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Sustainment Monthly Program Report July 2016

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LANL Executive Summary

Many Pu239 operations are still undergoing readiness assessments and restart activities prior to returning to operational status. Operations of concern to Plutonium Sustainment, that have been restarted, include the following,

- Moore (b) (7)(F) and Machining Operations (including pit coring, disassembly, the (b) (7)(F), and the (b) (7)(F))
- Pit Flowsheet operations (b) (7)(E), (b) (7)(F) including (b) (7)(F), inspection, weighing, basement, gas operations).
- Furnace Operations/Casting/ARIES (b) (7)(F) and shape casting)

(b) (7)(F)

The contractor readiness assessment for (b) (7)(F) was successfully performed in July. A funding model including programmatic and RTBF support and a resource-loaded schedule has been developed with completion in September 2016. The readiness project team provides details in a separate report.

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

- 1) Pit Fabrication: Two Pu shells, that were cast prior to the pause, were successfully machined in July. In July, Drill/Press and brazing operations underwent development iterations on a previously scrapped component. Development was to support a planned (b) (7)(F) in August. The (b) (7)(F) of the MC4597-00 and the (b) (7)(F) to be performed post-resumption.
- 2) Pit Fabrication: Casting operations were resumed and (b) (7)(F) to support casting of pucks for science experiments and shape casting of a subcritical experiment component. Shape casting operations are currently scheduled for August.
- 3) Power Supplies: The electrical testers from KC-NSC have been installed and initially tested in PF-5. In addition, (b) (3) have been obtained to store the baked-out components inside the atmosphere boxes. The storage chambers will ease throughput bottlenecks.
- 4) Pit Equipment: CMM #1 Glovebox is complete and factory acceptance testing began on July 25, 2016 and is scheduled to complete in August.
- 5) Pit Equipment: Work authorization documentation completed for the (b) (7)(F) and glovebox.

Two of five NNSA Level 2 Milestones for FY16 are completed (MRT 5689 and 5699) and the remaining three (MRT 5696, 5697, and 5705) are on track to be completed successfully in FY16. The earned value metrics overall for LANL are within acceptable thresholds.

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

LANL Response to NNSA Comments

None.

