

LA-CP-

*Los Alamos Controlled Publication;
distribution is limited.*

Title: Los Alamos National Laboratory Plutonium Sustainment
Monthly Program Report December 2014

Author(s): (b) (6)

Intended for: Report

DISTRIBUTION LIMITATION STATEMENT

Further dissemination authorized to the Department of Energy and DOE contractors only; other requests shall be approved by the originating facility or higher DOE programmatic authority.

Unclassified Controlled Nuclear Information (UCNI)

Not for public dissemination.

DOCUMENT REVIEW

Unauthorized dissemination subject to civil and criminal sanctions under section 148 of the Atomic Energy Act of 1954, as amended (42 U.S.C. 2168).

Reviewing Official: (b) (6)

Date: 01/23/15

Guidance Used: CG-SS-4, 09/12/2000

(List all UCNI guidance used)



Los Alamos National Laboratory, an affirmative action/equal opportunity employer, is operated by the Los Alamos National Security, LLC for the National Nuclear Security Administration of the U.S. Department of Energy under contract DE-AC52-06NA25396. By acceptance of this article, the publisher recognizes that the U.S. Government retains a nonexclusive, royalty-free license to publish or reproduce the published form of this contribution, or to allow others to do so, for U.S. Government purposes. Los Alamos National Laboratory requests that the publisher identify this article as work performed under the auspices of the U.S. Department of Energy. Los Alamos National Laboratory strongly supports academic freedom and a researcher's right to publish; as an institution, however, the Laboratory does not endorse the viewpoint of a publication or guarantee its technical correctness.

Form 1756a (7/06)

LANL Executive Summary.....	3
LANL Response to November NNSA Comments	3
Table 1: December Baseline Change Requests	4
Earned Value Metrics	5
1.0 LANL - Pit Development	6
1.1 Technical Progress	7
1.2 Equipment.....	7
1.3 Issues	7
1.4 Variance Analysis and Recovery Plan.....	7
1.5 BCRs.....	7
1.6 Risk Table	8
1.7 Earned Value Metrics.....	9
2.0 LANL - Power Supply	11
2.1 Technical Progress	11
2.2 Equipment.....	11
2.3 Issues	12
2.4 Variance Analysis and Recovery Plan.....	12
2.5 BCRs.....	12
2.6 Risk Table	13
2.7 Earned Value Metrics.....	14
3.0 Program and Manufacturing Support Services	15
3.1 Program Management	15
3.2 Support	15
3.3 Issues	17
Metrology	17
3.4 Variance Analysis and Recovery Plan.....	17
3.5 BCRs.....	17
3.6 Earned Value Metrics.....	18
4.0 Facilities and Readiness/Waste and Institutional Support.....	19
4.1 Technical Progress	19
4.2 Equipment.....	19
4.3 Issues	19
4.4 Variance Analysis and Recovery Plan.....	19
4.5 BCRs.....	19
4.6 Earned Value Metrics.....	20

LANL Executive Summary

As part of a required Conduct of Operations review, on June 10, 2013, several key PF-4 Operation Procedures were paused halting most SNM operations in PF-4, prompting Laboratory Director Charlie McMillan to issue a temporary pause of all programmatic activities in PF-4. The Evaluation of the Safety Situation (ESS) memo has been issued allowing previously resumed operations to operate in PF-4 (primarily Pu238 and small sample testing related). The majority of Pu239 operations require a series of readiness assessments prior to returning to operational status.

The majority of plutonium operations have been (b) (7)(F)

. A funding model including programmatic and RTBF support and a resource-loaded schedule has been developed. The readiness project team will provide a separate monthly report as a follow-up to this report.

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

- 1) Vendor fabrication of the new xenon backfill station chamber was completed in December. LANL engineers completed acceptance testing at the vendor's factory, and unit delivery is scheduled for January, 2015. Installation planning and designs have been completed in advance of delivery, so that the chamber can be installed immediately after arrival at the facility.
- 2) Line 7 in PF-4 has had several glove box windows replaced and about ½ of the shielding re-installed. Line 7 supports the fuel fabrication (making of granules) for the Power Supply component and it is now possible to test the high fire furnaces and prepare for the Demo 1 lot of fuel to arrive.

All three proposed NNSA Level 2 Milestones (MRT 5366, 5367, and 5373) associated with Plutonium Sustainment are on track for success in FY15.

The earned value metrics overall for LANL are within acceptable thresholds.

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

LANL Response to November NNSA Comments

- Commitments are now included in the 'minifile' spreadsheet
- The requested Readiness cost information has been sent as an attachment to this Monthly Report submission.

