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Monthly Program Report January 2017

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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)

(b) (7)(F)

In January of 2017 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

1. Pit Fabrication:
 - a. Machined Hemishells to support (b) (7)(F) A LANL shape cast from 2012 and a LLNL die-cast shell were used. Machining is supporting a (b) (7)(F) schedule.
 - b. (b) (7)(F)
 - c. (b) (7)(F)
 - d. (b) (7)(F) A holding fixture is needed.
 - e. PRT meeting for the (b) (7)(F) was held January 10-12th. The PRT with the help of LANL and LLNL management will redefine the short term subcomponent product acceptance deliverables in February 2017.
2. Sub crit Fabrication: Machining program was tested for the (b) (7)(F).
3. Pit Equipment: (b) (7)(F) progressing and now on track to complete approximately 2-3 months early. Foundry GB#1 construction started in January.
4. Power Supplies: Purified oxide samples have been delivered to analytical chemistry for analysis. A vibration table engineering study is being executed. Process improvement of the assembly potting operation has 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.

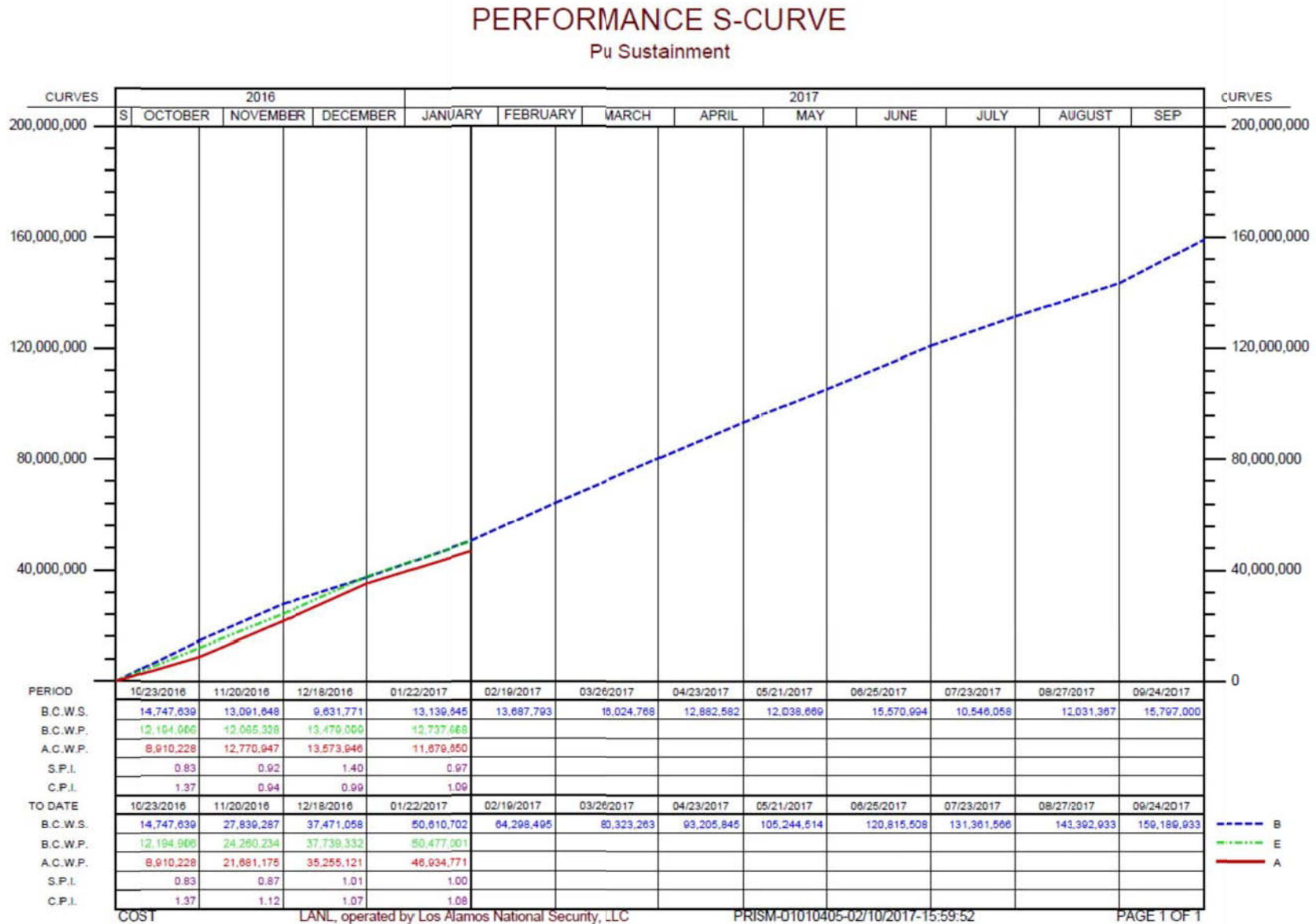
LANL Response to NNSA Comments

None.

Table 1: FY17 Baseline Change Requests

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

Earned Value Metrics



1.0 LANL - Pit Development

MRT 6058	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.				
(Due Date: 7/2017)				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)	7/31/2017	On Track (reference section 1.2.1 for detail)		GREEN
PF-4				
Complete Foundry GB#1 upgrades	9/22/2017	On Track (reference section 1.2.2 for detail)		GREEN
Start CMM #1 glovebox installation	8/21/2017	On Track (reference section 1.2.3 for detail)		GREEN
Start CMM #2 glovebox installation	8/28/2017	On Track (reference section 1.2.4 for detail)		GREEN
Complete (b) (3) and start (b) (7)(F) and glovebox installation	6/03/2017	On Track (reference section 1.2.5 for detail)		GREEN

MRT 6053		GREEN	(b) (7)(F)		s
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments		Completion Date	RGYB
(b) (7)(F)					

