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Monthly Program Report November 2016

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Report

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(List all UCNI guidance used)



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LANL Executive Summary

Pu239 operations have been undergoing readiness assessments in previous years. In FY16 pit manufacturing was resumed. All operations are available in FY 17 (b) (7)(F)

- (b) (7)(F)
- (b) (7)(F)

(b) (7)(F)

In November of 2016 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

1. Pit Fabrication:
 - a. Machining of Pu coupons for coupon subdevelopment completed.
 - b. (b) (7)(F)
 - c. Product Design Definition Review materials prepared.
2. Sub crit Fabrication: Schedule developed for completion of the (b) (7)(F) in FY17. Confirmatory shot assembly was participated in and observed.
3. Pit Equipment: CMM #1/2 Gloveboxes are progressing. (b) (7)(F) progressing. (b) (7)(F) Glovebox beginning
4. Power Supplies. Electrical testers from Kansas City are installed and functioning. The Design of Experiments (DoE) for the liner has begun with (b) (7)(F) samples started. The aqueous purification of legacy oxide (960 grams in) has yielded about 660 grams of purified oxide. Process improvements have begun.

All NNSA Level 2 Milestones for FY17 are on track to complete on time.

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

LANL Response to NNSA Comments

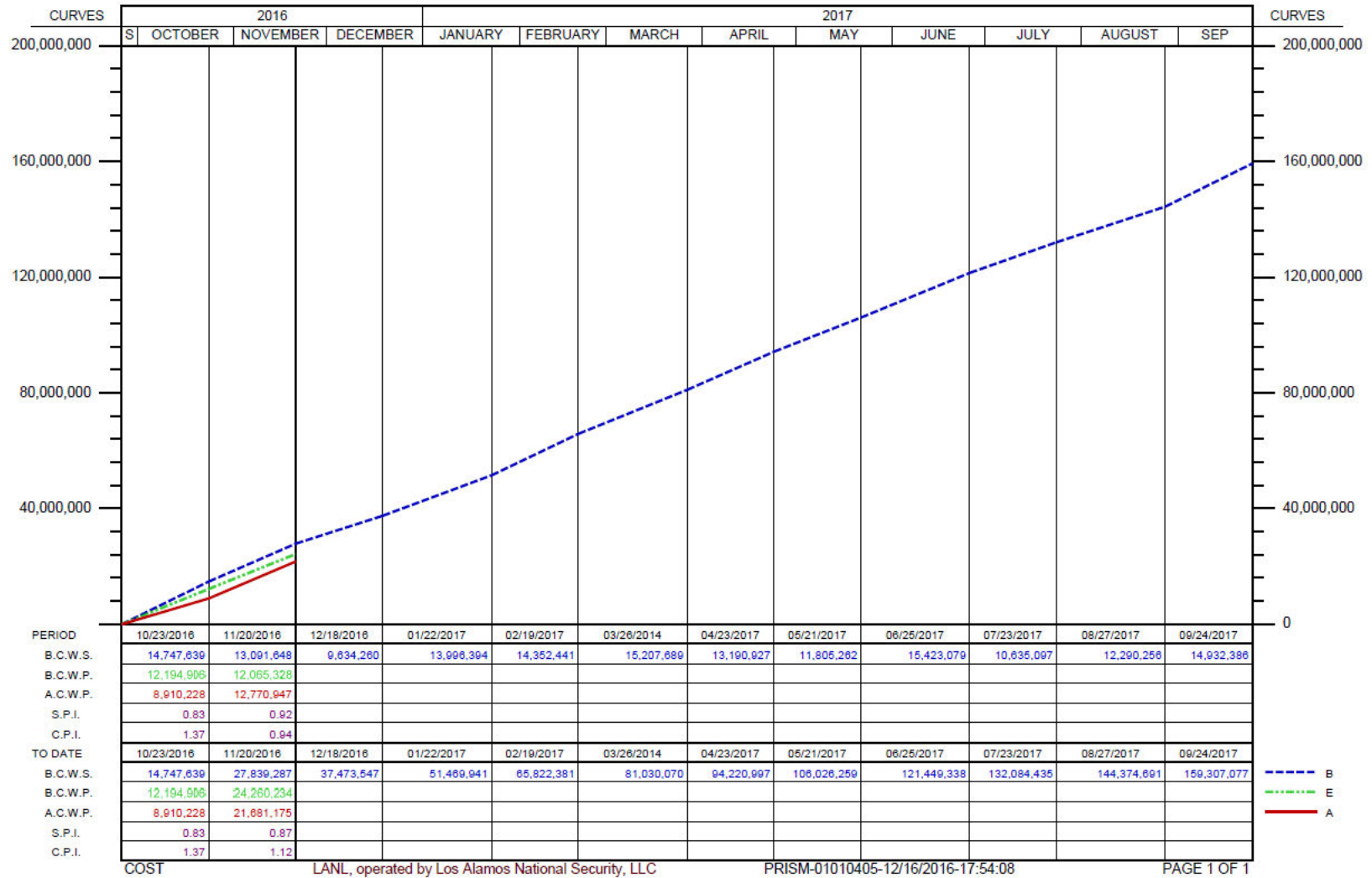
None.

Table 1: FY17 Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level

Earned Value Metrics

PERFORMANCE S-CURVE
Pu Sustainment



1.0 LANL - Pit Development

MRT XXXX		GREEN	Complete Equipment Upgrade and Replacement Activities		
Continue equipment upgrade and replacement activities including the following:					
1. Complete installation of (b) (7)(F) at TA-55 PF-4.					
2. Complete Foundry GB #1 upgrades.					
3. Start CMM #1 glovebox installation.					
4. Start CMM #2 glovebox installation.					
5. Complete (b) (3) and start (b) (7)(F) and glovebox installation.					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F) PF-4	7/31/2017	D&D activities are ahead of schedule. Installation activities remain on track.		GREEN	
Complete Foundry GB#1 upgrades	9/22/2017	100% Design and Integrated Work Authorizing Documents (IWDs) have been released and are through USQ and ready for construction.		GREEN	
Start CMM #1 glovebox installation	8/21/2017	Corridor to laboratory room support ramp construction 100% complete Installation and certification of new tent was completed in late November		GREEN	
Start CMM #2 glovebox installation	8/28/2017	Fabrication of CMM #2 GB was completed in late November with FAT scheduled for mid to late December Forecasted installation dates remain on schedule		GREEN	
Complete (b) (3) and start (b) (7)(F) and glovebox installation	6/03/2017	Both enclosures were removed from room in mid to late November Craft continue to work on grouting of floor penetrations in support of CNC Lathe Project 1&2 (b) (7)(F) installation project start dates remain on schedule		GREEN	