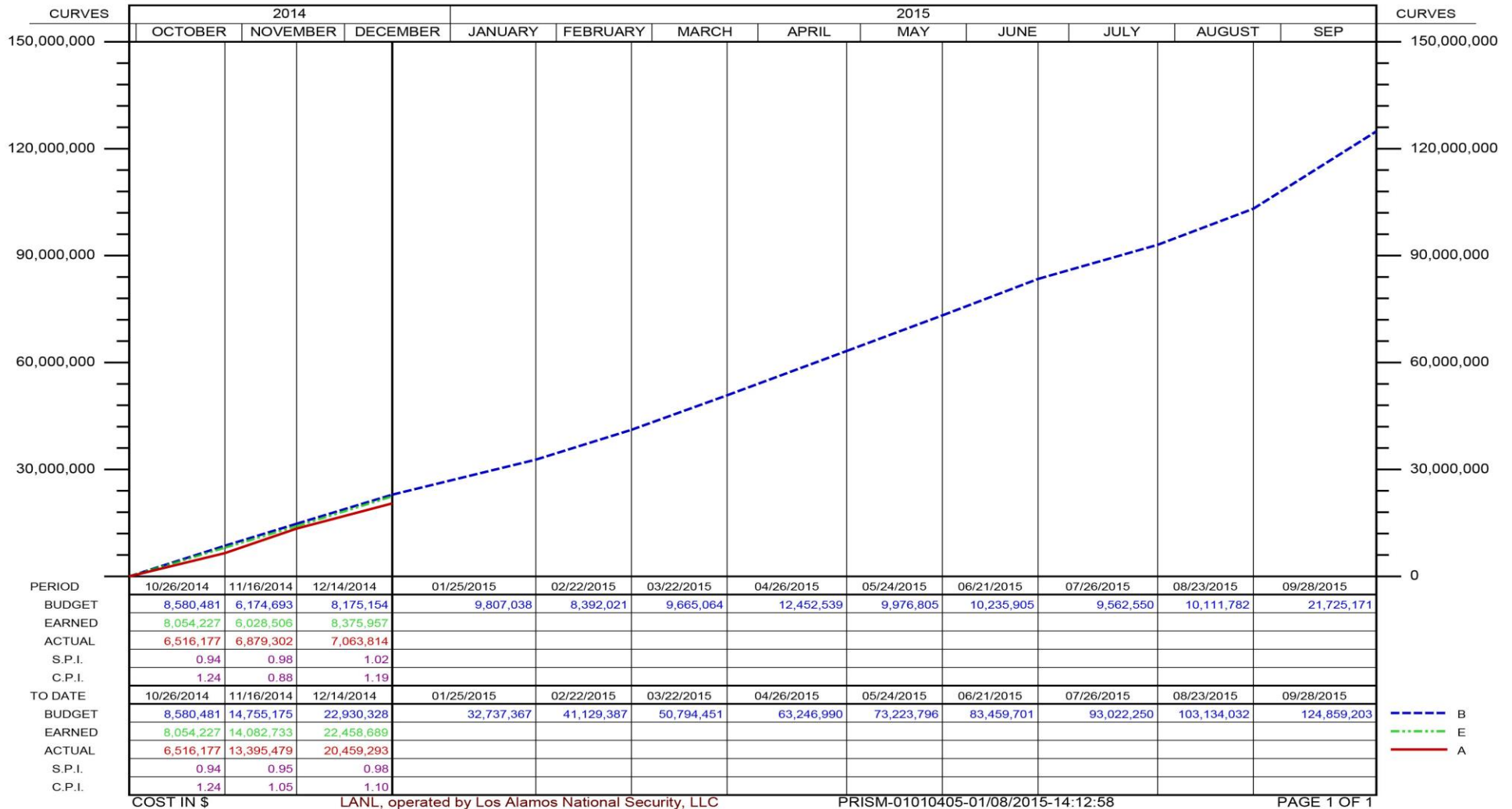
Table 1: December Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Pit Equipment	PSM-15-002	ER-Line Baseline	11/17/14	In process	Schedule	none	3
Pit Equipment	PSM-15-003	(b) (7)(F)	11/17/14	In process	Schedule/Cost	TBD	3
Pit Equipment	PSM-15-004	(b) (7)(F)	11/17/14	Cancelled; combined w/other	Schedule/Cost	TBD	3
Pit Equipment	PSM-15-005	Foundry D&D Baseline	11/17/14	In process	Schedule	none	3
Readiness/ Production Support	PSM-15-015	Redistribution of KKRA IFIT Funds in to Pu Sustainment	11/23/14	12/8/14	Scope/ Schedule/Cost	TBD	3
Project Controls	PSM-15-017	Correct Financial Periods in P6	12/1/14	12/2/14	Time phasing	none	4
Pit Development	PSM-15-026	MST-16 Casting Technology Road Map	1/20/15	pending	Scope/Schedule	\$750K	3

Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05 - Pu Sustainment



[NOTE: September 2015 includes 6% FY16 carryover holdback of \$7.496M in addition to the five major WBS elements.]

1.0 LANL - Pit Development

MRT 5366		GREEN	Complete FY 2015 Key Equipment Upgrades and Replacement Activities		
Continue equipment upgrade and replacement activities including the following:					
1. Receive Precision Measurement Machines (PMM) #1 and #2 (Infinity) at LANL					
2. Release PMM #1 glove box fabrication design to procurement					
3. Complete factory acceptance testing for (b) (7)(F) System #1					
4. Complete decontamination and decommissioning (D&D) of 2 glove boxes (XB's) (assuming a disposition path is available at LANL)					
5. Start external installation for chlorine supply room					
6. Start glove box fabrication of (b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
Conduct Factory Acceptance Test on Infinity PMM#1	March 27, 2015	Currently ahead of schedule		GREEN	
Receive PMM#1	May 29, 2015			GREEN	
Conduct Factory Acceptance Test on Infinity PMM#2	May 15, 2015			GREEN	
Receive PMM#2	July 24, 2015			GREEN	
Develop Checklist for Glovebox Mockup for PMM#1	January 2, 2015	Completed	December 15, 2014	BLUE	
Approve Final Glovebox Mockup for PMM#1	June 26, 2015			GREEN	
Approve PMM#1 Glovebox Fabrication Design for Construction (Release for procurement)	September 11, 2015			GREEN	
(b) (7)(F)	May 29, 2015			GREEN	
(b) (7)(F)	September 11, 2015			GREEN	
Start D&D of 2 XBs (gloveboxes)	January 9, 2015	Started D&D	October 21, 2014	BLUE	
2 XBs (gloveboxes) removed from room	May 15, 2015			GREEN	
IBC reports of completion of D&D of XBs	June 19, 2015			GREEN	
Start equipment procurement for Chlorine Supply Room	November 7, 2014	Completed	October 29, 2014	BLUE	
Complete equipment procurement for Chlorine Supply Room	February 27, 2015	Procurement starts on track		GREEN	
Start Construction for Chlorine Supply Room	March 20, 2015	Development of Work Control Documents are ahead of schedule		GREEN	
Procurement (ASM) issues request for proposal (RFP) for (b) (7)(F) Glovebox	January 30, 2015	Completed	December 2, 2014	BLUE	
Kickoff meeting with vendor for (b) (7)(F) Glovebox	March 13, 2015	Completed	December 19, 2014	BLUE	