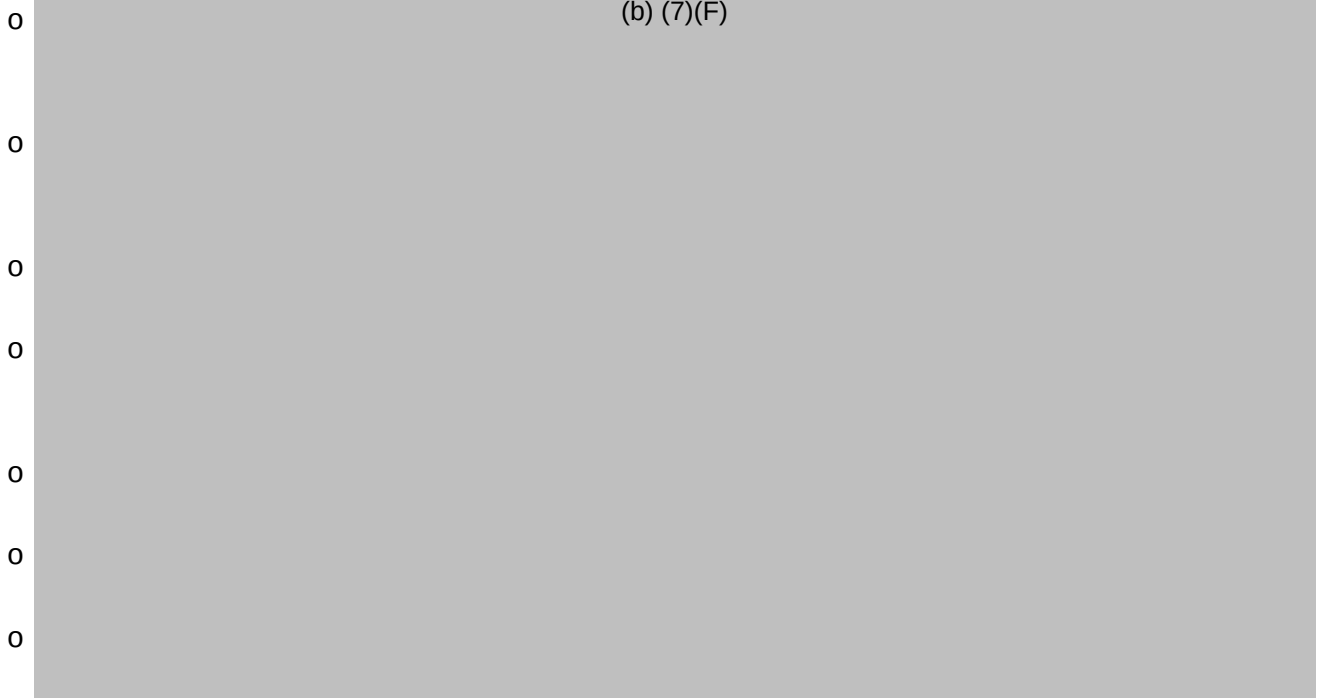
MRT 6054		GREEN	Manufacture Subcritical Experiment		
Perform manufacturing of components for subcritical experiments Complete components to support the Vega shot. Begin planning and support for the Red Sage shot. (Due Date: 9/2017)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
Begin Machining of Vega components	7/31/2017	Baseline date previously reported incorrectly		GREEN	
Begin Assembly of Vega components	8/16/2017	Baseline date previously reported incorrectly		GREEN	
Complete Vega – ready to ship	9/30/2017	On track		GREEN	

MRT 6055		GREEN	(b) (7)(F)	
(b) (7)(F)		on. Subdevelopment activities are operations with Pu that will progress the technical or manufacturing readiness levels. (Due Date 7/2017)		
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)				

MRT 6052		GREEN	(b) (7)(F)		
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F) Production Strategy	1/31/2017	Draft production strategy released 11/30/2016 Reviewed by LLNL 12/12/17	1/31/2017	BLUE	
(b) (7)(F) Development Plan	1/31/2017	Revised due date in order to support (b) (7)(F)	Forecast 3/31/2017	GREEN	
Attend PRT meetings and complete all action items	9/30/2107	On track		GREEN	

1.1 Fabrication Technical Progress

- Pit Fabrication



- Subcritical Experiment Fabrication

- o Exercised machining programs in preparation for performing Vega machining operations.