Table 1: FY16 Baseline Change Requests

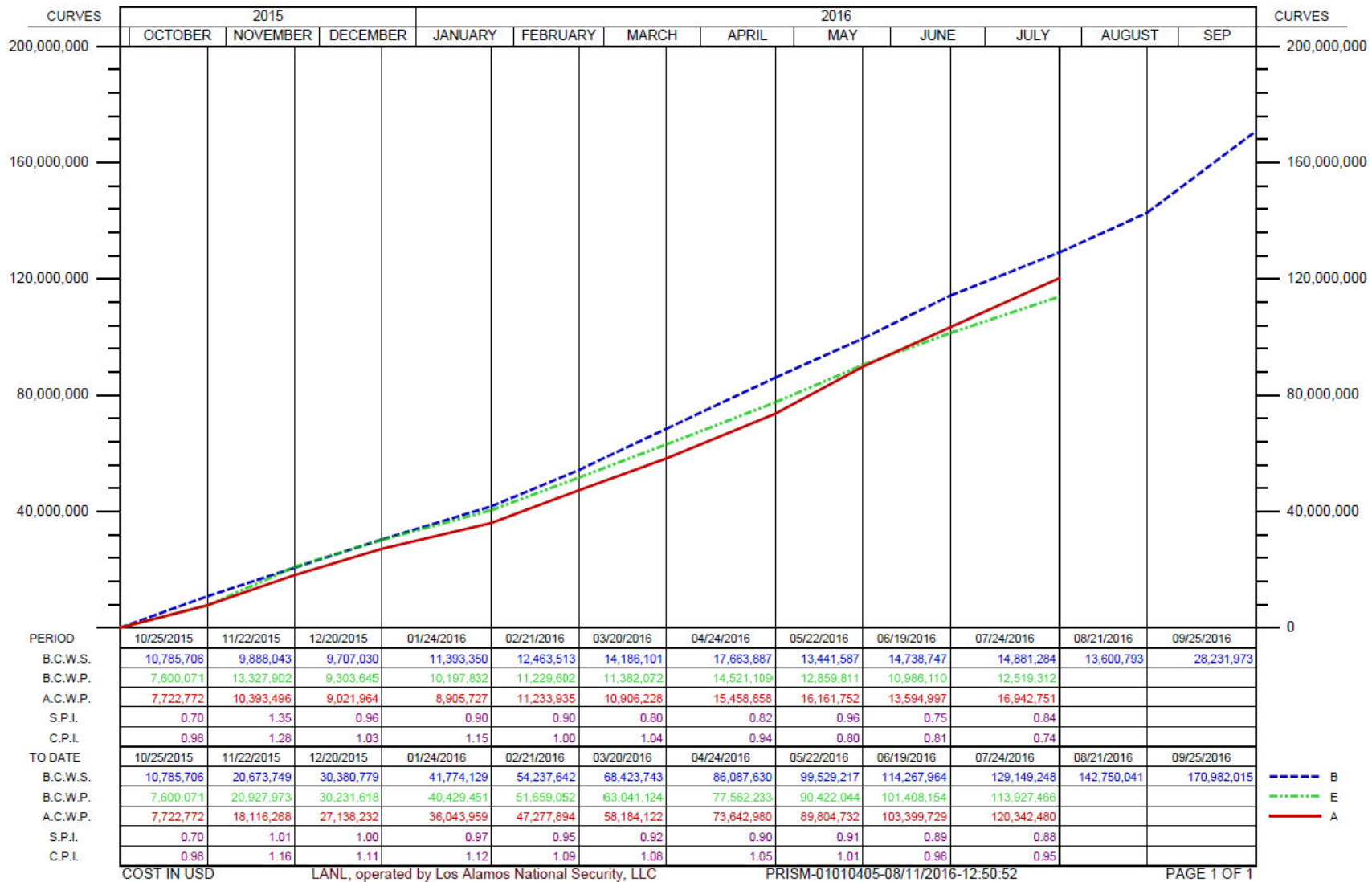
WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Power Supply	PSM-16-013	Moving scope between KFML and KMMS program codes due to CR	11/12/15		None	none	4
Pit Development	PSM-16-028	AC Support	1/13/16		Scope	\$3,000k	3
Pit Development	PSM-16-060	(b) (7)(F)	3/1/16		Scope/Schedule /Cost	\$1.5M	3
Pit Development	PSM-16-061	Lighthouse Project TA-55 Application 2016	3/1/16		Scope/Schedule /Cost	\$1.795M	2
Pit Development	PSM-062	Low Temperature Expansion for Plutonium	3/1/16		Scope/Schedule /Cost	\$1.022M	3
Pit Equipment	PSM-16-072	Reschedule Disassembly of Mock GB and Infinity	3/17/16		Schedule	None	3
Pit Development	PSM-16-073	Material Characterization Procurement	3/17/16		Cost	\$1.488M	2
Pit Development	PSM-16-074	Neutronics Code Capabilities	3/17/16		Scope/Schedule /Cost	\$600k	3
Pit Development	PSM-16-075	Elastic Modulus Measurements	3/17/16		Scope/Schedule /Cost	\$270k	3
Pit Equipment	PSM-16-097	300 Area Trolley Upgrade – New Scope	4/13/16		Scope/Schedule /Cost	\$50k	4
Pit Equipment	PSM-16-099	(b) (7)(F) (Design, Fab & Install)	5/5/16	4/14/16	Scope/Schedule /Cost	TBD	3
Power Supply	PSM-16-106	Harvesting	4/22/16		Scope/Schedule /Cost		3
Pit Equipment	PSM-16-112	Budget Adjustment	5/9/16		Cost	TBD	3
Manufacturing Systems	PSM-16-117	Setting MMP CD2 Federal Baseline	5/20/16		Scope/Schedule /Cost	0	3
Pit Equipment	PSM-16-120	CMM1, CMM2 Add'l Design Effort	6/1/2016	6/9/2016	Scope/Schedule /Cost	\$400k	3
Pit Equipment	PSM-16-125	3-D Printer Support for Generation of Scaled Equipment Models	6/2/2016	6/9/2016	Scope/Schedule /Cost	\$100k	3
Pit Equipment	PSM-16-126	CMM1, CMM2 Glovebox Vendor Contract Mod	6/9/2016	6/20/2016	N/A	\$0k	4
Pit Equipment	PSM-16-130	Actinide Surface Science Lab Design Mod	6/30/2016		Scope/Schedule /Cost	\$85k	3
Pit Equipment	PSM-16-131	Scope Rescheduling of 3-D Modeling	7/17/16		Schedule	None	3
Pit Equipment	PSM-16-132	De-scope Disassembly of Mock GB & Infinity	7/17/16		Scope/Schedule /Cost	\$85K	3
Pit Equipment	PSM-16-133	Accelerate GB Fabrication from FY17 to FY16	7/17/16		Schedule	None	3
Pit Equipment	PSM-16-135	(b) (7)(F) PF-4 Schedule Delays	7/20/16		Schedule	None	3

Pit Development	PSM-16-136	Analytical Chemistry Funds Removed	7/20/2016		Scope	\$765k	3
Pit Development	PSM-16-141	Low Temperature Expansion for Plutonium – revised	7/1/2016		Scope/Schedule /Cost	\$1.022M	3
Pit Development	PSM-16-142	Neutronics Code Capabilities – revised	7/1/2016		Scope/Schedule /Cost	\$300k	3

Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05 - Pu Sustainment



1.0 LANL - Pit Development

MRT 5696		GREEN	Complete FY 2016 Key Equipment Upgrades and Replacement Activities		
Continue equipment upgrade and replacement activities including the following:					
1. Conduct the Factory Acceptance Test (FAT) for the glovebox for Coordinate Measuring Machine (CMM) #1.					
2. Complete the 100% design for the radiography glovebox associated with CMM #2.					
3. Conduct the Fabrication Acceptance Testing (FAT) for CMM #3.					
4. Complete installation of (b) (7)(F) at cold lab (SM-39).					
5. Conduct FAT for (b) (7)(F)					
6. Complete full construction design and work authorization documents to be ready to begin construction of the (b) (7)(F) and glove box in the plutonium facility (PF-4).					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
CMM#1 GB shell fit-up(s) complete	June 10, 2016	Complete	April 18, 2016	BLUE	
CMM#1 GB weld acceptance complete	July 18, 2016	Complete	June 13, 2016	BLUE	
Conduct CMM#1 GB Factory Acceptance Testing (FAT)	September 9, 2016	On track for completion in early August.		GREEN	
Complete radiography location study (PMWB approval)	December 22, 2015	Complete	January 26, 2016	BLUE	
Radiography Glovebox 90% design complete	May 2, 2016	Complete	February 17, 2016	BLUE	
Radiography Glovebox 100% design complete	June 17, 2016	Complete	March 23, 2016	BLUE	
Start fabrication of CMM#3	March 1, 2016	Complete	November 16, 2015	BLUE	
Complete CMM#3 FAT	August 8, 2016	Complete	April 29, 2016	BLUE	
Receive (b) (7)(F)	October 9, 2015	Complete	October 9, 2015	BLUE	
(b) (7)(F) design complete Laboratory Building Official approved	February 15, 2016	Complete	February 10, 2016	BLUE	
Construction start (b) (7)(F)	March 18, 2016	Complete	January 16, 2016	BLUE	
(b) (7)(F)	July 1, 2016	Complete	April 29, 2016	BLUE	
(b) (7)(F) tank test	December 25, 2015	Complete	November 18, 2015	BLUE	
Complete FAT of (b) (7)(F)	June 3, 2016	Complete	April 22, 2016	BLUE	
Complete (b) (7)(F) Glovebox construction design	June 12, 2016	Complete	April 29, 2016	BLUE	
(b) (7)(F) Glovebox work authorization documentation development completed	August 6, 2016	Complete	July 29, 2016	Blue	

MRT 5698	BLUE	(b) (7)(F) Development Activities		
(b) (7)(F) :				
1. Complete the Engineering Development Unit at the direction of the LANL PA, to demonstrate a feasible flow sheet. Present results and lessons-learned to the PRT.				
2. Issue Production Strategy to the PRT.				
3. Issue TRL/MRL assessment and forecast to achieve TRL-9 and MRT-9.				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)	April 27, 2016	Complete	May 3, 2016	BLUE
(b) (7)(F)	June 8, 2016	Complete	May 18, 2016	BLUE
Issue Production Strategy to the PRT	April 29, 2016	Complete	April 27, 2016	BLUE
Issue TRL/MRL assessment and forecast to achieve TRL-9 and MRT-9	April 29, 2016	Complete	April 9, 2016	BLUE

MRT 5699		BLUE	(b) (7)(F)		
(b) (7)(F)					
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F)	February 1, 2016	Complete	February 25, 2016	BLUE	
Complete Gap Analysis Report	April 1, 2016	Complete	March 30, 2106	BLUE	
(b) (7)(F)	June 30, 2016	Complete	March 30, 2016	BLUE	

1.1 Technical Progress

- Pit Fabrication
 - Casting operations were successfully performed in July. Multiple (b) (7)(F). The (b) (7)(F) are intended to support planned casting operations in August. The plan for August is to perform casting of pucks in support of the science mission, and to do a casting in support of a subcritical experiment.
 - (b) (7)(F). Machining was successfully performed on the (b) (7)(F).
 - (b) (7)(F) (b) (7)(F) were performed in July. (b) (7) (b) (7)(F). A previously scrapped component was selected to use for development. Development was performed to determine drill/press and brazing parameters for use in the (b) (7)(F).
 - (b) (7)(F). (b) (7)(F)

- (b) (7)(F) Engineering Development
 - Some additional cutting development is ongoing.
 - Support for the subPRT is ongoing. Funding from Pu Sustainment is not likely in FY17. Development activities will be documented such that they can be paused after the end of the FY.

1.2 Equipment

The plan to meet the grading criterion L2 milestone MRT 5696 includes the following by September 30, 2016:

1. Conduct the Factory Acceptance Test (FAT) for the glovebox for Coordinate Measuring Machine (CMM) #1.
 2. Complete the 100% design for the radiography glovebox associated with CMM #2.
 3. Conduct the Fabrication Acceptance Testing (FAT) for CMM #3.
 4. Complete installation of (b) (7)(F) at cold lab (SM-39).
 5. Conduct FAT for (b) (7)(F)
 6. Complete full construction design and work authorization documents to be ready to begin construction of the (b) (7)(F) and glove box in the plutonium facility (PF-4).
- Coordinate Measurement Machine #1 (b) (3)
 - CMM #1 glovebox factory acceptance testing commenced on July 25, 2016 and is scheduled to complete on August 1, 2016.
 - Radiography Glovebox Design
 - **COMPLETED** 100% radiography glovebox design on March 23, 2016.
 - Coordinate Measurement Machine #3
 - **COMPLETED** factory acceptance testing of Coordinate Measurement Machine #3 on April 29, 2016.
 - Installation of (b) (7)(F) at TA-3 SM-39
 - **COMPLETED** installation of (b) (7)(F) on April 29, 2016.
 - (b) (7)(F) #2 FAT
 - **COMPLETED** FAT on (b) (7)(F) on April 22, 2016.
 - (b) (7)(F) and glovebox (b) (3)
 - **COMPLETED** work authorization documentation development on July 29, 2016.
 -