Start (b) (7)(F) Glovebox fabrication	April 3, 2015	Completed	December 14, 2014	BLUE
---------------------------------------	---------------	-----------	-------------------	------

1.1 Technical Progress

- (b) (7)(F)

1.2 Equipment

- The plan to meet the grading criterion L2 milestone MRT 5366 includes the following by September 30, 2015:
 1. Receive Precision Measurement Machines (PMM) #1 and #2 (Infinity) at LANL
 2. Release PMM #1 glove box fabrication design to procurement.
 3. Complete factory acceptance testing for (b) (7)(F)
 4. Complete decontamination and decommissioning (D&D) of 2 glove boxes (XB's) (assuming a disposition path is available to LANL).
 5. Start external installation for chlorine supply room.
 6. Start glove box fabrication of (b) (7)(F).
- Receive Precision Measurement Machines (PMM) #1 and #2 (Infinity) at LANL (b) (3)
 - Continued preparation of the factory acceptance testing document.
- Release PMM #1 glove box fabrication design to procurement
 - Continued to develop the checklist for mockup glovebox acceptance.
- (b) (7)(F) (b) (3)
 - Began evaluating whether (b) (7)(F) will be installed in (b) (3) and the impact, if any, on (b) (7)(F) (b) (7)(F)
- Decontamination and Decommissioning of (b) (7)(F) (b) (3)
 - IWDs for D&D under preparation.
- Chlorine Distribution & Detection System (b) (3)
 - Scrubber design nearing completion.
- (b) (7)(F) (b) (3)

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 BCRs

- PSM-15-002: This BCR establishes the baseline Primavera schedule for the ER line upgrades project based on the Continuing Resolution budget.
- PSM-15-004: This BCR funds the PF-4 location study for (b) (7)(F) to conclude at the end of January.
- PSM-15-005: This BCR establishes the baseline Primavera schedule for the Foundry D&D project based on the Continuing Resolution budget.

