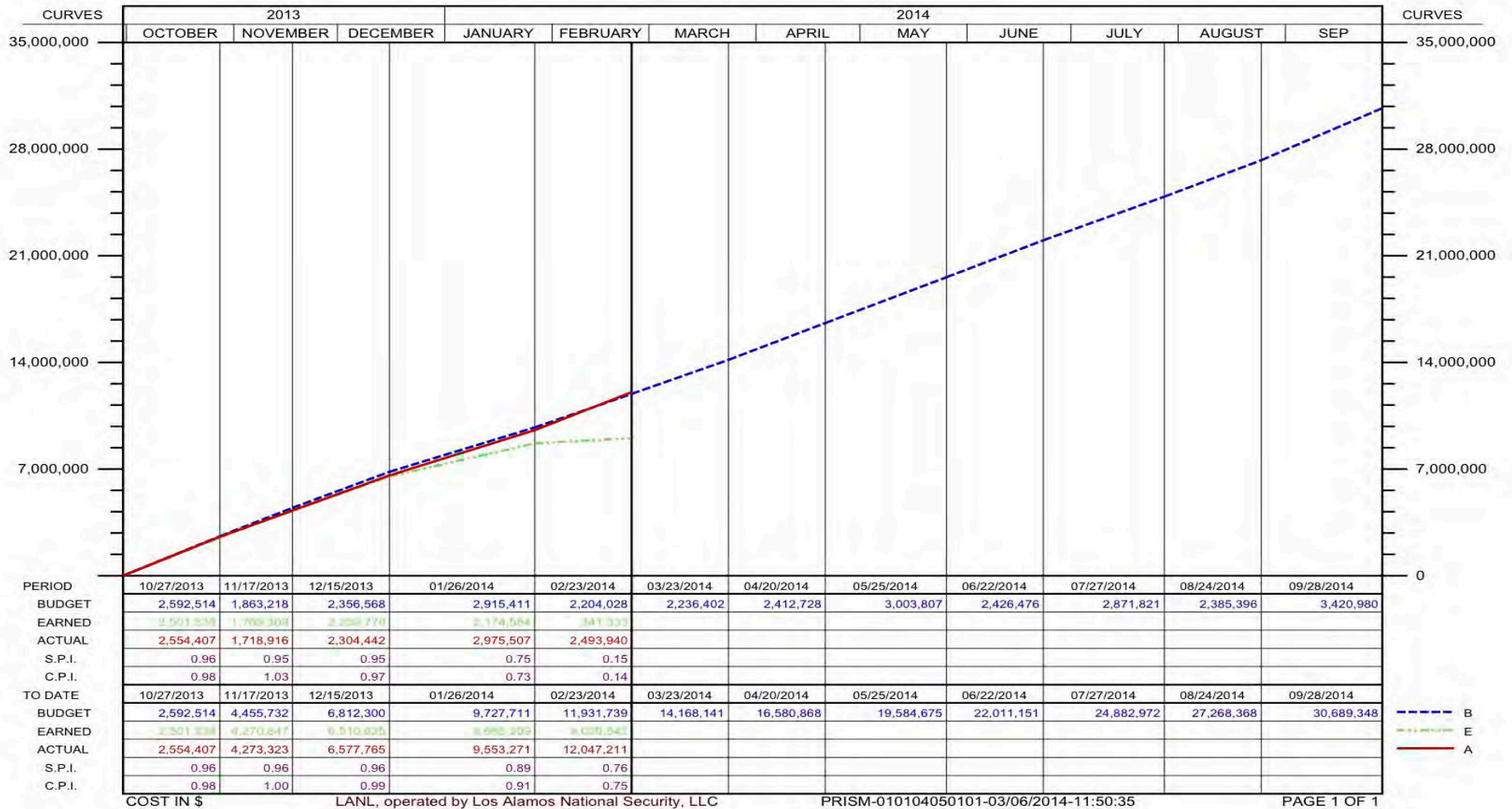
1.6 Risk Table

Work	Description	Handling Strategy	Status
(b) (7)(F)	(b) (7)(F)		
Completion of DCP	Equipment projects all require new or revised CSEs and procedures. Without CSEs these DCPs cannot be closed.	Identify all installation project CSEs & related DOPs, and prioritize by schedule/complexity. Complete supporting activities and request project resources available when needed. If resources are unavailable due to conflict with PF-4 Resumption, then the DCP closure will be removed for the L2 milestone requirement.	
Equipment Upgrades	The resumption process and related demands on criticality engineering and other project support create significant uncertainties for the FY14 equipment execution. - ER Line activities that may be impacted include cold testing, Zone 1 tie-in, and NPCCW tie-in. - Foundry Upgrade activities include criticality design/construction support and waste management processes.	Equipment project resource requirements will be reviewed and prioritized by Program. The projects will alternate work methods as contingencies. If necessary the milestone may be renegotiated.	
(b) (5)			
(b) (7)(F)			