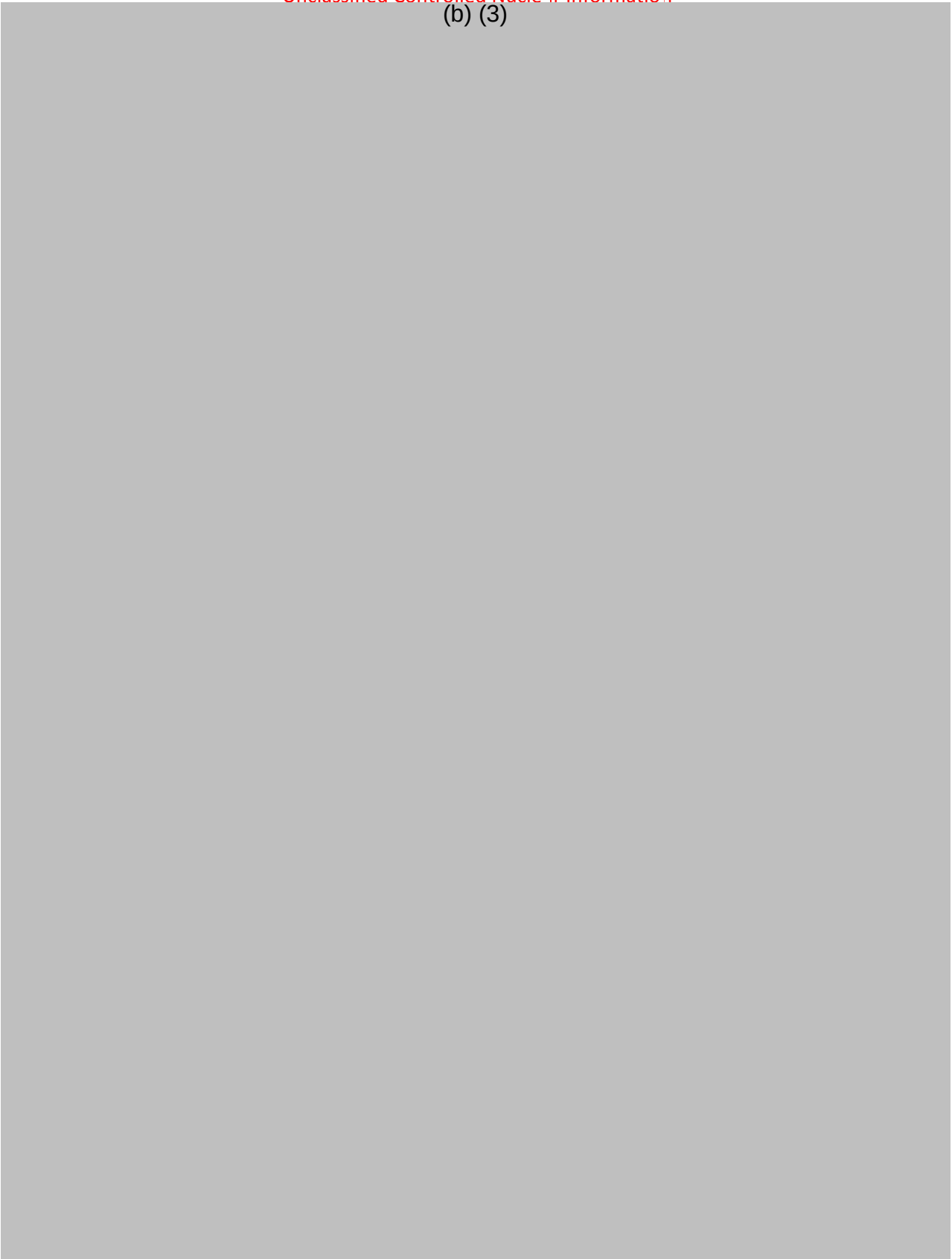
1.2 Equipment

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

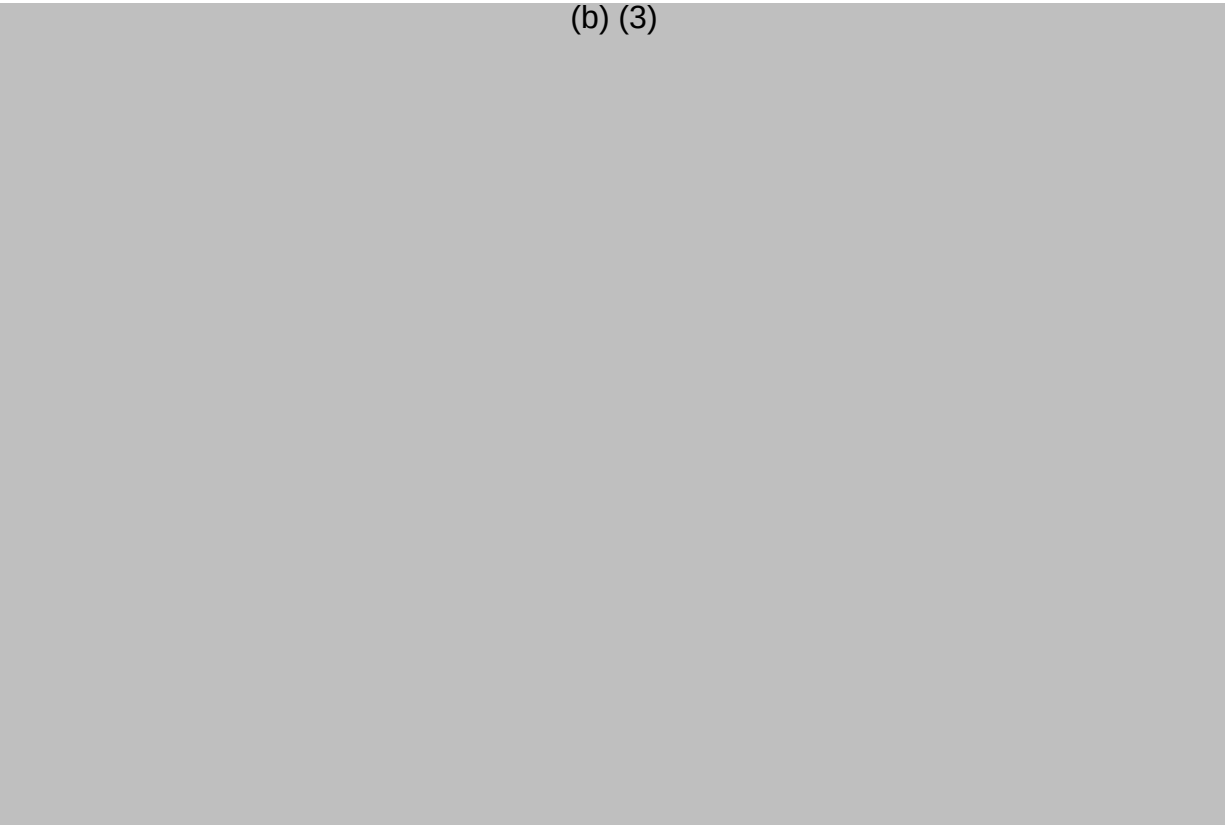
1. Complete (b) (7)(F) (all specified inspection and post modification reports generated, reviewed and approved)
 - (b) (7)(F) continues to progress as crews prepare for transfer of the new unit from storage to PF-4
 - a. Start installation of (b) (7)(F) utility skid relocation into PF-4 basement
 - **COMPLETE December 1, 2016**
 - b. (b) (7)(F) complete
 - D&D activities continue and are 95% complete and forecasted to complete in early February 2 months ahead of the baseline date.
2. Foundry Upgrades GB#1
 - a. Construction complete (all specified inspection and post modification reports generated, reviewed and approved)
 - On schedule and forecasted to complete on September 22, 2017
 - b. Design and work authorizing documents have been developed, reviewed and released for construction
 - **COMPLETE December 5, 2016**
 - c. Start GB #1 construction activities
 - **COMPLETE January 9, 2017**
3. CMM #1 Installation
 - a. Infinity (CMM #1) relocated into and in PF-4
 - On schedule and forecasted to complete on August 21, 2017
 - b. Start trunk-line GB installation
 - **COMPLETE December 21, 2016**
 - c. Start CMM #1 glovebox installation
 - On schedule and forecasted to complete on June 5, 2017
 - d. Fabrication and installation of approach ramp
 - Complete January 9, 2017
4. CMM #2 Installation
 - a. Start CMM #2 glovebox installation
 - On schedule and forecasted to complete on August 28, 2017
 - b. Installation/construction work authorization document released for construction
 - On schedule and forecasted to complete on August 28, 2017
 - c. CMM #2 installation design complete
 - **COMPLETE November 4, 2016**
5. (b) (7)(F) Installation
 - a. Start (b) (7)(F) installation
 - On schedule and forecasted to complete on June 2, 2017
 - b. (b) (3) complete
 - On schedule and forecasted to complete on March 6, 2017