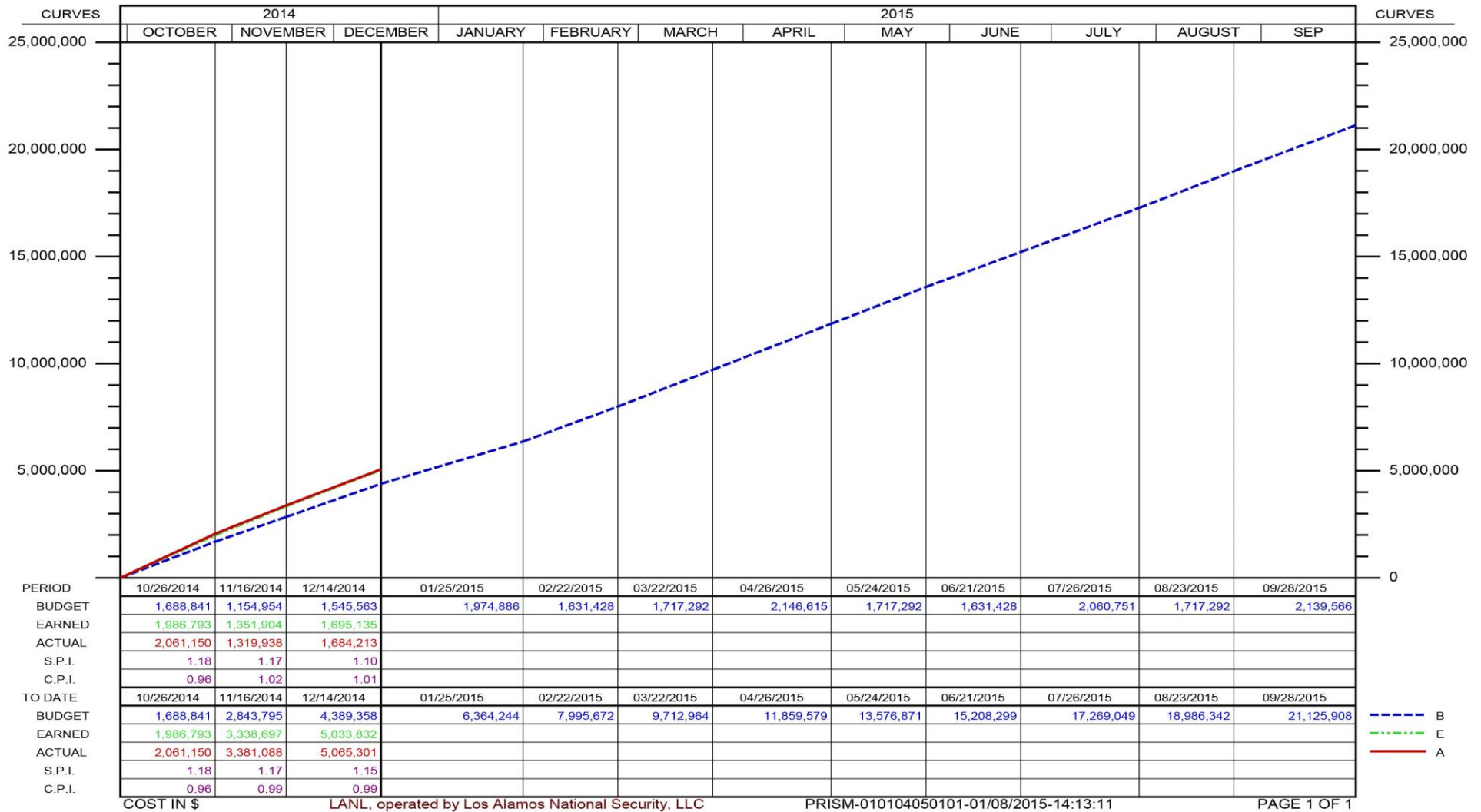
1.6 Risk Table

Work	Description	Handling Strategy	Status
(b) (7)(F)	(b) (7)(F)	If operations are not resumed in about mid-July when pits are hoped to be built, the workforce will continue to: focus on resuming operations by supporting readiness activities, supporting equipment investments, and exercising the flow sheet with surrogates if possible. (b) (7)(F) (b) (5), (b) (7)(F) (b) (7)(F)	(b) (7)(F) Management Self-Assessment is underway with the Red Team Review scheduled for November and the Contractor Readiness Assessment scheduled to begin in December 2014. Plans of Action are being developed for Machining and the Pit Flowsheet Readiness areas.
(b) (7)(F)			

1.7 Earned Value Metrics

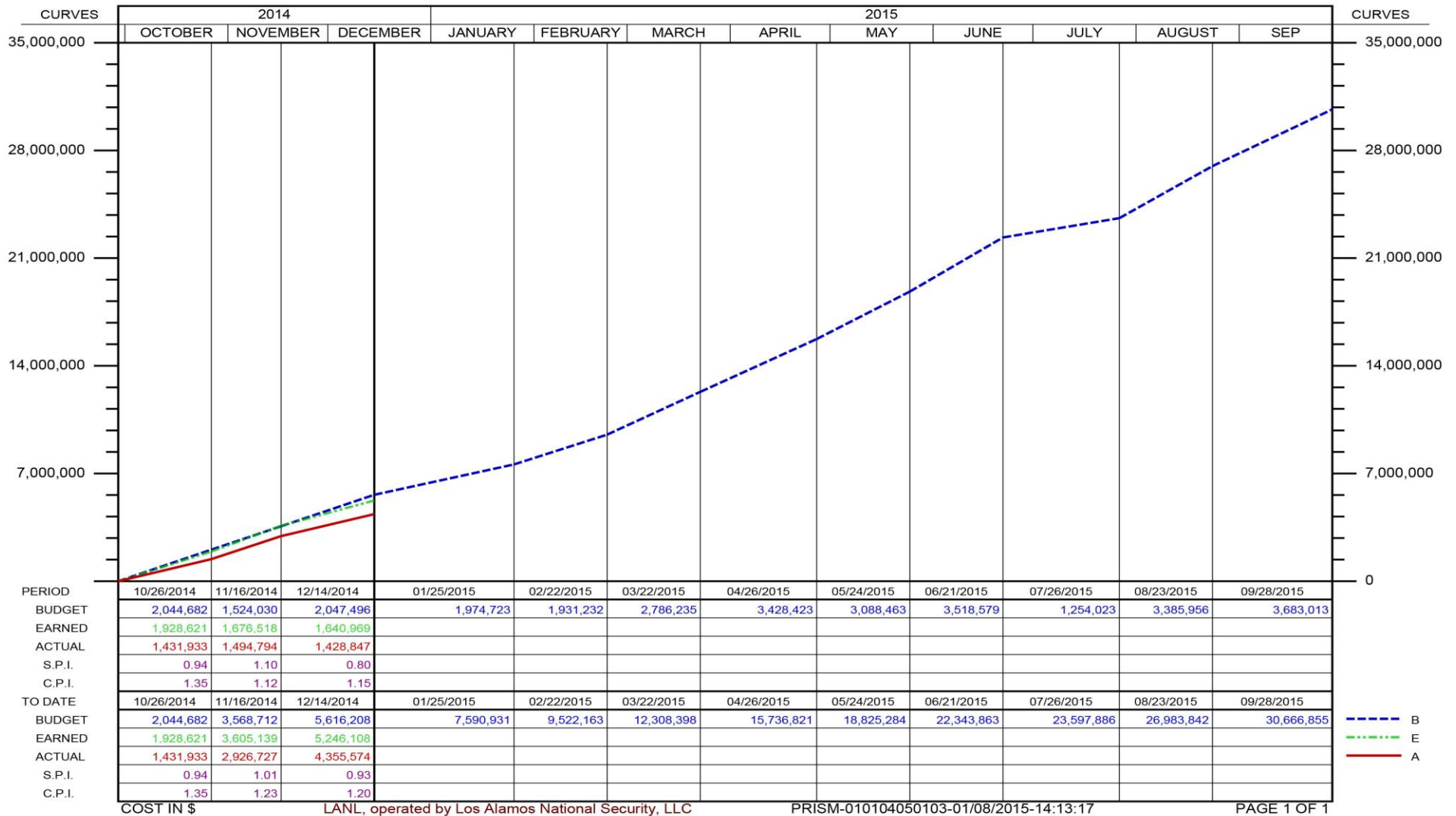
PERFORMANCE S-CURVE

01.01.04.05.01.01 - Pit Manufacturing and Design D



PERFORMANCE S-CURVE

01.01.04.05.01.03- Pit Manufacturing Equipment



2.0 LANL - Power Supply

MRT 5367	GREEN	Complete FY 2015 Power Supply Development Activities		
Continue the development of Power Supply production capability by completing one functional Atmosphere Control Box (ACB) Line in Assembly Test Facility (ATF) including the following: 1. Install prototype Xenon backfill station in ACB line 2. Install prototype Xenon leak check station in Assembly Test Facility (ATF) 3. Manufacture surrogate Power Supply using KCP provided (b) (7)(F) components				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Install prototype Xenon backfill station in ACB line	September 30, 2015	Delivery to LANL expected in January, 2015		GREEN
Install prototype Xenon leak check station in ATF	September 30, 2015			GREEN
Manufacture surrogate Power Supply using KCP-provided DEV 2 components	September 30, 2015	An ICO has been issued to KCP by the DA for procurement of material to make the DEV2 parts		GREEN