1.7 Earned Value Metrics

PERFORMANCE S-CURVE

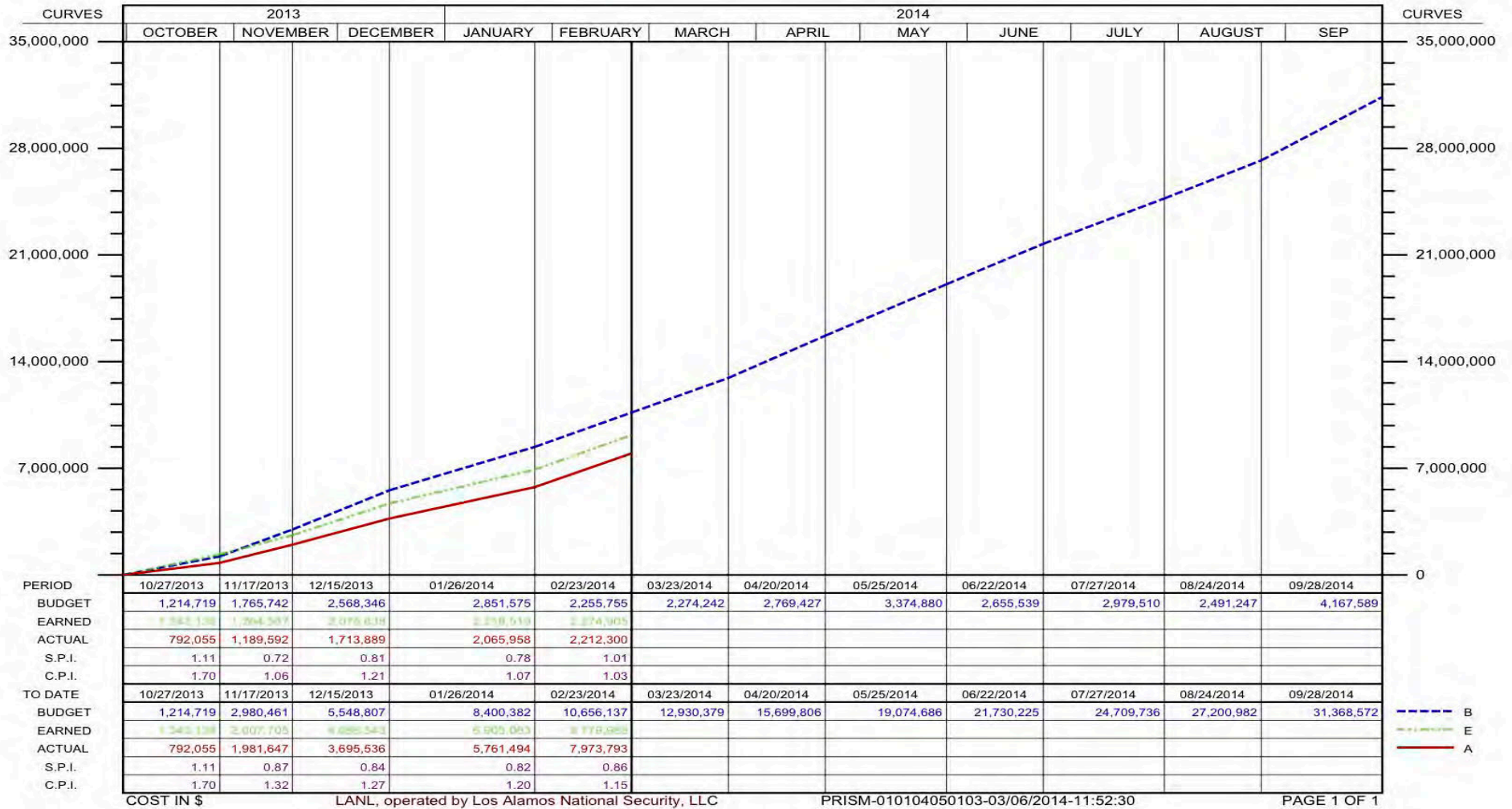
Pit Manufacturing & Design Development



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PERFORMANCE S-CURVE

Pit Manufacturing Equipment



2.0 LANL - Power Supply

MRT 4963		GREEN	Progress Power Supply Development		
1. Complete (b) (7)(F) of inert heat sources.					
2. Start (b) (7)(F) of assembled Power Supplies.					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F)					

2.1 Technical Progress

- ☐ (b) (7)(F) and refinement continues. Development of the (b) (7)(F) parameters for the strength member nears completion. Additional work to ensure the machine produces a quality beam each use includes:
 - Working with vendor on evaluation/fine tuning of recently procured Beam Measurement Tooling and software.
 - Performing detailed analysis of (b) (7)(F) Profile. Working issues real time with vendor.
- ☐ Quality documentation has begun for the equipment in the RTG-AFT. This includes Process Qualification Plans (PQP) and the subsequent Process Qualification Reports (PQR). The draft PQPs were sent to the DA for signature and will serve as a basis for the QERs later in the program. Next month will have the results of many of the tests needed to fill out the PQR.
- ☐ LANL fabricated six mass mock power supplies for use by the DA. These were welded to the SNL's design drawings using the (b) (7)(F) system in RTG-ATF. The mass mocks were (b) (7)(F) marked using equipment that will be used in production.
- ☐ The (b) (7)(F) for the (b) (7)(F) strength member is nearing completion. A design of experiments has focused the work on a set of parameters that produce reliable and repeatable welds. Metallography is being performed on a final set of welds and no great surprises are expected.

2.2 Equipment

- ☐ New accelerometers are being purchased from the vendor (Lansmont) using WR MT&E protocols. This will serve as the pilot for obtaining all necessary MT&E using the quality standards required to sell product.
- ☐ An E-Tester report has been generated and sent to KCP to help in the development of the production units. The report has several ergonomic and data display changes identified and as well as a status of the functionality of the prototype. It appears one channel is not functioning.
- ☐ The furnaces suffered a breaker switch failure. Breakers are a special category of procurement and the multistep process has been completed. New breakers are on site and repairs are scheduled for March.

2.3 Issues

- The continued Pause in PF-4 operations coupled with procedural activities for resumptions, is affecting power supply production in the following areas:
 - FY14 Demo Fuel Run (Aqueous Processing and Fuel Fabrication)
 - Harvesting support activities: FSI opening and location/identification of fuel to increase current amounts
- FY14 funding cancellation for AMET Controller replacement in PF-4 and UT Development for installation at SM-39 will delay (b) (7)(F) activities.