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) (3)



(b) (3)



1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 Monthly BCR Explanation

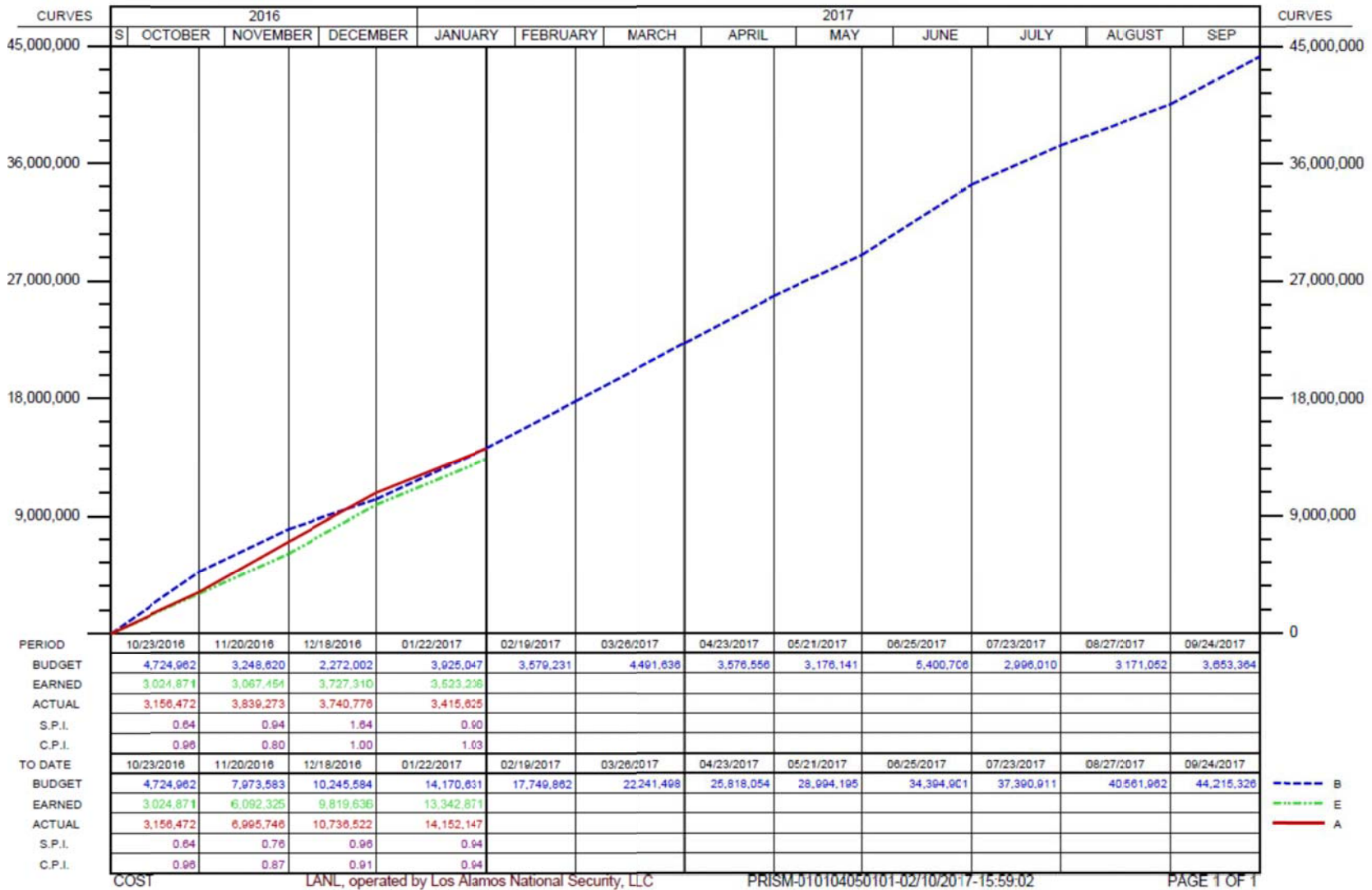
- None in November

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) (5)			
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)			