2.1 Technical Progress

- LANL hosted the Power Supply Project Realization Team (PRT) meeting in December, and LANL engineers gave presentations on several of the (b) (7)(F) currently being developed. (b) (7)(F) is on schedule and all technical issues discovered to date have been mitigated by improved design, improved fixturing, and/or by utilizing Design of Experiments to determine acceptable weld parameters.
- Development Lot 2 parts have been received from Kansas City via SNL with the exception of the Min-K insulation and the final design (D04) heat source parts. The Min-K, as well as D04 parts manufactured as part of the vendor qualification, is expected in January 2015. New D04 parts are expected in the April 2015 timeframe.
- Vendor fabrication of the new xenon backfill station chamber was completed in December. LANL engineers completed acceptance testing at the vendor's factory, and unit delivery is scheduled for January, 2015. Installation planning and designs have been completed in advance of delivery, so that the chamber can be installed immediately after arrival at the facility.
- FSO 520/FSI 0048 has been opened for oxide production demonstration run one (Demo 1). The dissolution and fuel fabrication is expected in January 2015. The trolley system needed to move the equipment and oxide around the plant has been repaired and is supporting the oxide demonstration run.
- The heat source liner (using D04) testing for Department of Transportation special forms sealed source certification (49CFR 173.469) is two-thirds complete without issue. It is expected to be finished in January.

2.2 Equipment

- Testing and debugging of the new (b) (7)(F) (for heat source fabrication) is now on-going and will continue through January 2015.
- Furnaces for performing the air fired process step on the Min-K have been ordered. Modifications to the facility (pulling 208V) have been planned and are expected to be completed in January shortly after the furnaces arrive.
- The xenon backfill station has been shipped from the vendor and is expected to arrive at LANL in January.
- Line 7 in PF-4 has had several glove box windows replaced and about half of the shielding re-installed. Line 7 supports the fuel fabrication (making of granules) for this component, and it is now possible to test the high fire furnaces and prepare for the Demo 1 lot of fuel to arrive.

2.3 Issues

- NNSA and SNL systems have provided LANL with a challenge to produce a live unit by Baseline Design Review (BDR). LANL has agreed to give their best effort to meet the challenge. All groups at LANL that have a role have been contacted and a comprehensive activity list has been developed. The unit to be produced and the tests to be accomplished have been defined in a joint SNL-LANL-KCP document (GE2A3752) published by SNL.