MRT XXXX		GREEN	Complete 2 MC4597-00 Development Units		
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments		Completion Date	RGYB
(b) (7)(F)					

(b) (7)(F)

MRT XXXX	GREEN	Manufacture Subcritical Experiment			
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F)					

MRT XXXX	GREEN	Complete MC4597-01 Subdevelopment Activities		
(b) (7)(F)		. Subdevelopment activities are operations with Pu that will progress the technical or manufacturing readiness levels.		
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)				

MRT XXXX	GREEN	MC4597-01 PRT Support			
Provide needed documentation, planning, and analysis to support the product realization effort for the (b) (7)(F) Fabrication.					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F) Production Strategy	1/31/2017	Draft production strategy released 11/30/2016		GREEN	

Unclassified

(b) (7)(F) Development Plan	1/31/2017			GREEN
Attend PRT meetings and complete all action items	9/30/2107	Up to date		GREEN

1.1 Fabrication Technical Progress

- Pit Fabrication

- o Machining of Pu coupons for coupon subdevelopment was completed in November. (b) (7)(F)
(b) (7)(F)
(b) (7)(F) Coupons will support subdevelopment activities allowing additional process development to occur with limited material and build opportunities.
 - o (b) (7)(F)
(b) (7)(F)
- (b) (7)(F)

Figure 2 – Sectioned, tested Ta container

- o (b) (7)(F)
- o A Product Design Definition Review (PDDR) has been prepared for, comparing design requirements against capability and planning. The review meeting will be conducted December 1st and 2nd at LLNL. The PDDR will document all required actions for capability and planning to meet requirements.

- Subcritical Experiment Fabrication

- o The baseline plan is to begin machining of (b) (7)(F) experiment parts in February of 2017.

- o (b) (7)(F)

1.2 Equipment

The plan to meet the grading criterion L2 milestone includes the following by September 30, 2016:

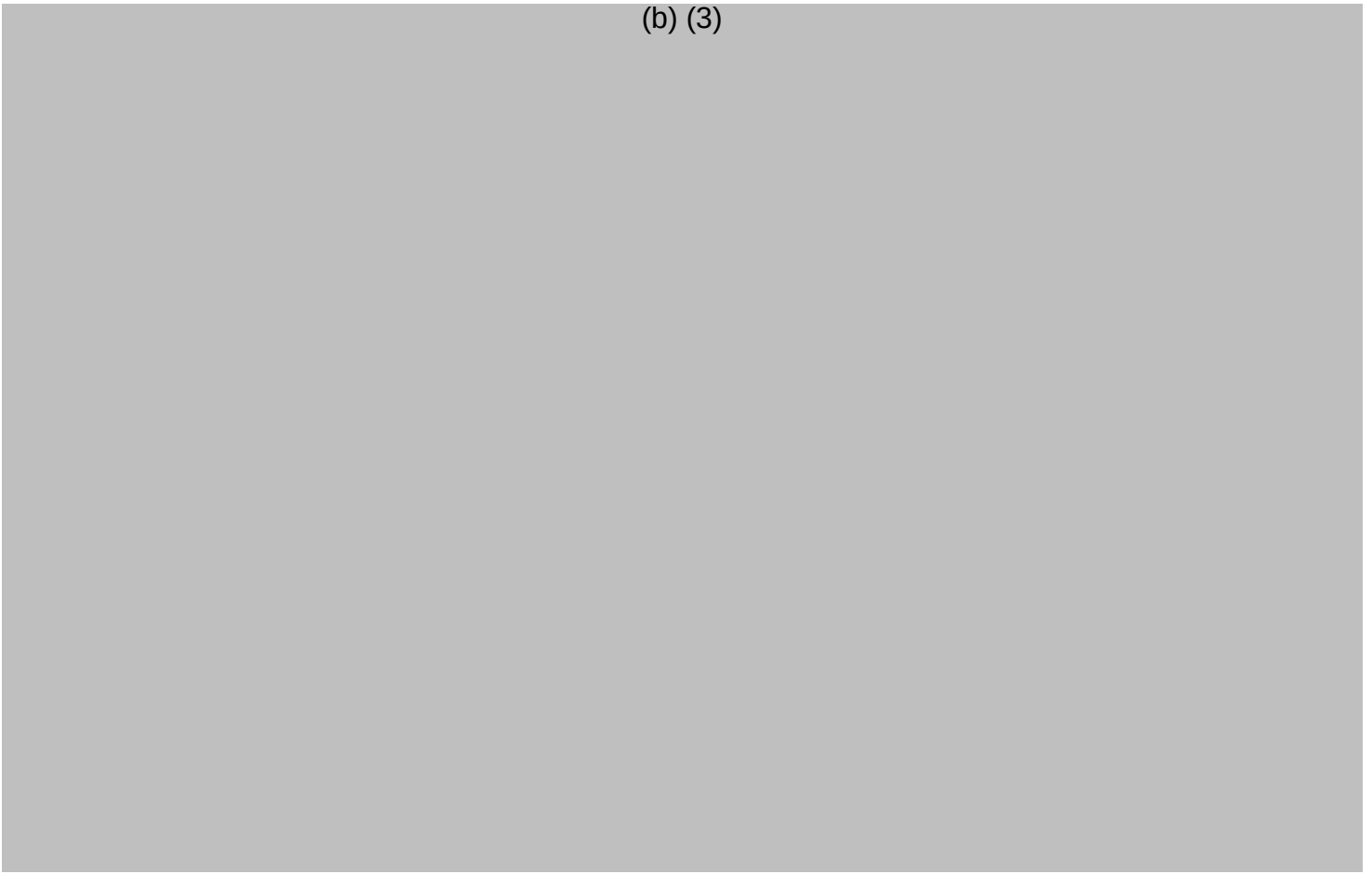
1. (b) (7)(F) (all specified inspection and post modification reports generated, reviewed and approved)
 - a. Start (b) (7)(F) (utility skid relocation into PF-4 basement)
 - b. (b) (7)(F) complete
2. Foundry Upgrades GB#1
 - a. Construction complete (all specified inspection and post modification reports generated, reviewed and approved)
 - b. Design and work authorizing documents have been developed, reviewed and released for construction
 - c. Start GB #1 construction activities
3. CMM #1 Installation
 - a. Infinity (CMM #1) relocated into and in PF-4
 - b. Start trunk-line GB installation
 - c. Start CMM #1 glovebox installation
4. CMM #2 Installation
 - a. Start CMM #2 glovebox installation
 - b. Installation/construction work authorization document released for construction
 - c. CMM #2 installation design complete
5. (b) (7)(F)
 - a. Start (b) (7)(F)
 - b. (b) (3) complete

Baseline plans are established for each project. The projects have been modified to follow a Lifecycle Management Guide that LANL is supporting. Plans have begun to be executed.