2.4 Variance Analysis and Recovery Plan

- None

2.5 BCRs

- None

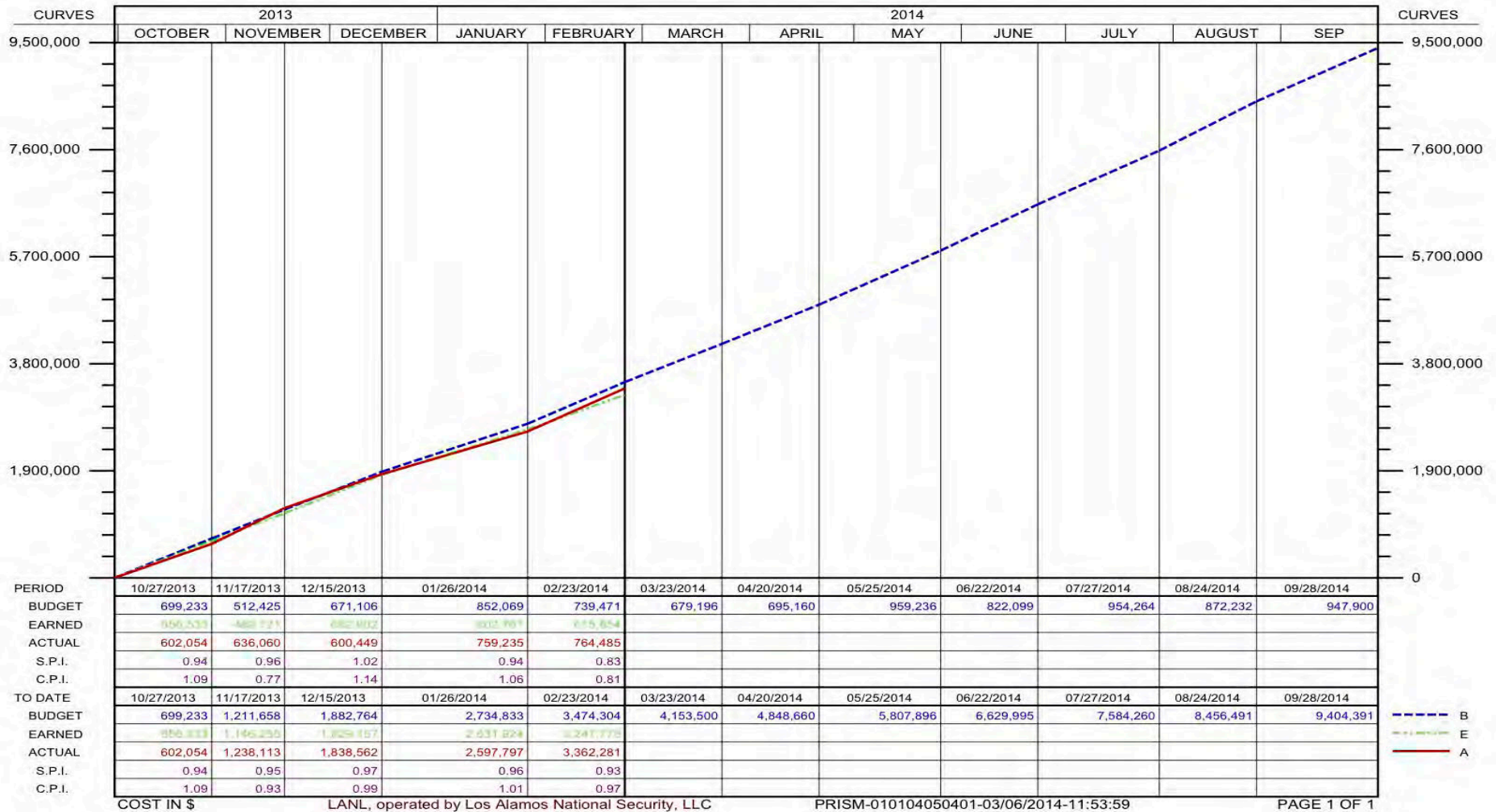
2.6 Risk Table

Work	Description	Handling Strategy	Status
Workforce development and recruiting	Dedicated staffing and depth of trained operators are both at risk to support the development, PPI, and Qual series for Power Supply manufacturing development. The plan to start hiring in FY13 for dedicated staffing did not occur. Staffing is shared with other programs and may not always be available as scheduled. Note that the increase in staff also was planned to maintain lower dose rates in the staff as part of LANL ALARA goals.	1. Communicate and integrate frequently with Power Supply surveillance, NE-75, and other programs to make the best use of available staff. 2. Request LANL and LAFO management to allow for increase in dose to staff assigned to this work. 3. Delay non-critical path activities until they become critical path for FPU.	LANL performed a cross-program review in October of the baselined P6 schedules with NE-75.
Design Maturation beyond PRT Schedule	Delays in the delivery of the various required design phases (AERs, BDR, etc) will lead to a delay in LANL's delivering the FPU.	1. Communicate and integrate frequently with the PRT on LANL design needs. 2. Provide monthly input into the PRT's Integrated Schedule to manage formally any delays.	LANL continues to provide input at the monthly PRT meeting. Topics of the October meeting included review of the most recent fuel specification.
(b) (7)(F)	(b) (7)(F)	(b) (7)(F)	
AMET Controllers Replacement	(b) (7)(F)	1. Delay until FY15 unless funding becomes available in FY14 (will not effect FPU schedule).	LANL to procure hardware, let contract for reps to be on-site and start disassembly/re-assembly and testing activities. Funding cancelled for FY14.
UT Cold Development	Develop and install a cold UT inspection station at SM39 that will be used for (b) (7)(F)	1. Working with other LANL groups to determine if equipment and resources are available to inspect (b) (7)(F) at another LANL location.	Hardware bought and on-hand. Equipment delivered at SM39 but installation/integration on-hold due to cancelled of FY14 funds.