2.4 Variance Analysis and Recovery Plan

- None

2.5 BCRs

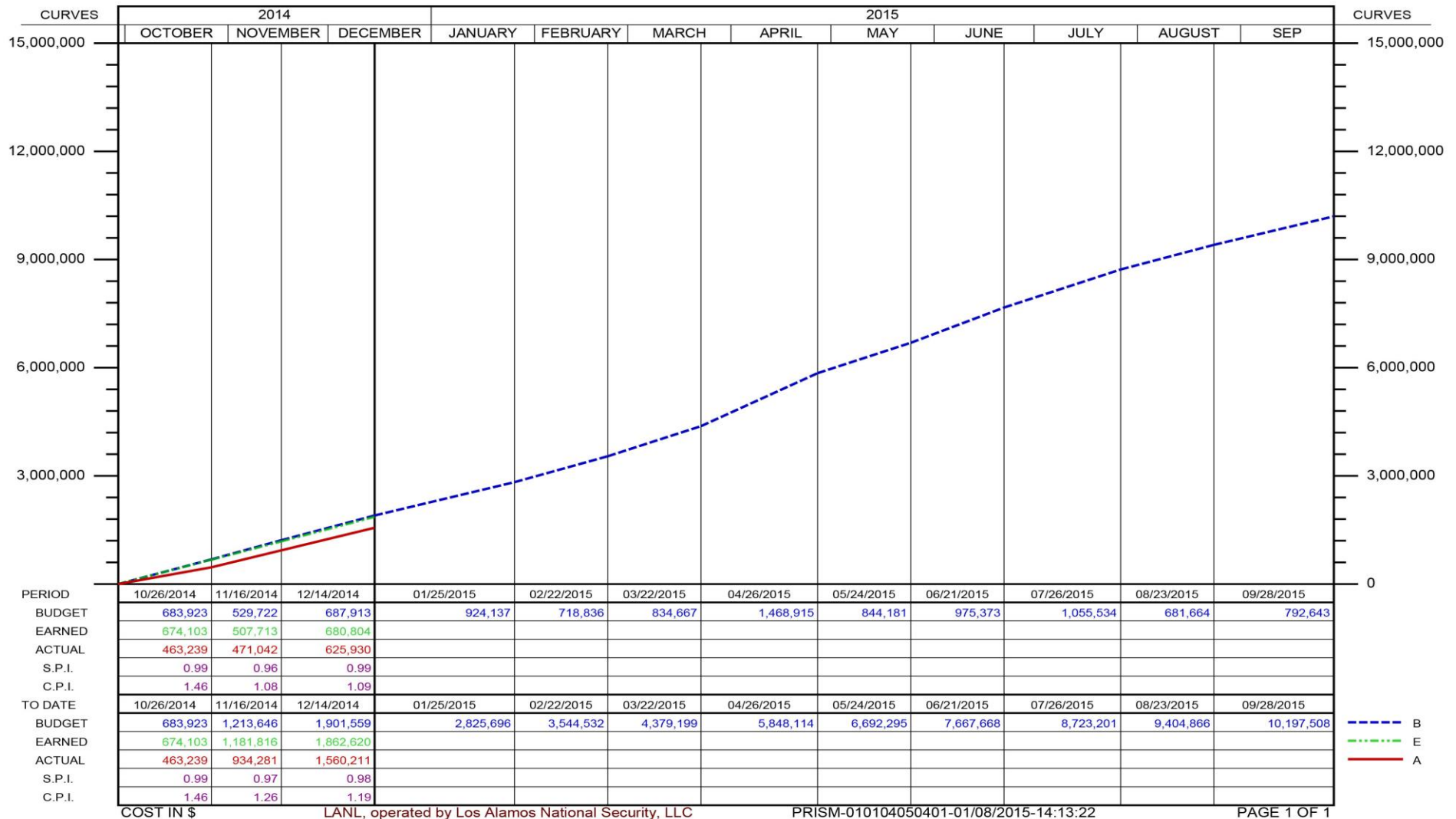
- None

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 that LANL and LAFO management allow for increase in dose to staff assigned to this work. 3. Delay non-critical path activities until they become critical path for FPU.	Working closely with other Programs to maintain adequate personnel coverage for all, and optimize use of resources.
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 delivery of 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 formally manage any delays.	LANL continues to provide input at the monthly PRT meeting.
(b) (7)(F)	(b) (7)(F)	(b) (7)(F)	
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; funding for development and installation has resumed in FY15.

2.7 Earned Value Metrics

PERFORMANCE S-CURVE 01.01.04.05.04.01 - Power Supply Production



3.0 Program and Manufacturing Support Services

MRT 5373	GREEN	<i>Complete and submit a monthly report to NA-123.1 detailing the programmatic status of the Plutonium Sustainment Program by Site</i>		
Provide program status on technical, cost and schedule, funding, milestones and risk to NNSA on a monthly basis				
1. All participants must submit a site specific monthly status report to NA-123.1 no later than the 24th day of each month. 2. The monthly report should be a word document in report type format using the FY14 reporting template and include submission of excel spreadsheet supporting financial data. 3. Minimum topics include (extracted from FY14 format): a. Executive Summary, Milestone Status (Level 2 and Level 3), Technical Progress, EVMS charts (where available), Issues, Variance Analysis and Recovery Plan and Risk Table. b. The financial portion includes: Cost and schedule, funding (FY15 budget authority and FY14 carryover), time phased spend plan by month, actual to date expenditures, estimates to complete, commitments (liens or encumbrances)				
Activity	Baseline Date	Status/Comments	Completion Date	RGYB
October Report	November 24, 2014	Issued	November 24, 2014	BLUE
November Report	December 24, 2014	Issued	December 22, 2014	BLUE
December Report	January 24, 2015	Issued	January 23, 2015	BLUE
January Report	February 24, 2015			GREEN
February Report	March 24, 2015			GREEN
March Report	April 24, 2015			GREEN
April Report	May 24, 2015			GREEN
May Report	June 24, 2015			GREEN
June Report	July 24, 2015			GREEN
July Report	August 24, 2015			GREEN
August Report	September 24, 2015			GREEN

3.1 Program Management

- Supported the resumption scheduling effort with priority assignments and procedure list review.
- Managing FY2015 work packages.
- Working with other programs to insure shared scope, like preventive and corrective maintenance, are equitably portioned across programs.
- PF-4 Readiness: In order to equitably distribute the PF-4 Readiness costs to each benefitting program, a Readiness Model was developed with input from program managers, program directors and division leaders for the owners of the processes with readiness activities. The Readiness Model is under change control with a board composed of the program directors representing the three major program areas and CFO. Direct funded through programmatic support within the Readiness Model are activities tied to specific components of readiness activities to include the Management Self-Assessments (MSA) and Contractor Readiness Assessments (CRA). Ancillary to the Assessments are the Readiness Managers, Readiness Technical Coordinators, and criticality safety evaluations. Readiness activities will continue throughout FY2015 and possibly beyond.

3.2 Support

- Procurement and Warehousing
 - The NPI-8 procurement team successfully processed 140 procurement requests this month. The team was able to work through the period without the development of a substantial (> 1 week) and permanent backlog. Successfully closed out PFITS-2014-2179.
 - Warehouse transactions
 - Warehouse distributions: 1,694

- Warehouse receipts: 2,812
- Cost of warehouse distributions: \$54,062
- Cost of warehouse receipts: \$70,063
- Change in warehouse valuation: \$16,001.
- Calibration
 - S&CL's organizational home in the Acquisition Services Management Division was effective on Dec 1, 2014.
 - PF-4 shutdown has impacted the number of items submitted for re-calibration compared to historical data for the same time periods. This is expected to change as PF-4 operations restart.
 - A total of 30 M&TE items were calibrated in October. Achieved target cycle times for equipment turn around to avoid mission and deliverable impacts.
 - S&CL has gained the ability to calibrate multiple thermocouples simultaneously through the use of new equipment. The new equipment allows for the simultaneous calibration of up to 40 thermocouples. Previously the maximum was 2.
 - S&CL is near completion in its efforts to regain accelerometer calibration capability.
 - Improvements to accuracies have been made in low pressure flow, AC current, and oscilloscopes.
- Document Control and Records Management
 - New DARs received by the team = 118
 - New DARs received for MET-1 = 41
 - New DARs received for MET-2 = 13
 - Completed DARs by the team = 71
 - Completed DARs for MET-1 = 19
 - Completed DARs for MET-2 = 6
- Records Management Results
 - Boxes indexed and shipped offsite = 10
 - Boxes indexed and stored in VTR = 4.25
 - Boxes received for processing = 0.0
- Preventive and Corrective Maintenance