(b) (7)(F)

- (b) (7)(F) is currently ahead of schedule
- Doghouse at (b) (7)(F) of old unit has been inspected and certified for use
- (b) (7)(F) has been removed and relocated to basement for capacitor energization and disposition
- Installation activities remain on schedule
- Basement mechanical skid has been relocated into the basement and anchored to floor
- Doghouse at (b) (7)(F) or old unit has been expected and certified for use

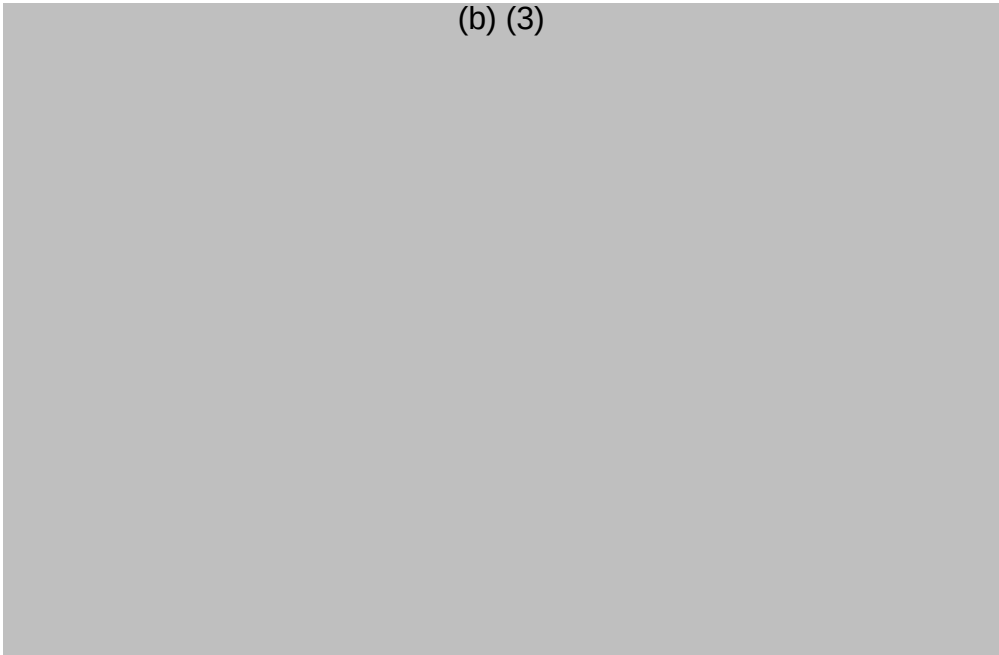
(b) (3)



CMM #1 Glovebox Installation

- All 6 Glove-boxes have been remove from room and floor space readied for CMM installations
- Corridor to laboratory room support ramp construction 100% complete with installation scheduled in early December

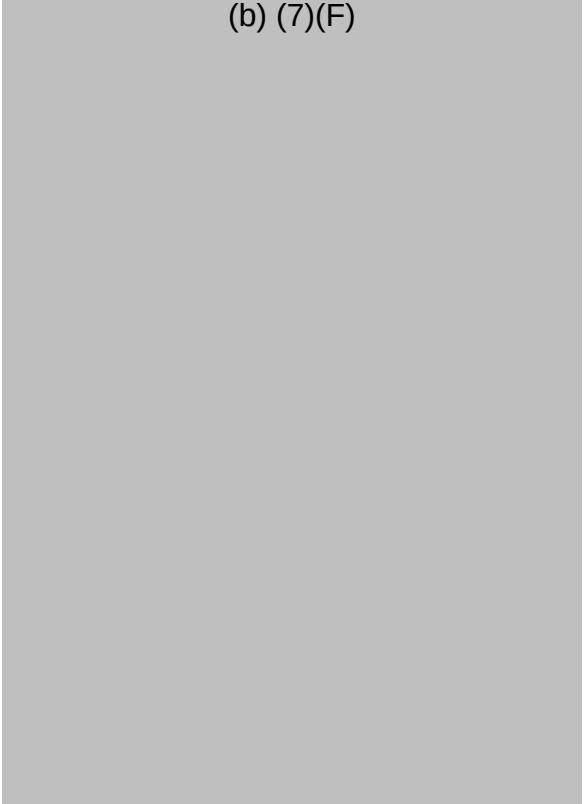
(b) (3)



(b) (3) and (b) (7)(F)

- Both enclosures for D&D were removed from mid to late November

(b) (7)(F)



- Craft continue to work on grouting of floor penetrations in support of (b) (7)(F) 1&2
- (b) (7)(F) installation project start dates remain on schedule