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 Monthly BCR Explanation

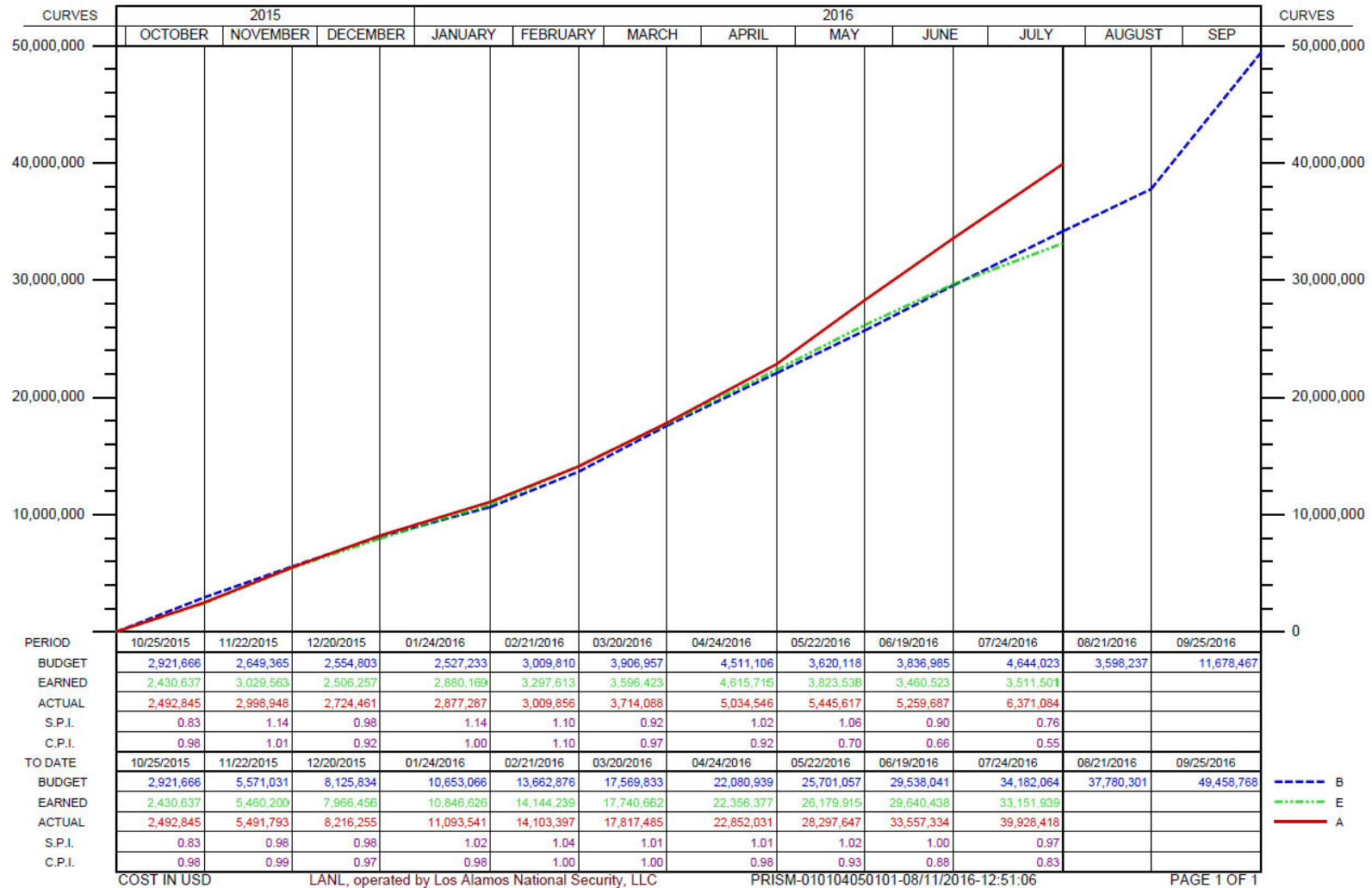
- PSM-16-131: This BCR reschedules small scale 3-D printing of the CMM glovebox. Project team unable to identify LANL resources and may have to subcontract the effort.
- PSM-16-132: This BCR De-scope disassembly of the mock glovebox and Infinity system at TA-3 SM-39. Project team has re-sequenced installation of CMM systems.
- PSM-16-133: This BCR accelerated CMM glovebox fabrication of CMM #2. This was done to streamline installation process by installing both at the same time.
- PSM-16-135: This BCR adjusted PF-4 (b) (7)(F) and installation activities due to unexpected room unavailability case by higher priority programmatic activities.
- PSM-16-136: This BCR moved funding from the Analytical Chemistry scope to cover facility costs at CMR and RLUOB related to analytical chemistry scope.
- PSM-16-141: This BCR revised a previous BCR adding funding to development work on low temperature expansion of plutonium.
- PSM-16-142: This BCR revised a previous BCR adding funding to do neutronics code capabilities.