Preventive Maintenance has been operating on a "replace as it fails" basis. In early FY2015, a detonator production and surveillance equipment plan will be compiled. This plan will include an investment prioritization along with a risk table.
- The NPI-3 TA-55 300 Area maintenance team processed the following tasks:
 - a. Trouble-call/Repairs GB Systems – 4 ea.
 - b. Preventive Maintenance GB Systems – 3 ea.
 - c. Trouble-call/Repairs Programmatic Equipment – 1 ea.
 - d. Preventive Maintenance Programmatic Equipment – 0 ea.
 - e. Power Supply and Heat Source
 - f. Decon support for 400 Area ESS upgrades (PuS)
- Projects Supported in December:
 - a. Foundry West (GB 351/354)
 - b. (b) (7)(F)
 - c. (b) (7)(F) D&D.
 - d. Transition spool and replacement window design – Ready for Prototype procurement/fab (currently SPDS funded, but will need for DSW and PUS))
 - e. Power Source Aqueous Line re-design – Bubbler and ventilation balance 100/200 area
 - f. Supporting MET-1 maintenance plan development for all furnace ops.
 - g. Pu238 MM upgrade options – Rev 1 with AET-5 (b) (6)
- The NPI-3 TA-55 100/200 Area maintenance team processed the following tasks in December:

- a. Trouble-call/Repairs GB Systems - 1 ea (Window Changes).
- b. Preventive Maintenance GB Systems - 0ea.
- c. NPI-3/NPI-7 working water discard issues (RCRA) (continued)
- d. Room Wipedowns 3 in 200 area, Decon support in 3 rooms, including the window change
- e. GB Fastener check (torque validation)
- f. Waste management support
- Work Management and Control
 - Supported T-Base 2 CRA, improved Maintenance Plan, and generated 3 new PM packages.
 - Updated MEL and History input.

3.3 Issues

Metrology

Facility temperature issues at the S&CL are at risk of impacting program calibrations. For items that can be outsourced when facility problems prevent their calibration at LANL, there should be no impact due to the current calibration Blanket Order Agreement in place; however, for specialty items that cannot be outsourced, there is a risk that a calibration need might come at the same time as a facility problem, impacting the S&CL's ability to calibrate in house. In the month of September, the S&CL experienced several days of 'Stop Work' conditions due to environmental issues.

The metrology information management system "Mudcats" will need to be replaced in early FY15 as the company that supports the current system has gone out of business. This will also require the web interface with M&TE customers to be replaced.

3.4 Variance Analysis and Recovery Plan

- Through month end October spending relative to planned at the MAL level. Some work packages are underrunning while others are overrunning in the first month. Working with work package managers to ensure spending tracks close to planned with exceptions fully explained.