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 Monthly BCR Explanation

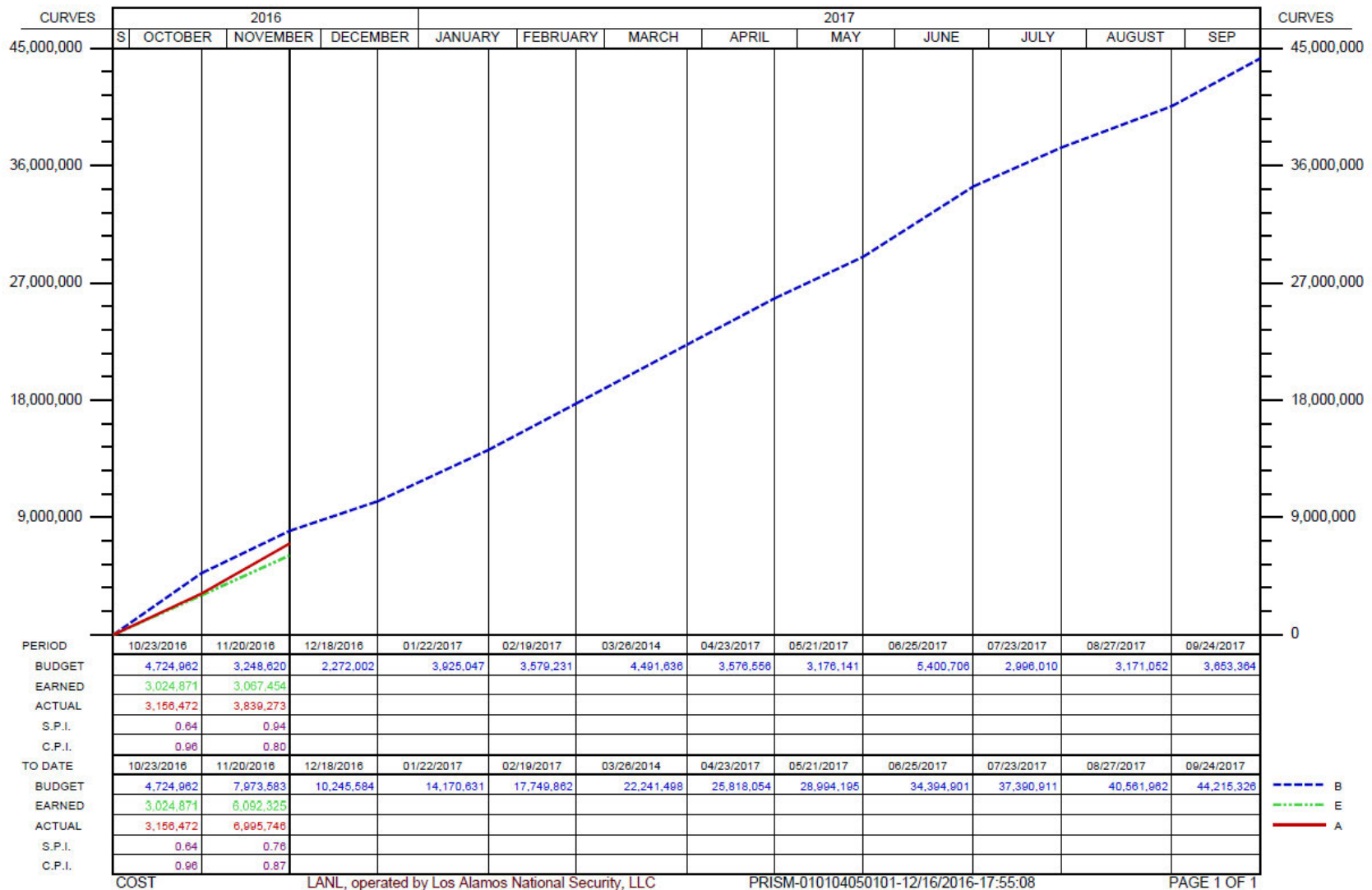
- None in November

1.6 Risk Table

Work	Description	Handling Strategy	Status
	(b) (7)(F)	A material supply team meets regularly to both identify available material and strategies for making material available.	(b) (7)(F)
	(b) (7)(F)		
Installation of equipment in PF-4	Readiness activities and production activities could conflict with D&D and installation of equipment in PF-4. Since readiness, in general, is a higher priority than equipment installation, equipment schedule delays could occur.	Prioritize installation work to emphasize areas of limited conflict (ie. PF-4 basement, SM-39, areas not subject to readiness, etc.).	Meetings are held weekly to deconflict program schedules, readiness schedules, and equipment installation schedules.
	(b) (7)(F)		

1.7 Earned Value Metrics

PERFORMANCE S-CURVE Pit Fabrication and Process Development



COST

LANL, operated by Los Alamos National Security, LLC

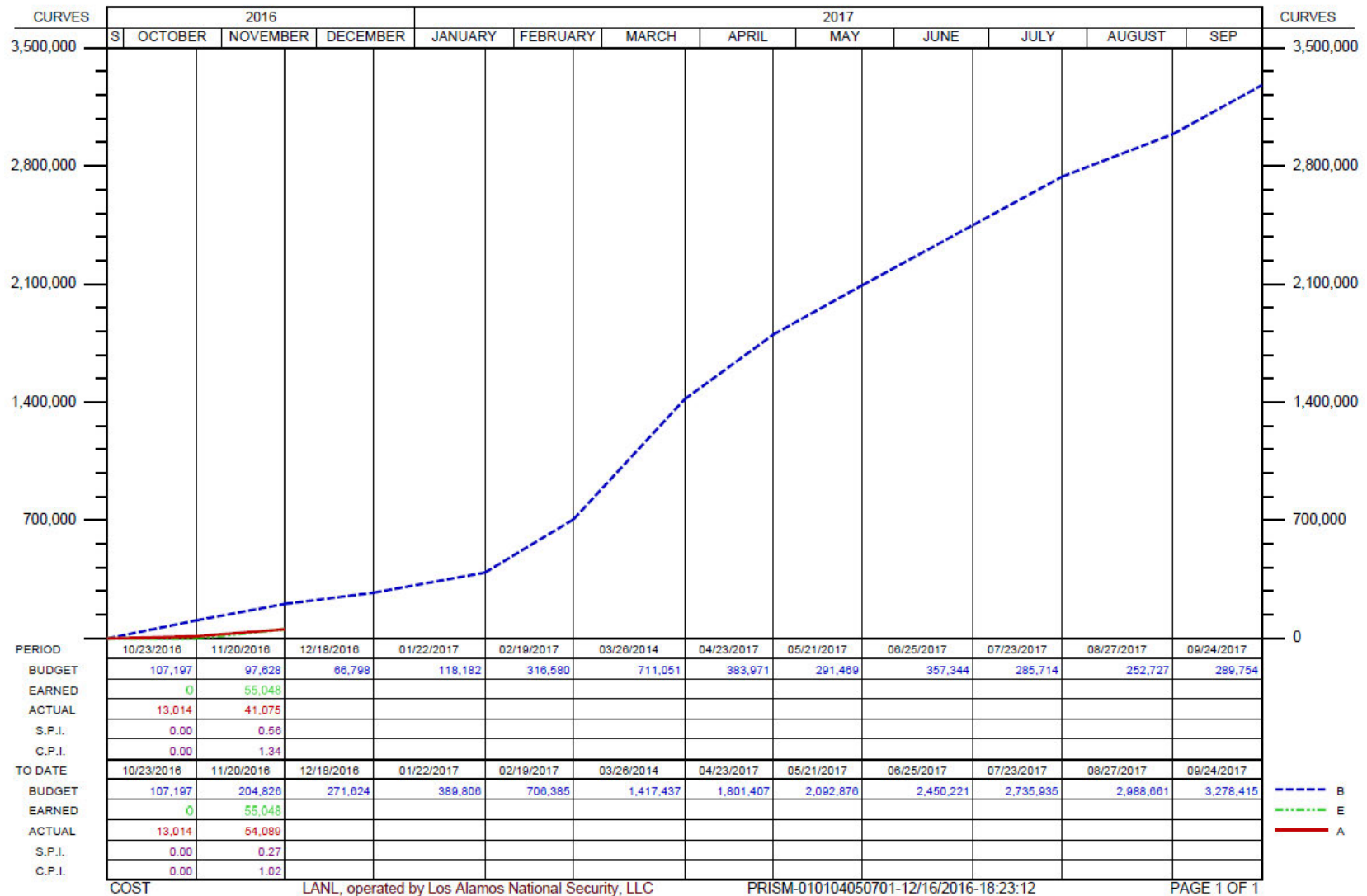
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PERFORMANCE S-CURVE