2.7 Earned Value Metrics

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Power Supply Production



3.0 Program Management and Support

3.1 Program Management

- Supported out year planning.
- Established revised Level 2 milestones with NNSA for pit manufacturing development and pit equipment.
- Continued support for the MRP replacement effort I-WEPS.
- Supported the resumption scheduling effort with priority assignments and procedure list review.

3.2 Support

- Warehousing and Procurement
 - The NPI-8 procurement team successfully processed 187 procurement requests for TA55 in February. The team was able to work through the period without the development of a substantial (> 1 week) and permanent backlog.
 - Soliciting input for the ADPSM-FY14 Procurement Forecasting Plan. Each Division needs to complete and submit their procurement template by Friday March 21st.
 - TA-55 Main Warehouse Transactions
 - 1,499 Warehouse distributions at a cost of \$61,505.
 - 833 Warehouse receipts at a cost of \$83,560.
 - \$22,055 change in warehouse valuation.
- Calibration
 - The Standards and Calibration Laboratory (S&CL) supported the development of a causal analysis to determine underlying causes behind the low rate of submission of measurement and test equipment (M&TE) for recalibration. Analysis continues with corrective action development to follow.
 - The S&CL continues to work with dimensional inspection to develop processes for re-certifying various M&TE in glove boxes that most benefits the Laboratory in regards to minimizing waste and maximizing the useful life of the M&TE.
 - Continued working with detonator project leads to ensure the availability of calibrated M&TE to meet production needs. This collaboration has been successful in meeting production requirements.
 - Initiated two Lean Six Sigma process improvement projects to address chronic underperformance in completing calibrations of dimensional measuring and test equipment and to improve the quality of calibration report packages.
 - A total of 14 M&TE items were expected for February and 23 items were actually received. Calibrated 26 M&TE items in February. Successfully and consistently achieved target cycle time rates for equipment turn around to avoid mission and deliverable impacts.

3.3 Issues

- Manufacturing Operations
 - Document controls staff that was reduced earlier in the FY were partially brought back in February with additional funding. This reduces response times and minimizes negatively impacts various production processes experience due to unavailable resources.
- Metrology
 - Funded to meet anticipated M&TE calibration requirements, however, aging calibration equipment is beginning to fail (one item failed in November) and replacement will be required to avoid impacts. Equipment replacement is not currently funded. Not all needed service contracts and equipment replacement needs are funded this FY. This will continue to be an on-going issue.

3.4 Variance Analysis and Recovery Plan

- Through month end February under spending by 9% of planned. Multiple work packages are spending at a rate higher than planned. Recovery plans are being developed address overspending areas.