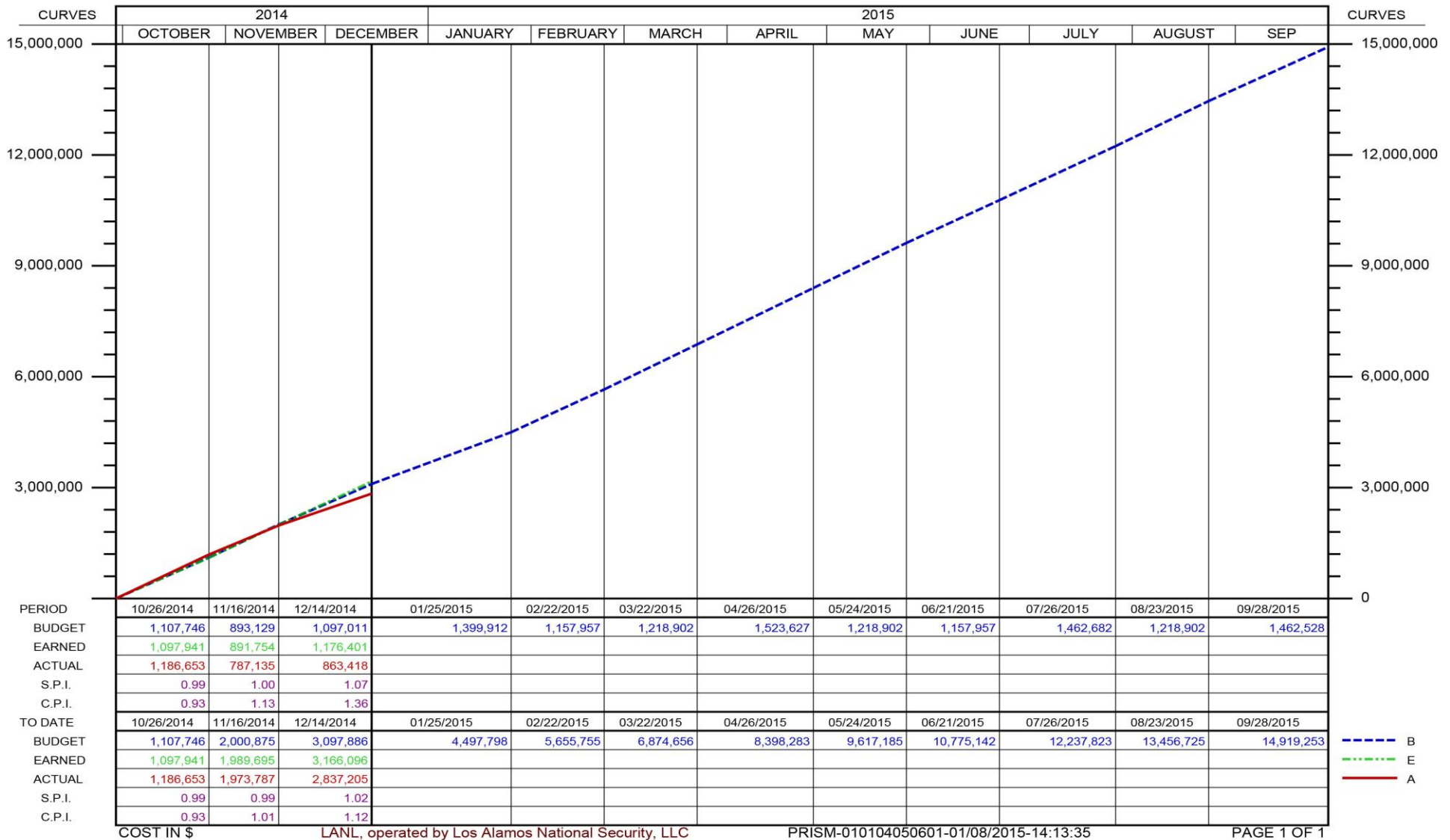
3.5 BCRs

- None

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05.06.01 - Program Support



COST IN \$

LANL, operated by Los Alamos National Security, LLC

PRISM-010104050601-01/08/2015-14:13:35

PAGE 1 OF 1

4.0 Facilities and Readiness/Waste and Institutional Support

4.1 Technical Progress

- Completed revisions of all Detailed Operating Procedures for the pit flowsheet activities to support readiness of that element. The readiness BCR scheduled for next month will add a Federal Readiness Assessment to this element.
- PF-4 Facility Availability: December 74.14%
 - 100 Area: 78.57%
 - 200 Area: 73.21%
 - 300 Area: 73.96%
 - 400 Area: 70.82%

4.2 Equipment

- None

4.3 Issues

- None

4.4 Variance Analysis and Recovery Plan

- None

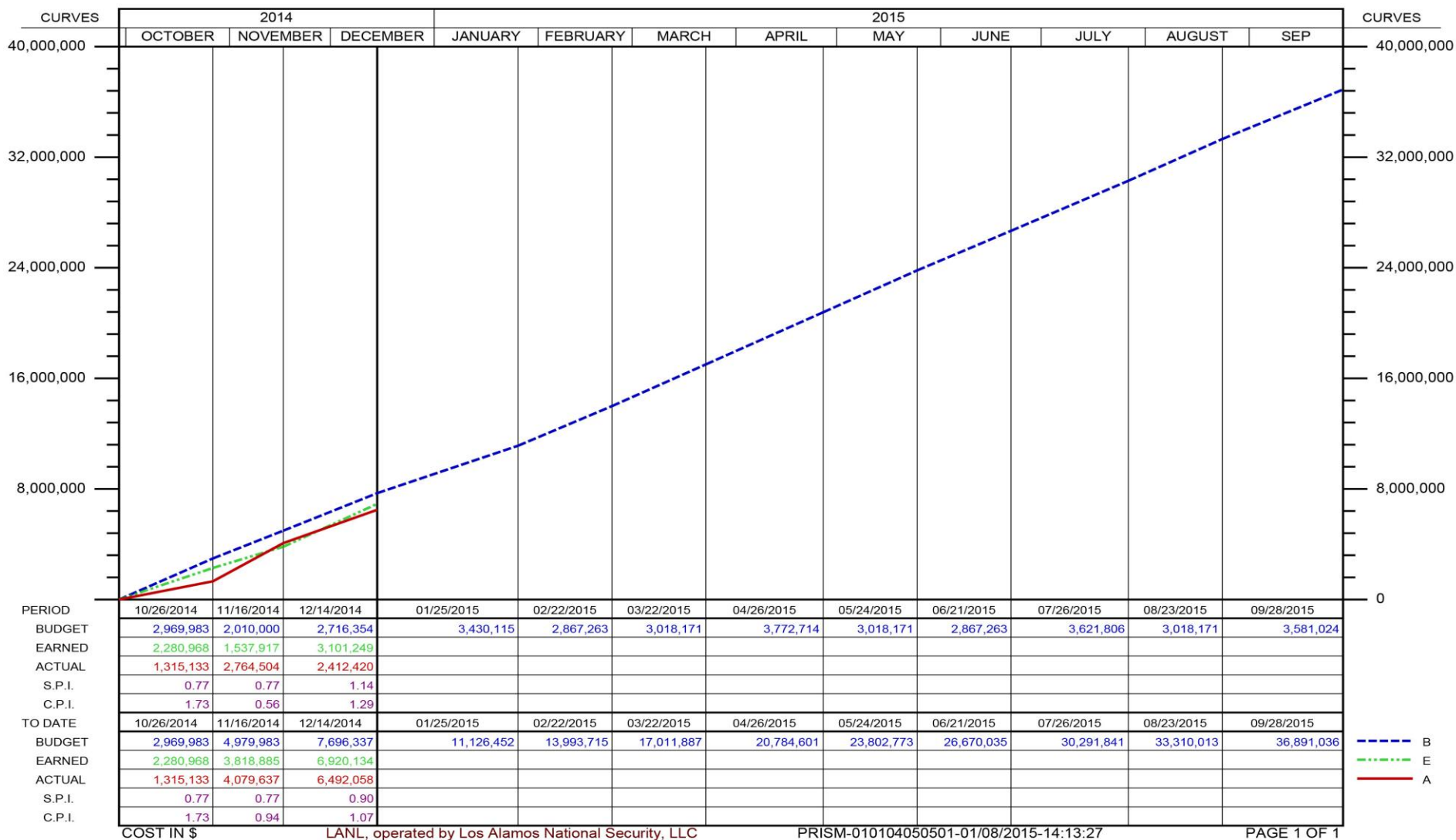
4.5 BCRs

- None

4.6 Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05.05.01 - RTBF Recovery



PERFORMANCE S-CURVE

01.01.04.05.05.02 - Waste & Other Landlord Recover