Plutonium Experimental Device Fab.



2.0 LANL - Power Supply

MRT XXXX		GREEN	Complete FY 2017 Power Supply Manufacturing Activities	
Complete activities to progress power supply manufacturing toward FPU.				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Complete oxide production through QER The road to QER passes through a Process Qualification Report (PQR), Process Prove-In (PPI), then Engineering Evaluation (EE) which if successful results in a QER from the Design Agency (DA)	September 15, 2017	- All aqueous purification runs (6) supporting PQR have been completed (11-22-16). - The first granular production run (of 8) was completed (11-17-2016).		GREEN
Complete heat source assembly through QER The road to QER passes through a design of experiments (DoE) for the (b) (7)(F) leading to a PQR, then PPI, then EE which if successful results in a QER from the DA	September 15, 2017	The DoE for liners has started with 6 liners prepared. These are in sectioning for analysis. There are 9 more expected.		GREEN
Assemble and test Tiger Team units in support of component development	September 15, 2017	Five surrogate assemblies have been assembled and tested and the results reported to the DA. 35 more are expected in the coming months.		GREEN

2.1 Technical Progress

- The (b) (7)(F) of legacy oxide (960 grams in) has yielded about 660 grams of purified oxide ready for granule production.

Unclassified

(b) (3)

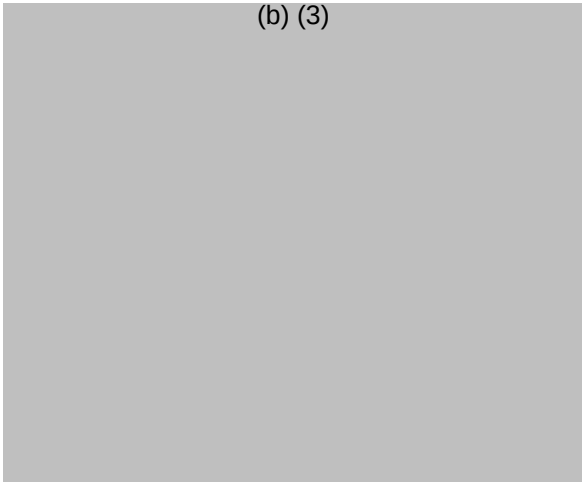


Figure 7 – Purified Oxide

- Electrical testers from Kansas City are installed and functioning. Edits to the software to reflect changes in the product specification are being requested of the KC-NSC personnel.
- The Design of Experiments (DoE) for the liner has begun with (b) (7)(F) samples started. As sample sectioning with the weld penetration is shown below.

(b) (3)

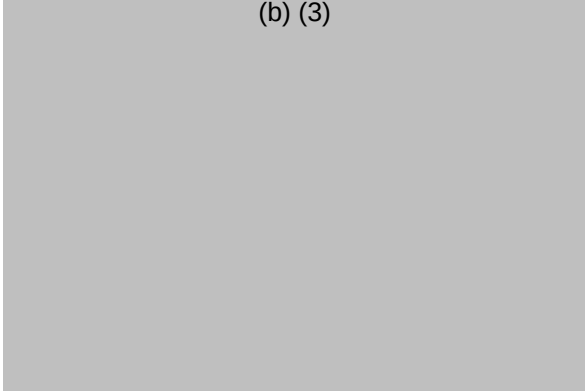
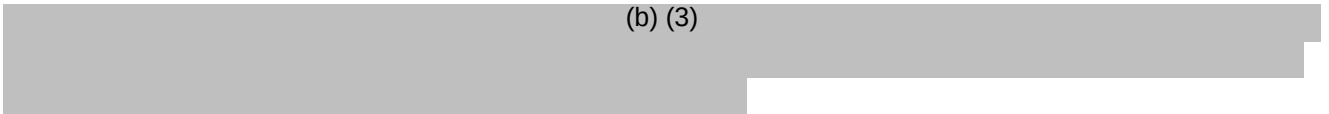


Figure 8 – Weld cross section

- 

2.2 Equipment

- The 2nd Xenon Backfill Station, needed to complete Line B's equipment readiness, has been installed in ACB-B3. Testing has been completed to ensure it performs as it did at the vendor site.

Unclassified

(b) (3)