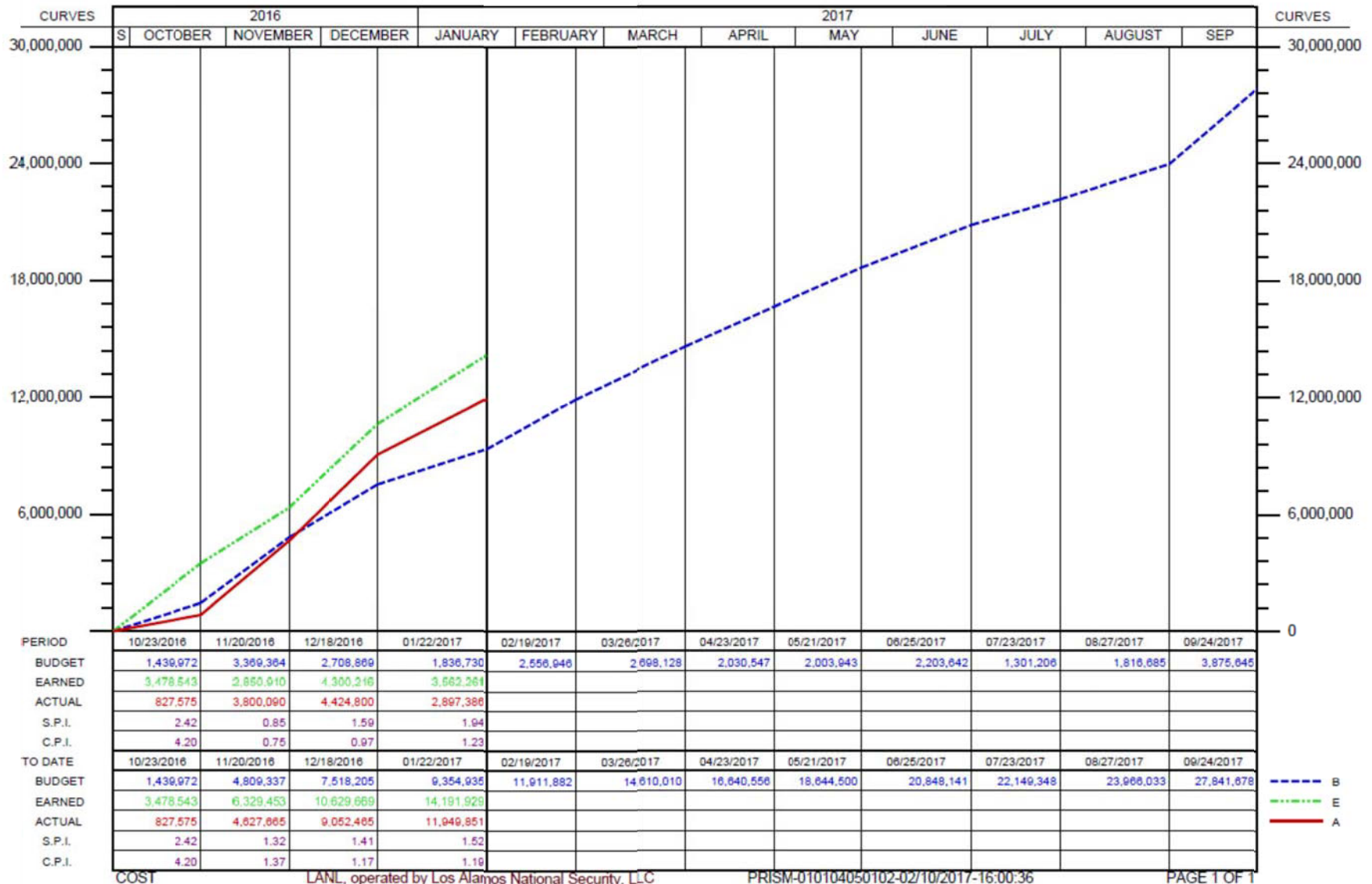
1.7 Earned Value Metrics

PERFORMANCE S-CURVE Pit Fabrication and Process Development



PERFORMANCE S-CURVE

Pit Manufacturing Equipment



COST

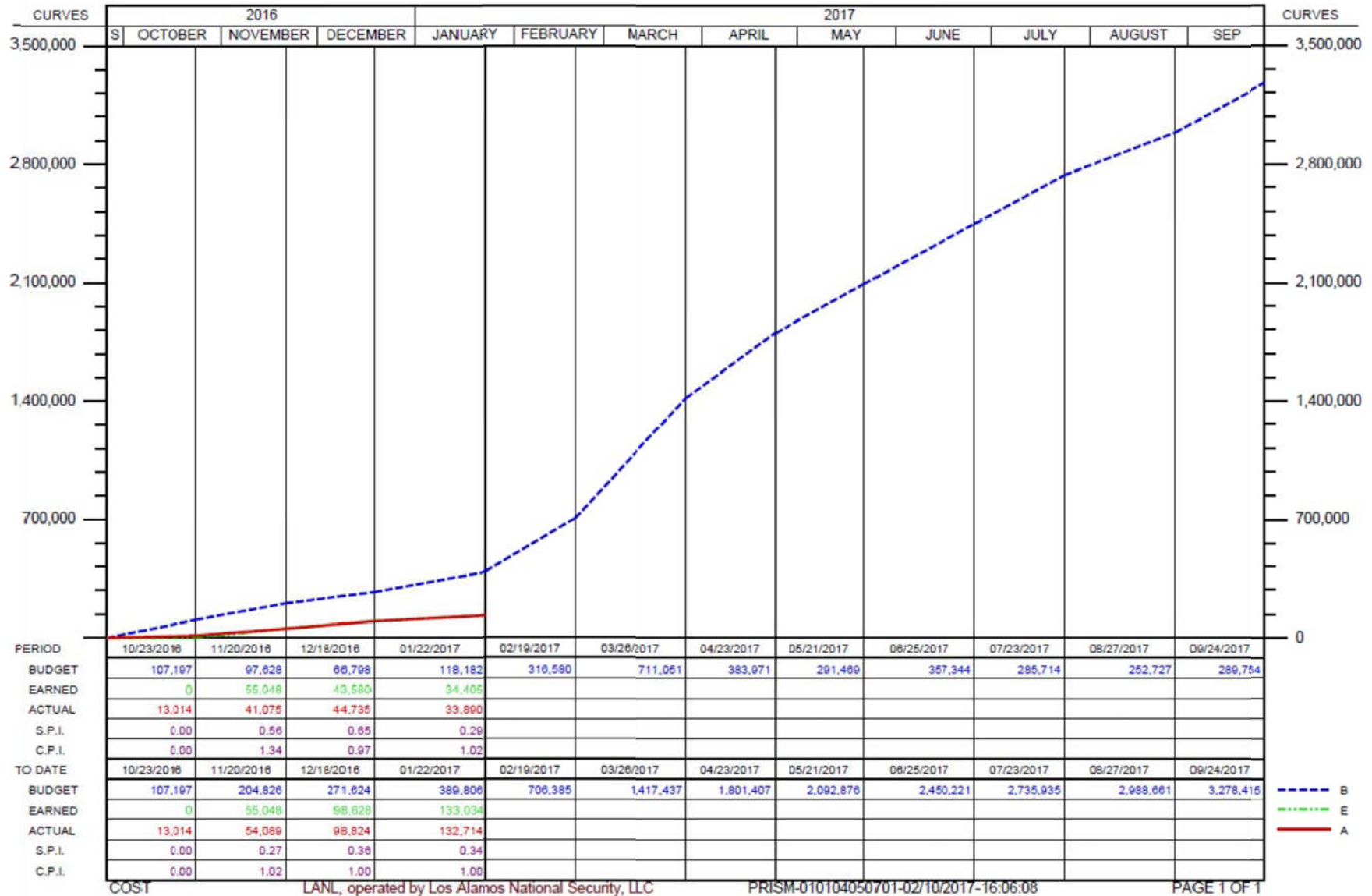
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Unclassified

PERFORMANCE S-CURVE Plutonium Experimental Device Fab.