1.6 Risk Table

Work	Description	Handling Strategy	Status
(b) (7)(F)	(b) (7)(F)	None	(b) (7)(F)
(u) (5)			
(b) (7)(F)	The DA Specification has not been completed and released. The specification may impact processes, inspections and fill gas, or require a pressure proof test that will impact the scope in (b) (7)(F). The risks could impact the ability to complete process reviews and start tooling in FY16. The specification may contain pole height and contour measurement requirements that may increase scope/cost in FY17 and beyond.	The milestone of one FY16 EDU unit completed should be minimally affected by the stated risk. The risk will have a larger impact on completing the EDU phase and moving into PPI in FY17. The risk will be handled by early review/comment with the design agency to mitigate impacts from the specification.	Draft specification was released. The comment/revision process will attempt to alleviate risks.
Installation of equipment in PF-4	Readiness activities could take 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.).	(b) (7)(F) and CMM was slowed in FY15.
(b) (7)(F)			

1.7 Earned Value Metrics

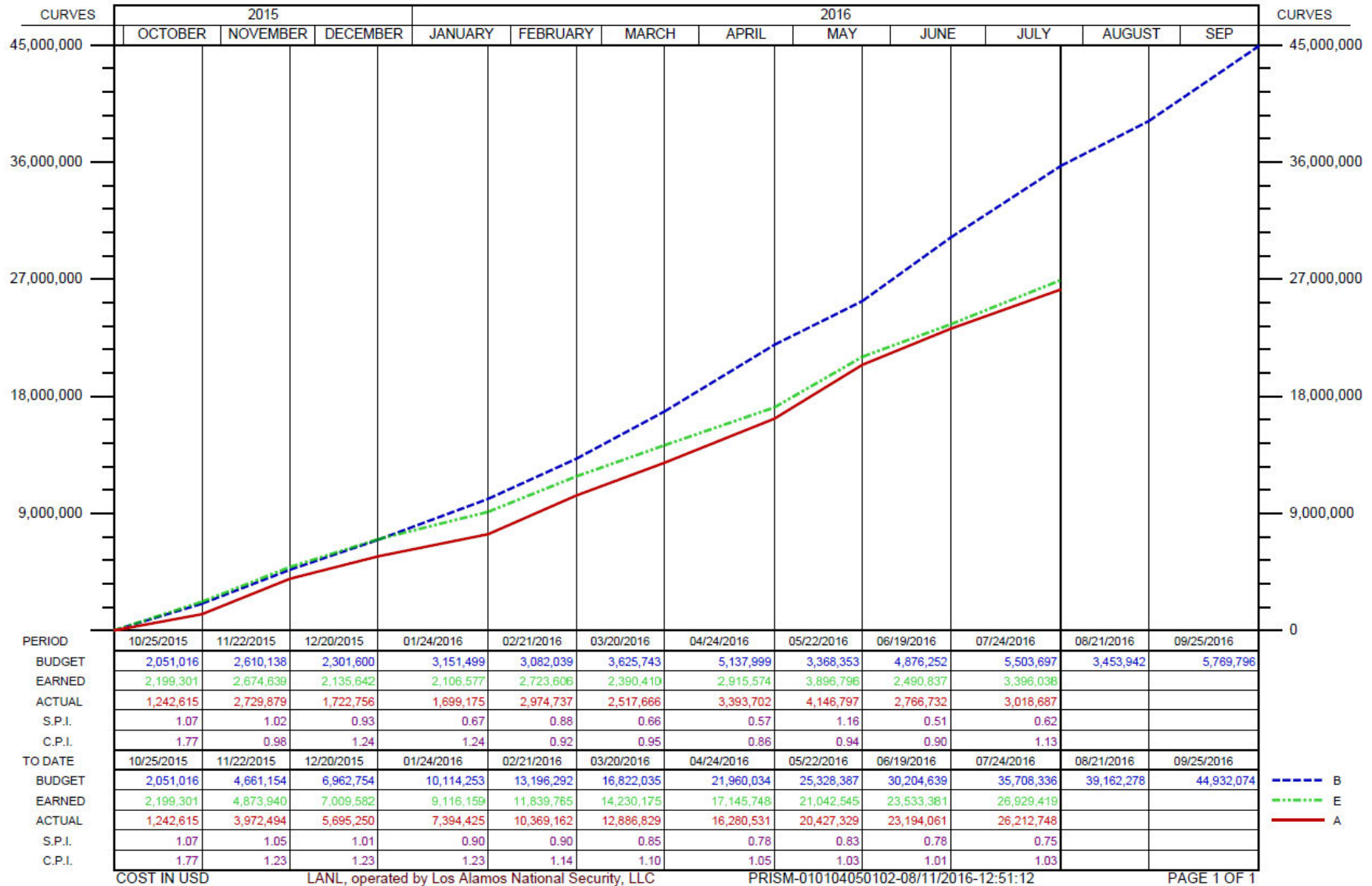
PERFORMANCE S-CURVE 01.01.04.05.01.01 - Pit Fab. and Process Dev.



Unclassified

PERFORMANCE S-CURVE

01.01.04.05.01.02- Pit Manufacturing Equipment



COST IN USD

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2.0 LANL - Power Supply

MRT 5697	GREEN	Complete FY 2016 Power Supply Development Activities		
Continue to progress the development of Power Supply production capability: (b) (7)(F)				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Demonstrate (b) (7)(F) on Haynes-25 Clad Material.	November 18, 2015	Complete	October 21, 2015	BLUE
Xenon Leak Station installed, tested, and ready for use (PF5)	May 1, 2016	Complete	April 27, 2016	BLUE
Complete installation and readiness of Ultrasonic Testing station in PF-4.	July 1, 2016	Complete	June 15, 2016	BLUE
Electrical Testers from Kansas City delivered, installed, and tested and ready for use (PF5)	August 15, 2016	(1) E-testers manufactured and in calibration testing at KC. (2) PF-5 install preparations (cabling, power) complete (3) Calibration cycle at NSC complete. (4) E-testers passed acceptance testing and are in transit to LANL. KC personnel to aid in the install August 9-10, 2016.	On track	GREEN
Manufacture Power Supply using NSC provided components.	September 30, 2016	Equipment to support shipping purchased and being installed as it arrives.		GREEN