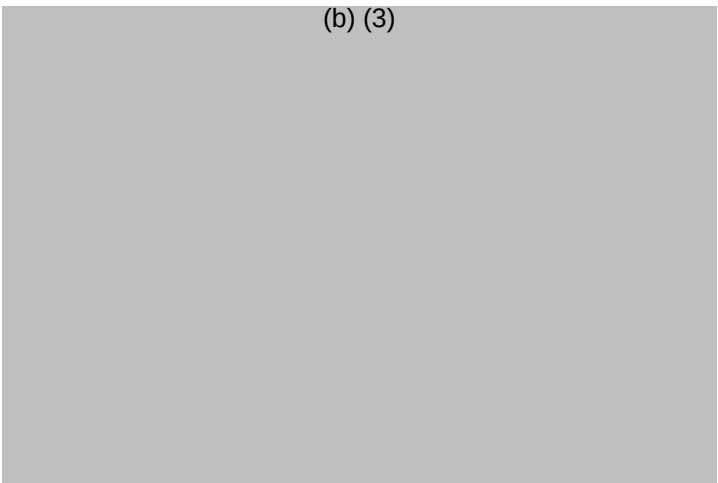


Figure 9 – Xenon Backfill Station

2.3 Issues

- None

2.4 Variance Analysis and Recovery Plan

- None

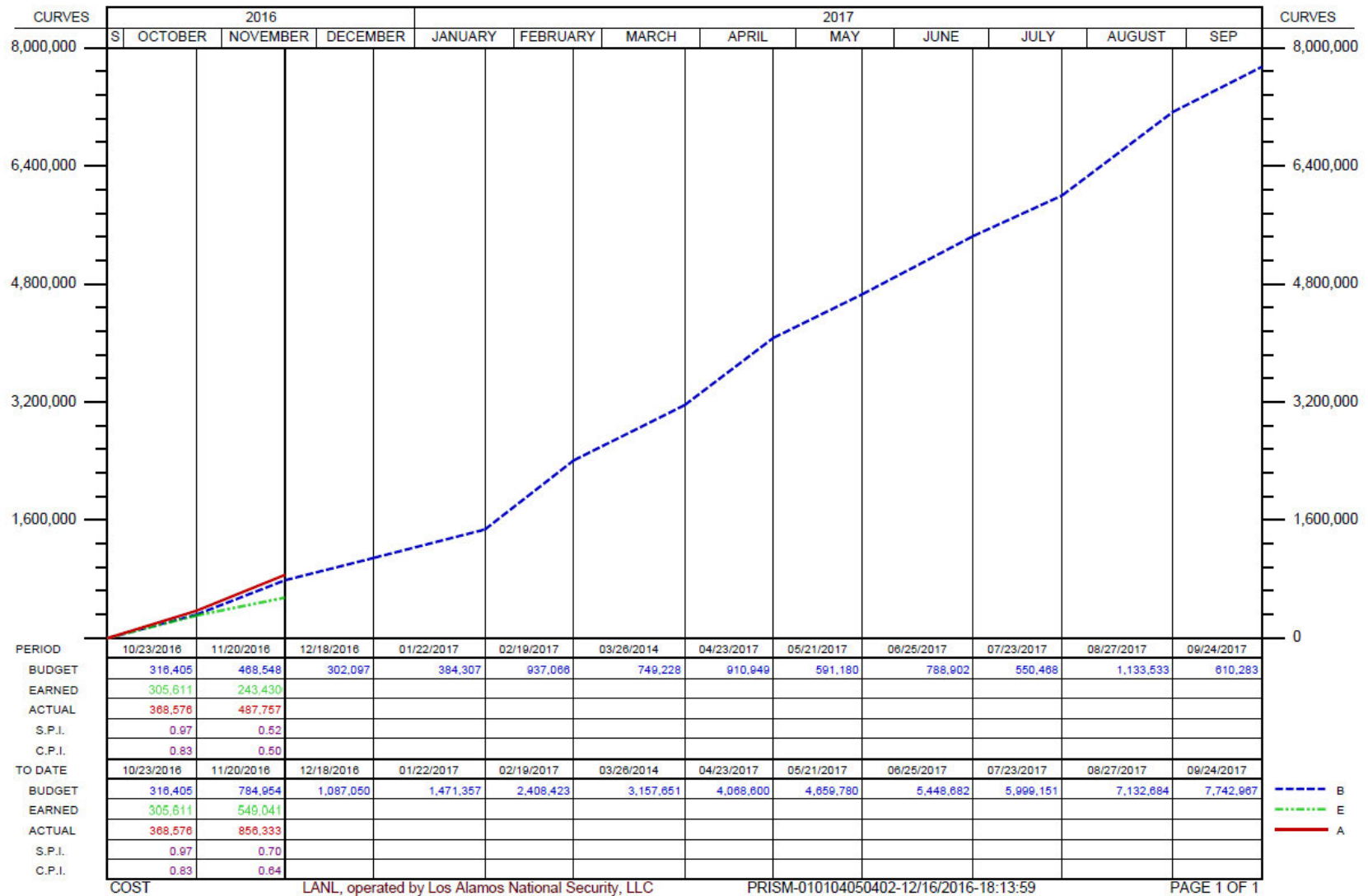
2.5 Monthly BCR Explanation

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. Aggressive hiring is planned for FY16 to ramp up the staffing. 2. Communicate and integrate frequently with Power Supply surveillance, NE-75, and other programs to make the best use of available staff. 3. Request that LANL and LAFO management allow for increase in dose to staff assigned to this work. 4. 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. Workforce attrition has occurred at a pace greater than or equal to the new hiring. Hiring is a high priority.
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.	The PRT is working to resolve schedule issues that could delay FPU. As of this monthly report, FPU is not in danger of being missed.