Unclassified

2.0 LANL - Power Supply

MRT 6057		YELLOW	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 (b) (7)(F) have been completed (11-22-16). - The first granular production run (of 8) was completed (11-17-2016). - Samples for Analytical Chemistry have been sent for analysis. These results serve as the basis of evaluating process control (12-20-16) - Analytical chemistry results of the (b) (7)(F) batches have been completed. All batches meet product specification.		GREEN	
Complete heat source assembly through QER The road to QER passes through a design of experiments (DoE) for the heat source welds 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. (b) (3) has been redlit more than 90% of the time making progress difficult. Recovery plans are being developed. (b) (3) and analyzed. Statisticians are looking at the results for qualification.		YELLOW	
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. - Three assemblies featuring (b) (3) were assembled		GREEN	

		without incident prior to the Christmas break (12-22-16). Six assemblies were assembled without incident. All survived the prescribed testing after assembly.		
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2.1 Technical Progress

- LANL is gearing up to aid in the long term aging studies of live units. It is expected that (b) (7)(F) will be thermal cycled for up to five years. A table top environmental chamber like that shown below is being procured and installed.



Figure 4 – Table Top Environmental Chamber

- Vibration at specified temperatures as part of the qualification of the unit is being investigated. Surrogates will be assembled at LANL and sent to SNL for testing. Live units may be tested out at TA16 as they have capability to perform combined environments.

- (b) (3)

2.2 Equipment

- The initial design of a heat source calorimeter to be installed in the Assembly and Test area has been developed. It will be used to ensure that heat sources that have been manufactured ahead of assembly are still producing specification heat output prior to assembly.