2.1 Technical Progress

- MQ has assumed full ownership of the PVS (Product Verification and Submittal) function. The Quality Assurance Inspection Procedures (QAIPs) are being developed and training and qualification of Verification Inspection and Acceptance Stamping personnel from QPA is going.
- Electrical testers from Kansas City were received. KC-NSC personnel will travel to LANL aid in installation and test the units for operational stability following shipping.
- Preparations have been made to accommodate the Tiger Team module design. Up to 58 assemblies are expected during the October-November 2016 timeframe. Fixturing to accommodate the design change has been manufactured, and test requirements for each unit determined.
- (b) (3) have been obtained to store the baked-out components inside the atmosphere boxes. Testing has started to see if the chambers disrupt normal ACB operation in any way. The chambers are expected to enable longer storage of pre-baked parts, helping ease throughput bottlenecks.

2.2 Equipment

- The electrical testers from KC-NSC have received.
- The second xenon backfill station (for ACB B-line) has been received. Installation in B-Line is expected to start soon.

2.3 Issues

- None

2.4 Variance Analysis and Recovery Plan

- None

2.5 Monthly BCR Explanation

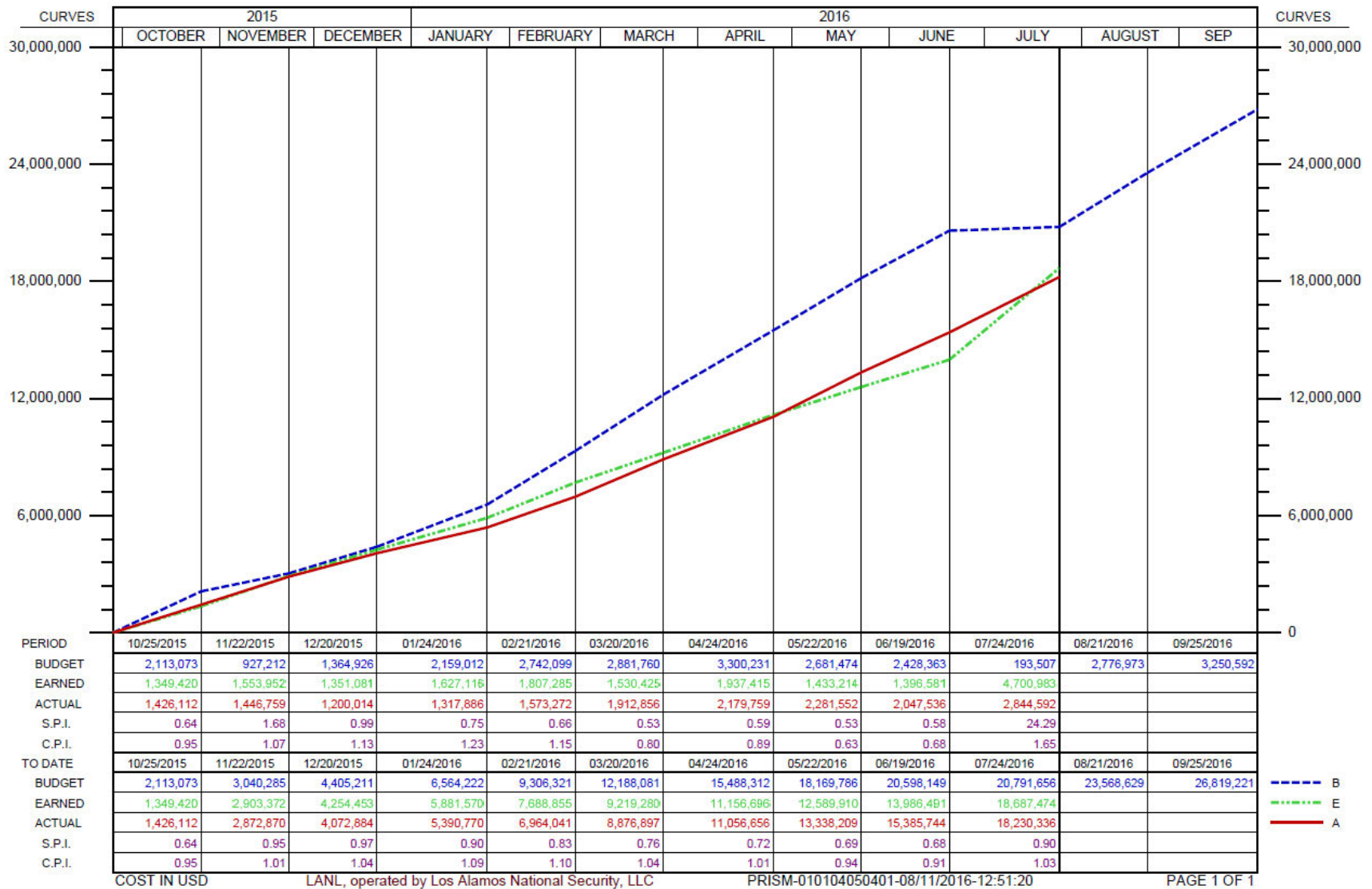
2.6 Risk Table

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 Including MMP



COST IN USD

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3.0 Program and Manufacturing Support Services