2.7 Earned Value Metrics

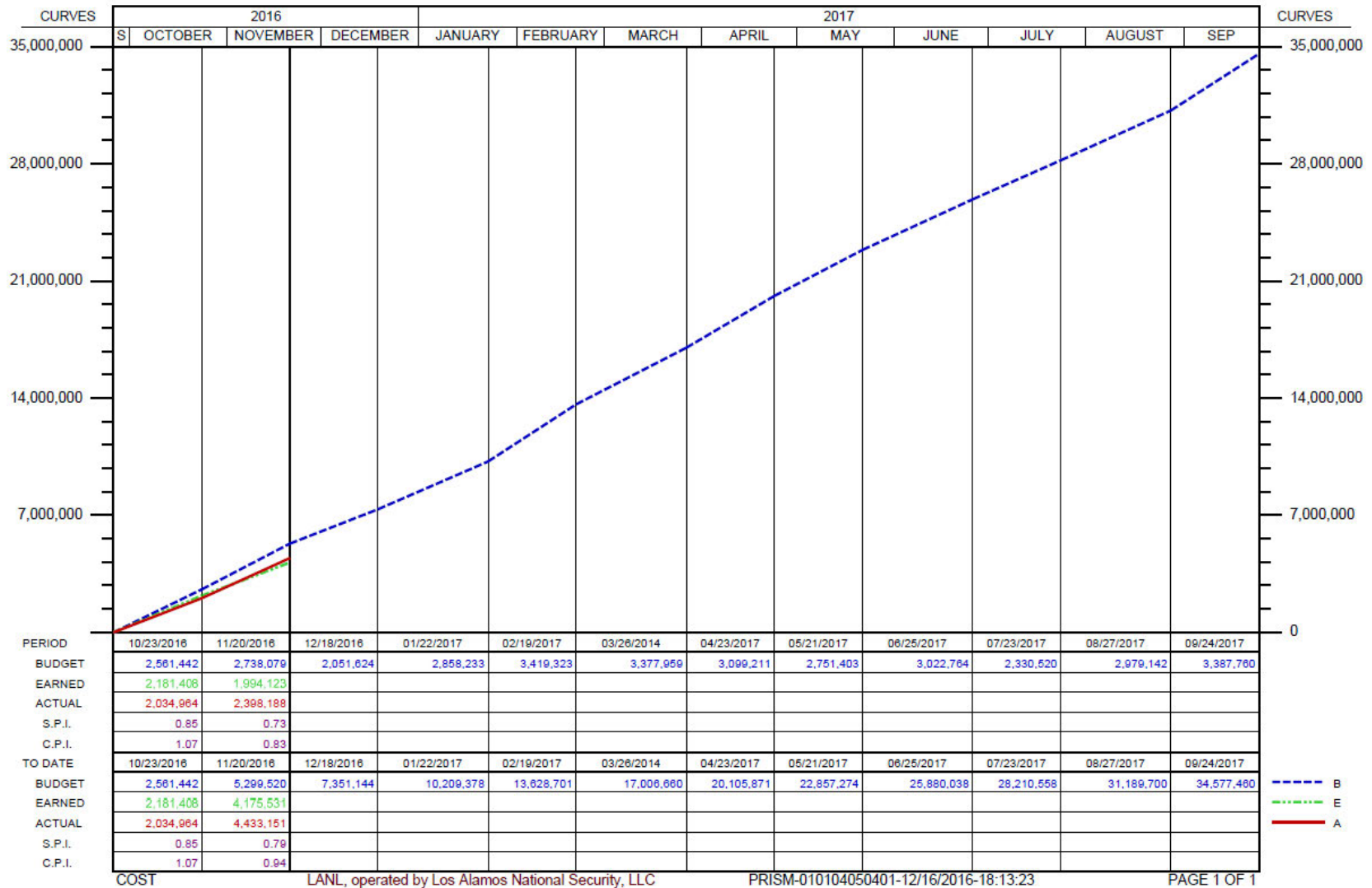
PERFORMANCE S-CURVE Power Supply Manufacturing Capability



Unclassified

PERFORMANCE S-CURVE

Power Supply Including MMP



3.0 Program and Manufacturing Support Services

MRT XXXX	GREEN	Complete and submit a monthly report to NA-196 detailing the programmatic status of the Plutonium Sustainment Program by Site		
Provide program status on technical details, 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-196 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 (FY17 budget authority and FY 16 carryover), time phased spend plan by month, and actual to date expenditures.				
Activity	Baseline Date	Status/Comments	Completion Date	RGYB
October Report	November 24, 2016	Issued	11-22-16	BLUE
November Report	December 24, 2016	Issued with this report	12-22-16	BLUE
December Report	January 24, 2017			GREEN
January Report	February 24, 2017			GREEN
February Report	March 24, 2017			GREEN
March Report	April 24, 2017			GREEN
April Report	May 24, 2017			GREEN
May Report	June 24, 2017			GREEN
June Report	July 24, 2017			GREEN
July Report	August 24, 2017			GREEN
August Report	September 24, 2017			GREEN

3.1 Program Management

- (b) (7)(F)
- Developing integrated resource loaded schedule to support subcritical experiments through FY21.
- Integrated support for the Manufacturing Modernization Project (MMP) under Pu Sustainment in FY17.

3.2 Support

- Developed travelers for Pu coupon work.
 - (b) (7)(F)
 - Maintenance plans are being executed.
 - Calibration activities are being executed
 - (b) (7)(F)
- Acceptance strategy being developed with PRT and socialized with the Los Alamos Field Office.