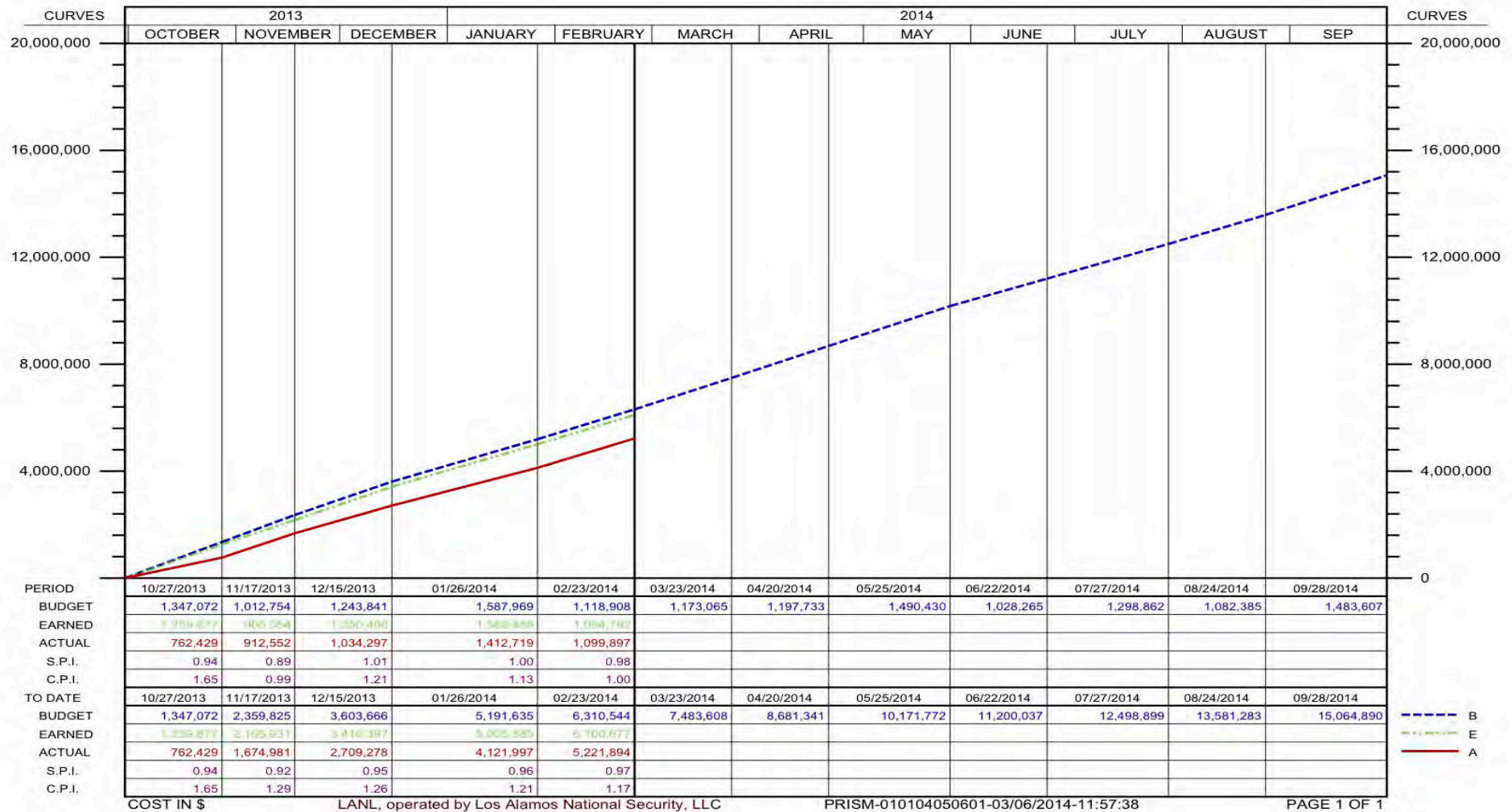
3.5 BCRs

- PSM-14-028: This BCR provides funding for new scope required to fund IPM staff (\$100k).
- PSM-14-044: This BCR moves \$1,783k of Preventive & Corrective Maintenance scope to the stockpile services/production support funding stream. This is part of a “scope swap” that includes this program acquiring small sample fabrication scope (see section 5).
- PSM-14-045: This BCR moves \$500k of production control (IWEP) scope to the stockpile services/production support funding stream. This is part of a “scope swap” that includes this program acquiring small sample fabrication scope (see section 5).

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

Program Office



4.0 Facilities, Waste and Institutional Support

4.1 Technical Progress

- PF-4 Facility availability in December 97.52%
- SAFE-4 Completed Initial Version of “InvLoc” on February 7th with the test plan and requirements documents developed. The application has been tested in the Yellow Test Environment and Scheduled for Testing on the Red Test Environment in February.
- Permanently shifted facility costs to RTBF and applied the savings to maintenance scope.

4.2 Equipment

- Missed one preventive maintenance activity (PM), due to material availability and one PM due to equipment being out of service. All PMs will be worked in their grace period.

4.3 Issues

- Lack funding to complete Red Network upgrade work. This work will cost more and take longer to complete once the plant is back in operations.