MRT 5705	GREEN	Complete and submit a monthly report to NA-123.1 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 (FY16 budget authority and FY 15 carryover), time phased spend plan by month, and actual to date expenditures.				
Activity	Baseline Date	Status/Comments	Completion Date	RGYB
October Report	November 24, 2015	Issued	November 24, 2015	BLUE
November Report	December 24, 2015	Issued	December 23, 2015	BLUE
December Report	January 24, 2016	Issued	January 21, 2016	BLUE
January Report	February 24, 2016	Issued	February 24, 2016	BLUE
February Report	March 24, 2016	Issued	March 21, 2016	BLUE
March Report	April 24, 2016	Issued	April 22, 2016	BLUE
April Report	May 24, 2016	Issued	May 24, 2016	BLUE
May Report	June 24, 2016	Issued	June 23, 2016	BLUE
June Report	July 24, 2016	Issued	July 29, 2016	BLUE
July Report	August 24, 2016	Issued	August 24, 2016	BLUE
August Report	September 24, 2016			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

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

3.3 Issues

- None

3.4 Variance Analysis and Recovery Plan

- None

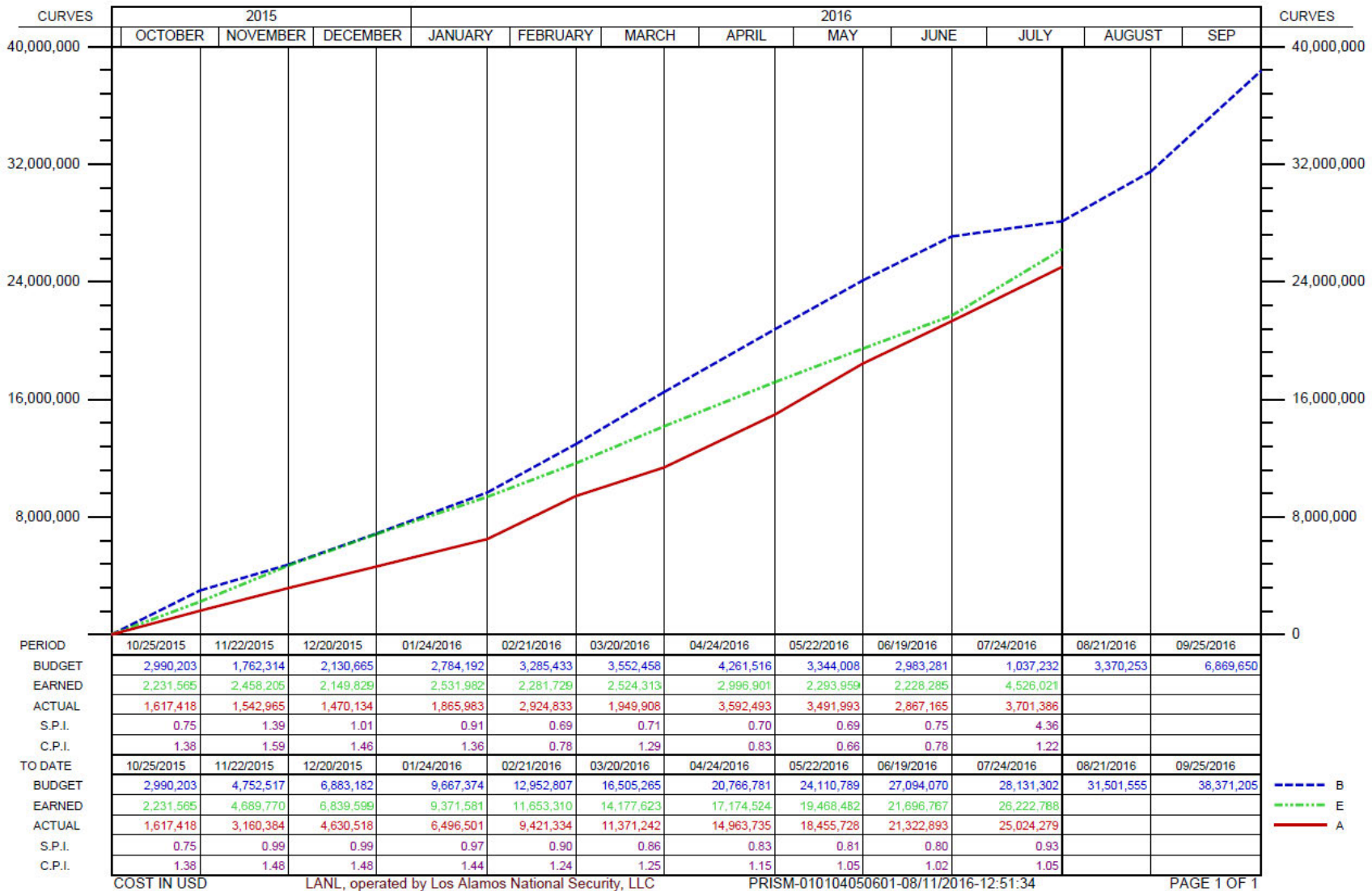
3.5 Monthly BCR Explanation

- None in June

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

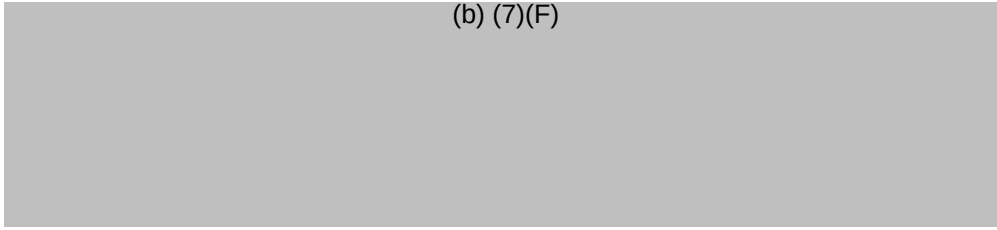
01.01.04.05.06.01 - LANL Program and Production Mg