2.3 Issues

- None

2.4 Variance Analysis and Recovery Plan

- None

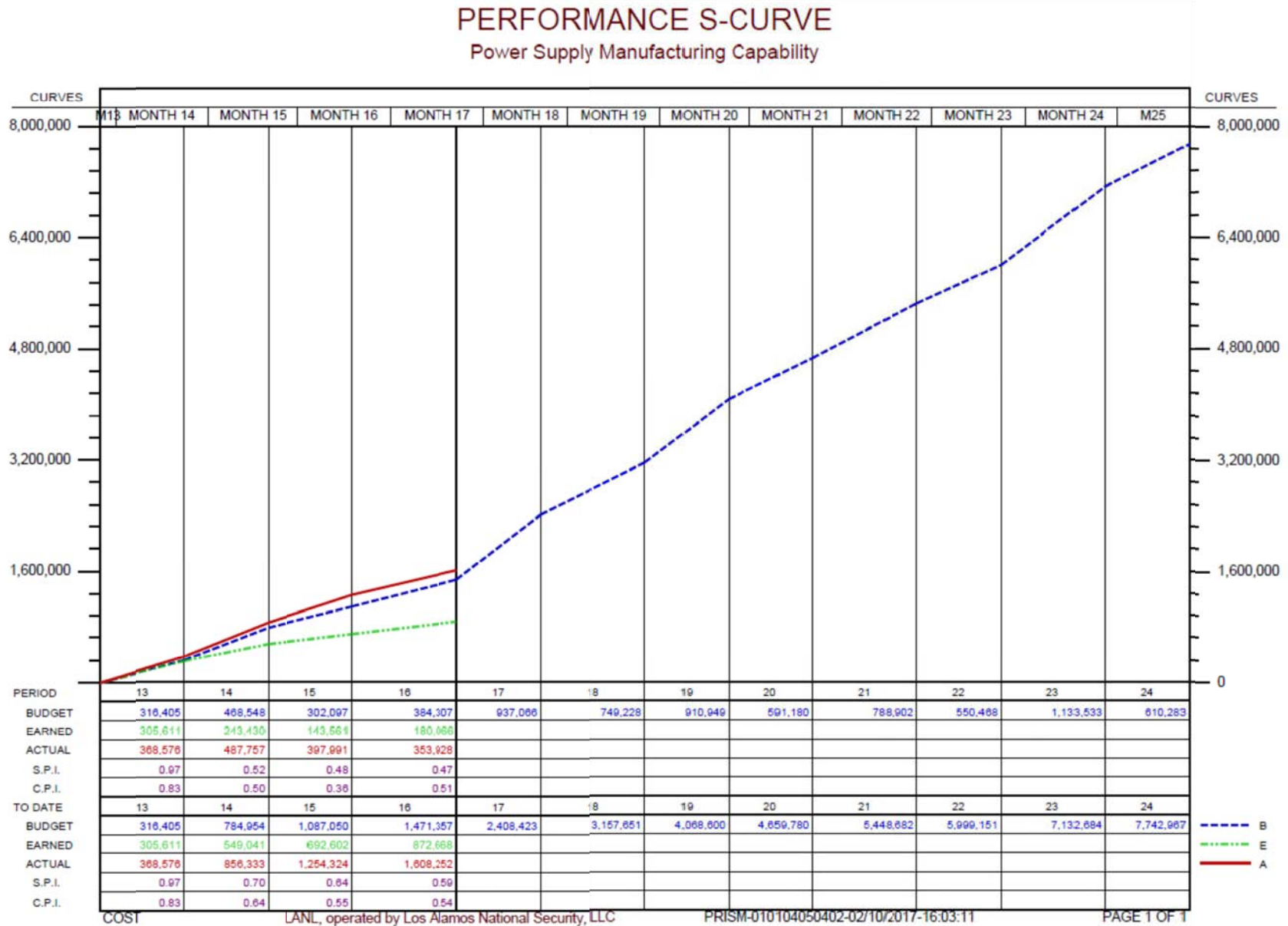
2.5 Monthly BCR Explanation

- None

2.6 Risk Table

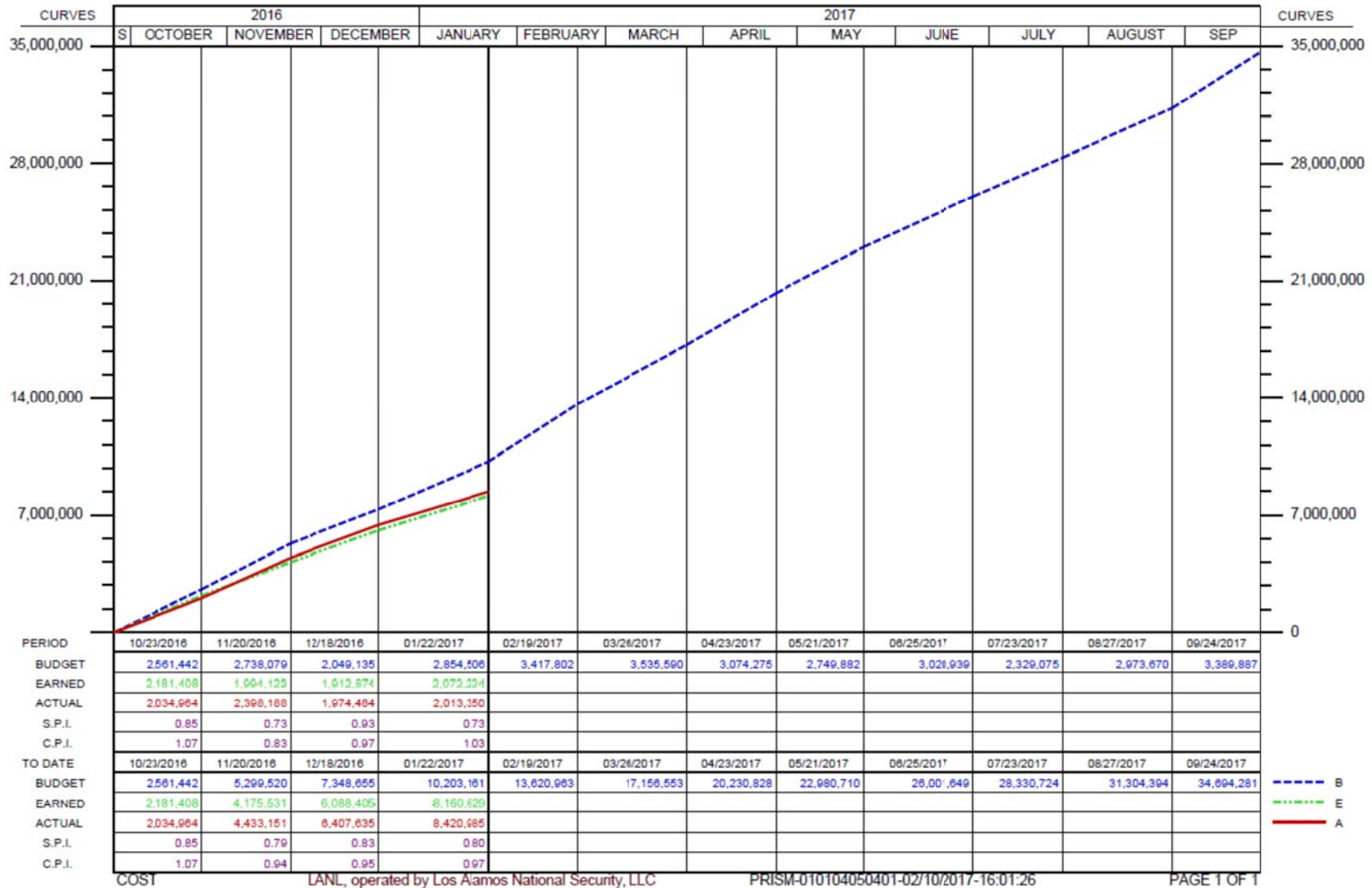
Work	Description	Handling Strategy	Status
Workforce development and recruiting	Dedicated staffing and depth of trained operators are both at risk to support the Development, PPI, and Qual series for Power Supply manufacturing development. The plan to start hiring in FY13 for dedicated staffing did not 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. 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 Including MMP



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3.0 Program and Manufacturing Support Services

MRT 6056	GREEN	Submit Pu Sustainment Monthly Reports		
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. Aligned to NNSA Strategic PEMP Goal 1, Objective 1.1				
3. Aligned to FY2017 Getting the Job Done List, Restore and Improve Weapons Infrastructure Bullet #1				
Activity	Baseline Date	Status/Comments	Completion Date	RGYB
October Report	November 24, 2016	Issued	11-22-16	BLUE
November Report	December 24, 2016	Issued	12-22-16	BLUE
December Report	January 24, 2017	Issued	01-24-17	BLUE
January Report	February 24, 2017	Issued with this Report	02-24-17	BLUE
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

- Developed draft program milestones through FY2024.
- 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

- Traveler started for (b) (7)(F) beginning with machining activities.
- Maintenance plans are being executed.
- Calibration activities are being executed
- Strategy for demonstrating quality systems and product acceptance on a Pu pit subcomponent is being revised.
A new plan will be issued in February.