3.3 Issues

- None

3.4 Variance Analysis and Recovery Plan

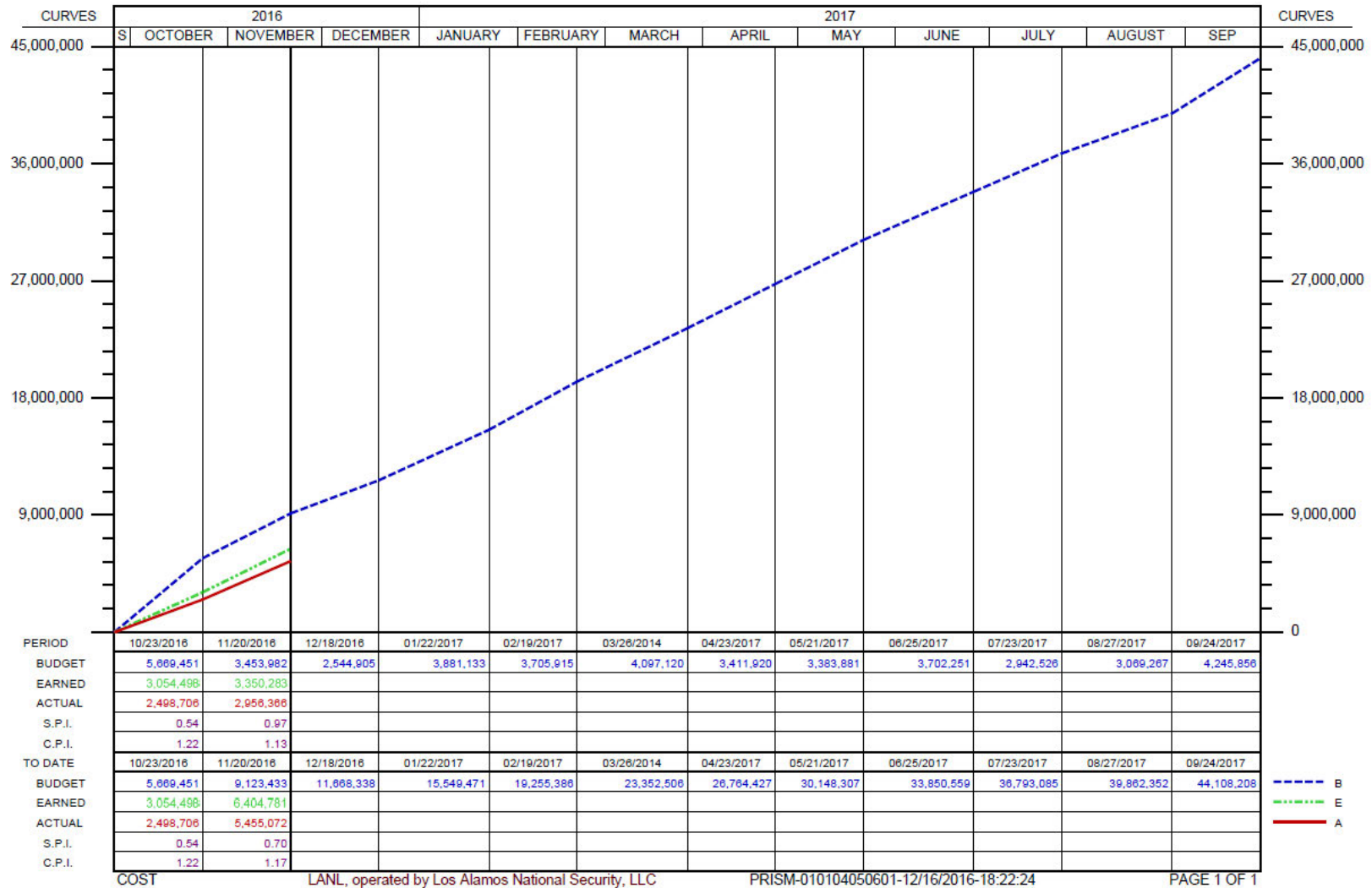
- None

3.5 Monthly BCR Explanation

- None

3.6 Earned Value Metrics

PERFORMANCE S-CURVE LANL Program and Production Mgmt (ADS)



4.0 Facilities and Readiness/Waste and Institutional Support

4.1 Technical Progress

- Preventive and corrective maintenance on track with no issues.

4.2 Equipment

- None

4.3 Issues

- Criticality Safety Evaluation Documents are driving the schedule. Aqueous operations and the new Electro-Refining line are required to produce additional metal to support pit fabrication needs in future fiscal years. A CSED and Readiness are required to bring up in-line radiography to support 2018 milestones.

4.4 Variance Analysis and Recovery Plan

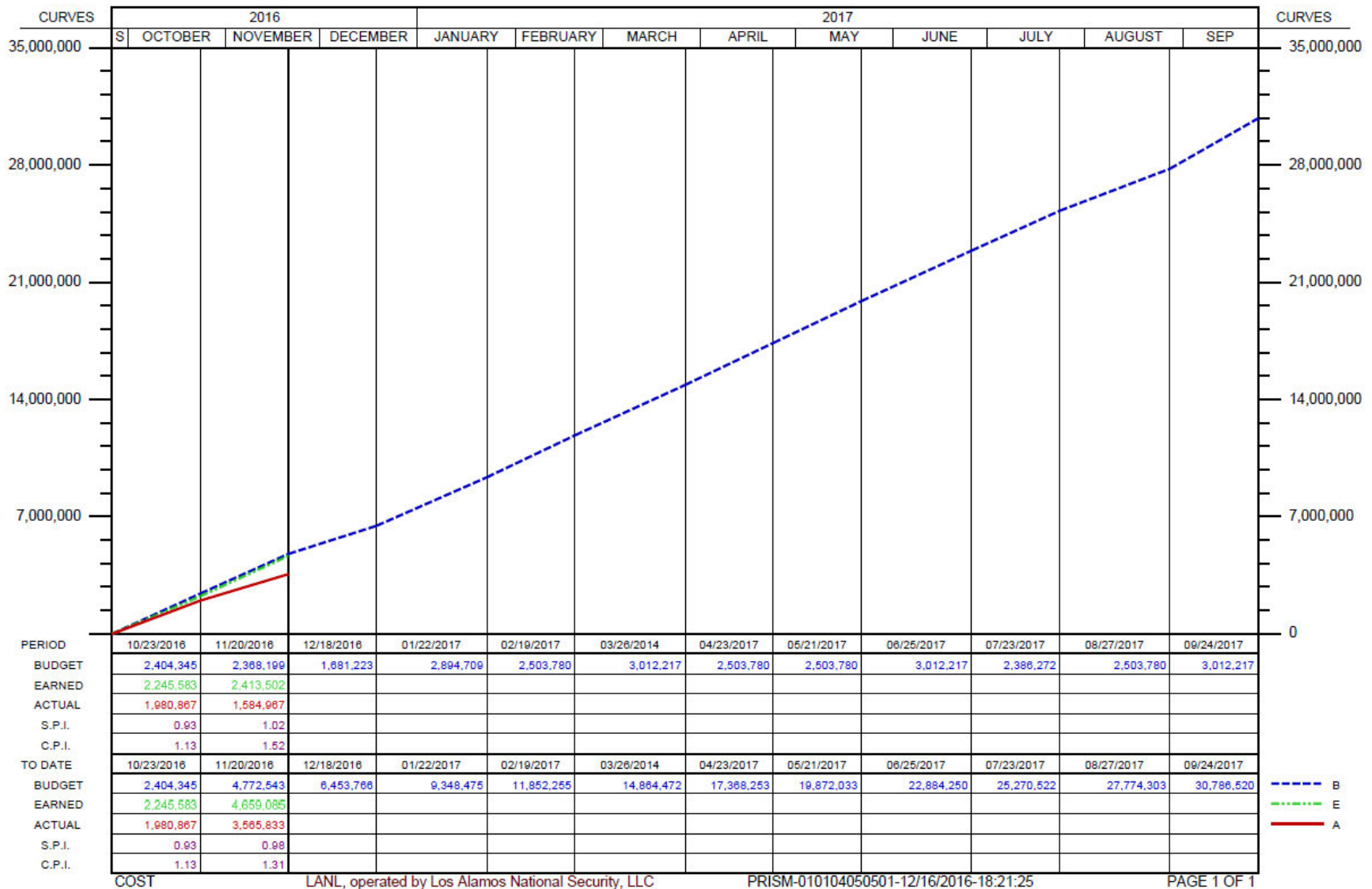
- None

4.5 Monthly BCR Explanation

- None

4.6 Earned Value Metrics

PERFORMANCE S-CURVE LANL RTBF Recovery (ADS)



Unclassified

PERFORMANCE S-CURVE LANL Waste Processing (ADS)