4.0 Facilities and Readiness/Waste and Institutional Support

4.1 Technical Progress

- Preventive and corrective maintenance on track with no issues.
- (b) (7)(F)



4.2 Equipment

- None

4.3 Issues

- Criticality Safety Evaluation Documents are driving the schedule. Pyrochemical operations and the new Electro-Refining line are required to produce additional metal to support pit fabrication needs in future fiscal years.

4.4 Variance Analysis and Recovery Plan

- None

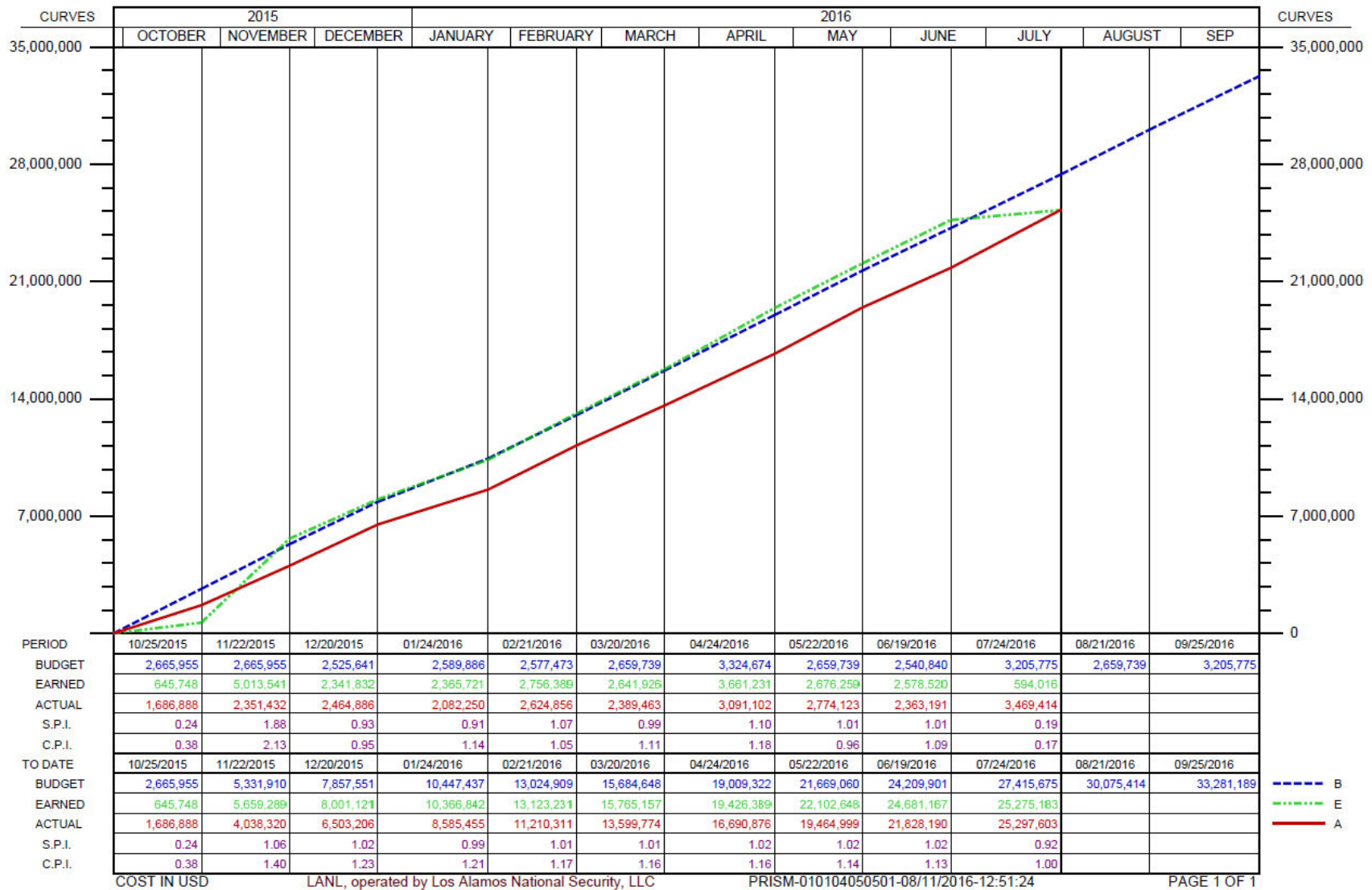
4.5 Monthly BCR Explanation

- None

4.6 Earned Value Metrics

PERFORMANCE S-CURVE

01.01.04.05.05.01 - LANL RTBF Recovery (ADS)



Unclassified

PERFORMANCE S-CURVE 01.01.04.05.05.02 - LANL Waste Processing (ADS)