3.3 Issues

- None

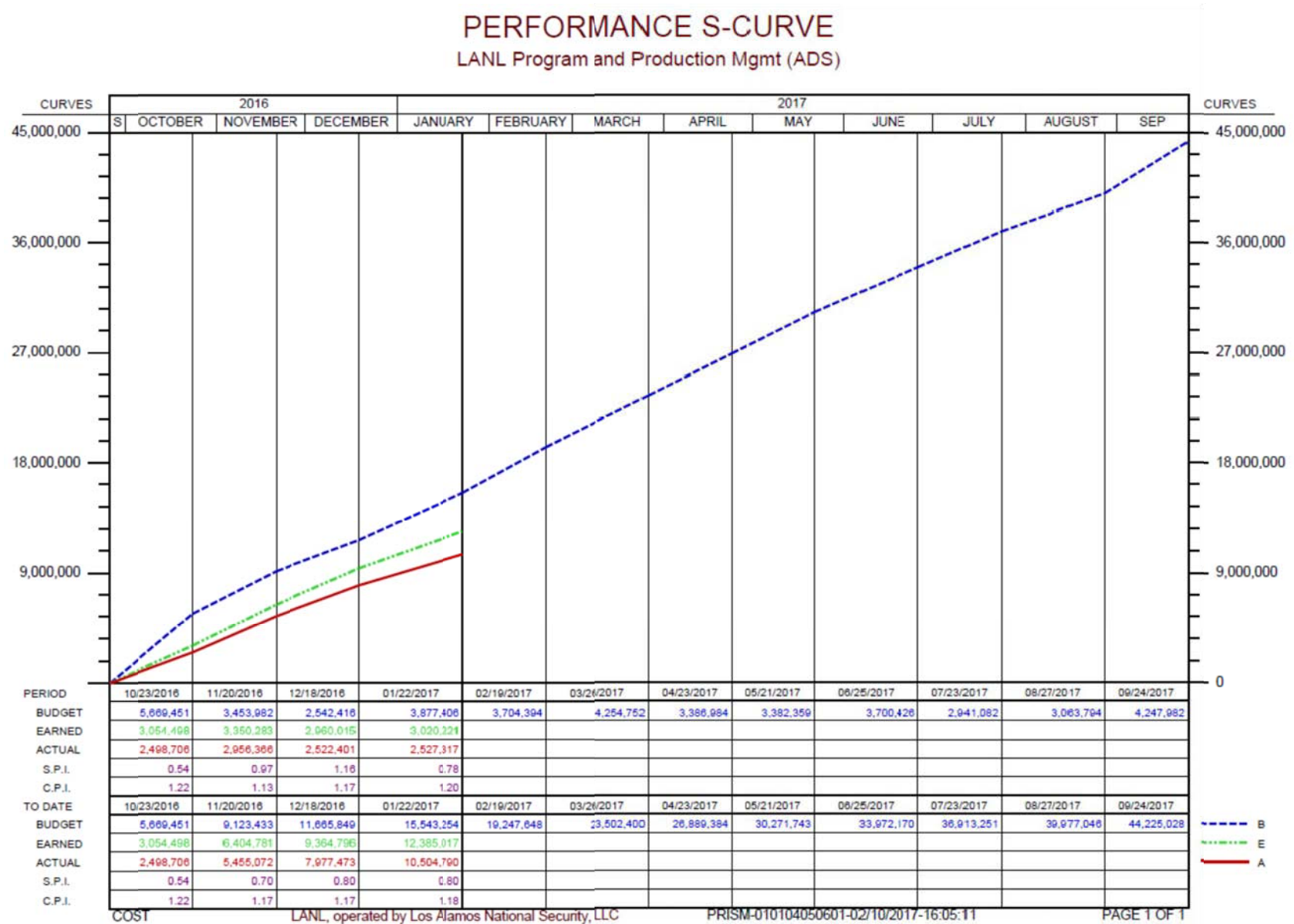
3.4 Variance Analysis and Recovery Plan

- None

3.5 Monthly BCR Explanation

- None

3.6 Earned Value Metrics



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.

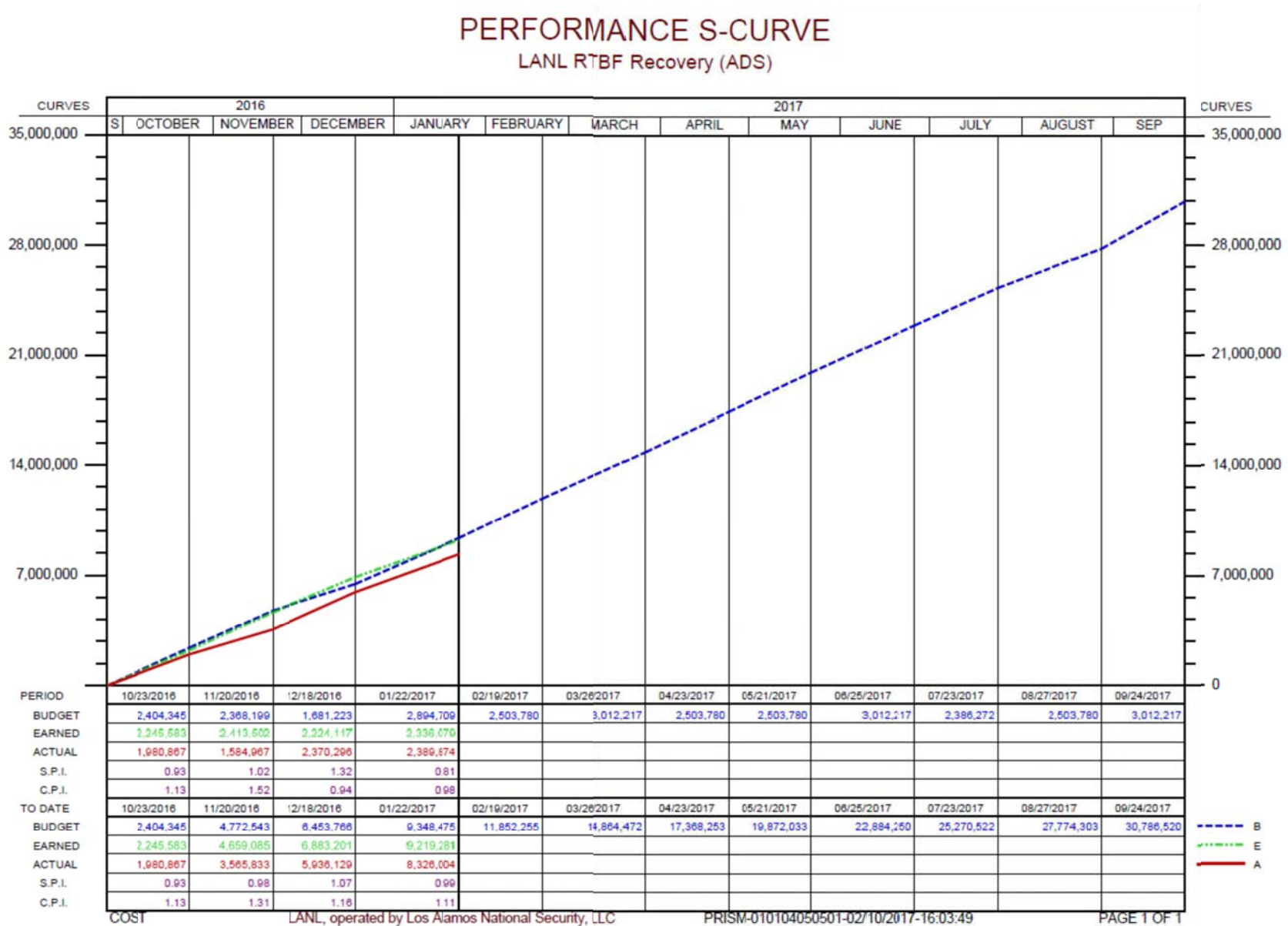
4.4 Variance Analysis and Recovery Plan

- None

4.5 Monthly BCR Explanation

- None

4.6 Earned Value Metrics



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PERFORMANCE S-CURVE

LANL Waste Processing (ADS)