4.4 Variance Analysis and Recovery Plan

- None

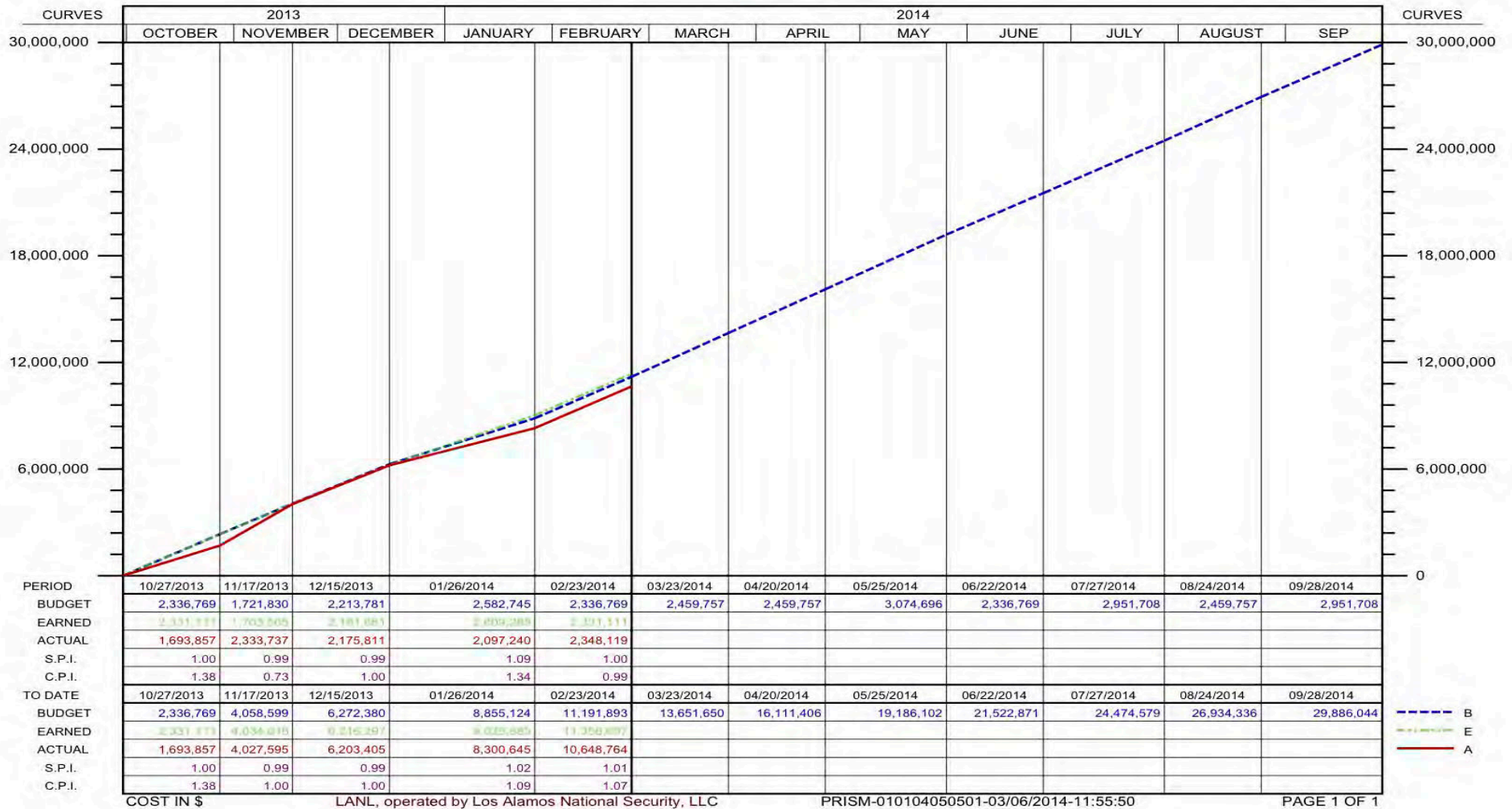
4.5 BCRs

- None

4.6 Earned Value Metrics

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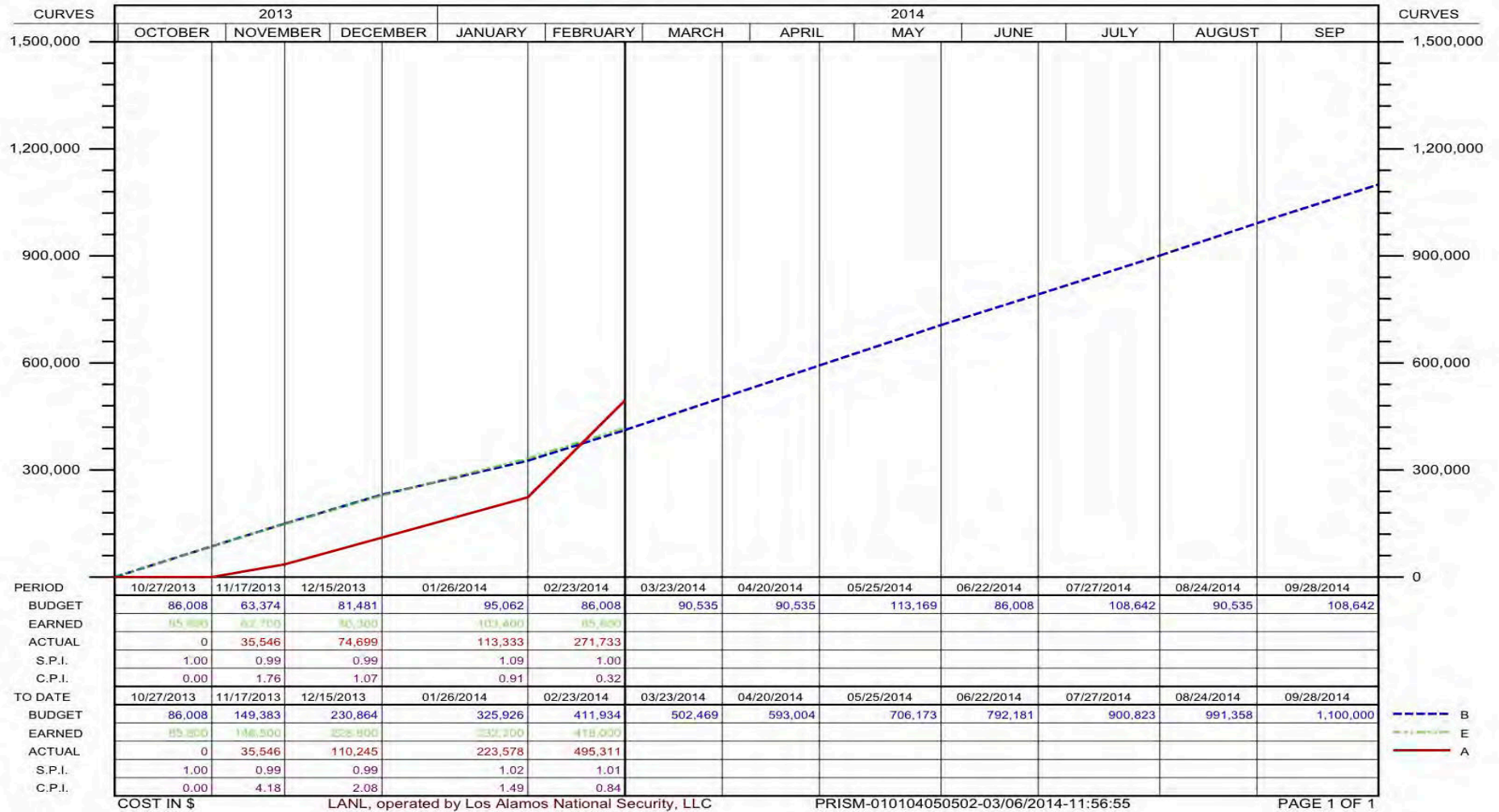
RTBF Recovery



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Waste & Other Landlord Recovery



5.0 Small Sample Fabrication

5.1 Technical Progress

- A scope swap arrangement was executed for FY14 moving small sample fabrication scope to Pu Sustainment.

5.2 Equipment

- None.

5.3 Issues

- None

5.4 Variance Analysis and Recovery Plan

- None

5.5 BCRs

- PSM-14-049: This BCR provides funding for small sample fabrication. This is part of a “scope swap” that includes various elements moving to stockpile services/production support funding (see section 3.5)

5.6 Earned Value Metrics

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Other - Plutonium Sustainment Activities

