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Los Alamos National Laboratory and Lawrence Livermore National
Laboratory

Plutonium Sustainment Monthly Program Report

August 2012

UNCLASSIFIED

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Executive Summary

In August of 2012 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

- 1) Memo issued by the Gemini LANL Program Director, Jeff Paisner, declared the work completed in FY12 by the Pu Sustainment program as sufficient to consider the L2 milestone MRT 4198 as complete. It was requested that the assembly and shipment be considered a flexible schedule. Note that all the Pollux team did receive all parts, tooling, fixtures, procedures and approvals to start assembly of Pollux experimental unit.
- 2) Supported NNSA 123.1 in making the decision to formally transfer the W87 non-nuclear pit component production mission from LANL to KCP. KCP will have direct funding starting in FY13 and be a formal part of all monthly reports, quarterly reviews, W87 Integrated Project Team, etc.
- 3) Hosted the FY12 third quarter review for the Plutonium Sustainment program.

There are currently no major issues associated with achieving MRT L2 Milestones 4195-4198 or the relevant PBIs associated with Plutonium Sustainment.

There are no budget issues associated with FY12 final budget guidance. Table 1 identifies all Baseline Change Requests (BCRs) that were initiated, in process, or completed during the month.

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

Each of the 5 major LANL WBS elements is discussed in detail below with a section at the end that is provided by LLNL.

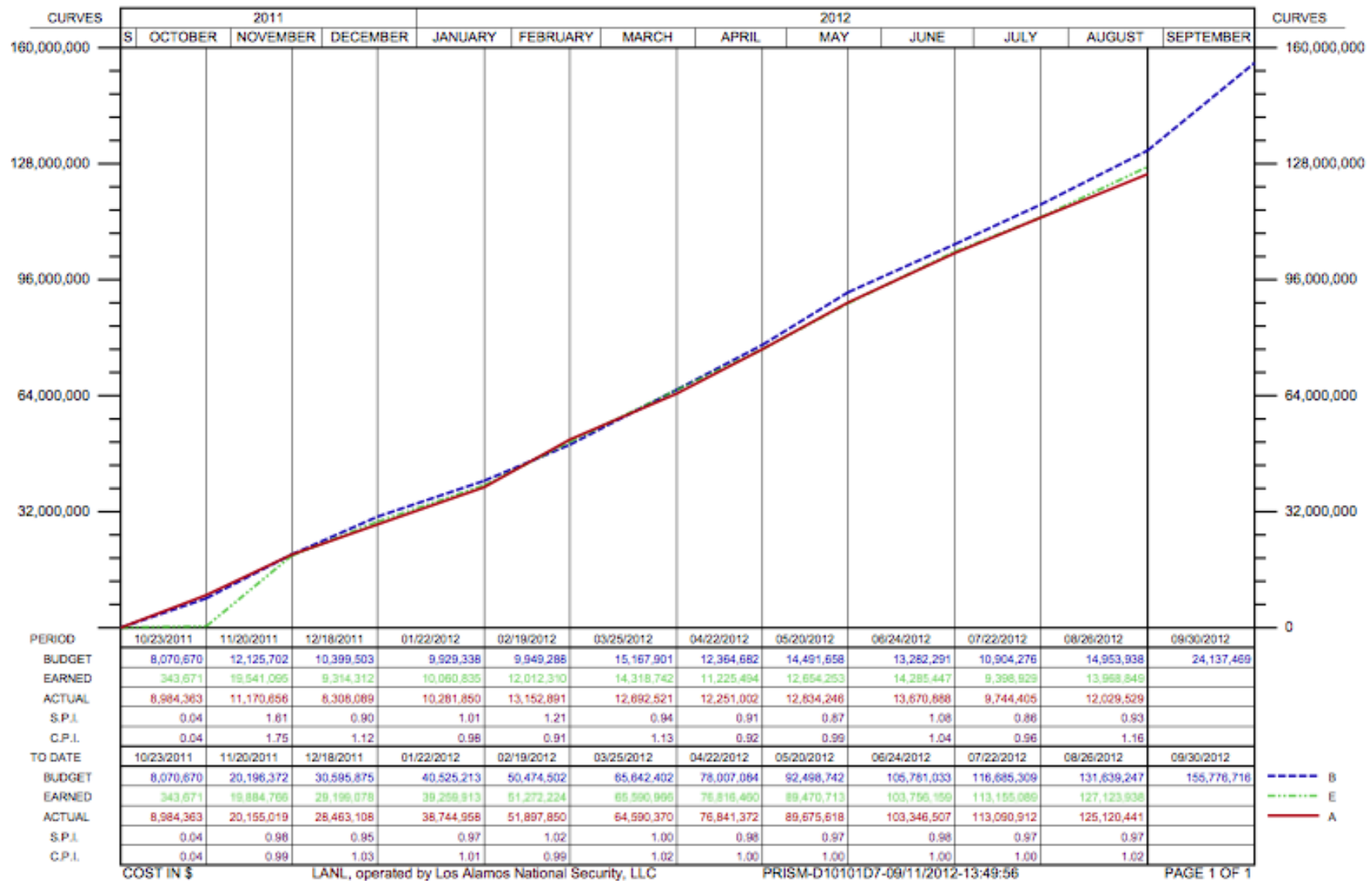
Table 1: August Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Power Supply	PSM-12-047	Fire Rating Modifications to Accommodate Definitive Design Details and Contractor Bids replacing Cost Estimate for Architectural Construction	8/13/12	8/14/12	Cost/Scope	\$84k	3
Pit Development	PSM-12-048	Chlorine Line SON and Options Evaluation	8/13/12	8/21/12	Cost/Scope	\$40k	4
Pit Development	PSM-12-049	University of Texas at Austin Contract	8/15/12	8/30/12	Cost/Scope	\$500k	3
Power Supply	PSM-12-051	VSP 2% Rate Change	8/22/12	8/27/12	Cost	\$242.5k	3

Earned Value Metrics

PERFORMANCE S-CURVE

Pu Sustainment



COST IN \$

LANL, operated by Los Alamos National Security, LLC

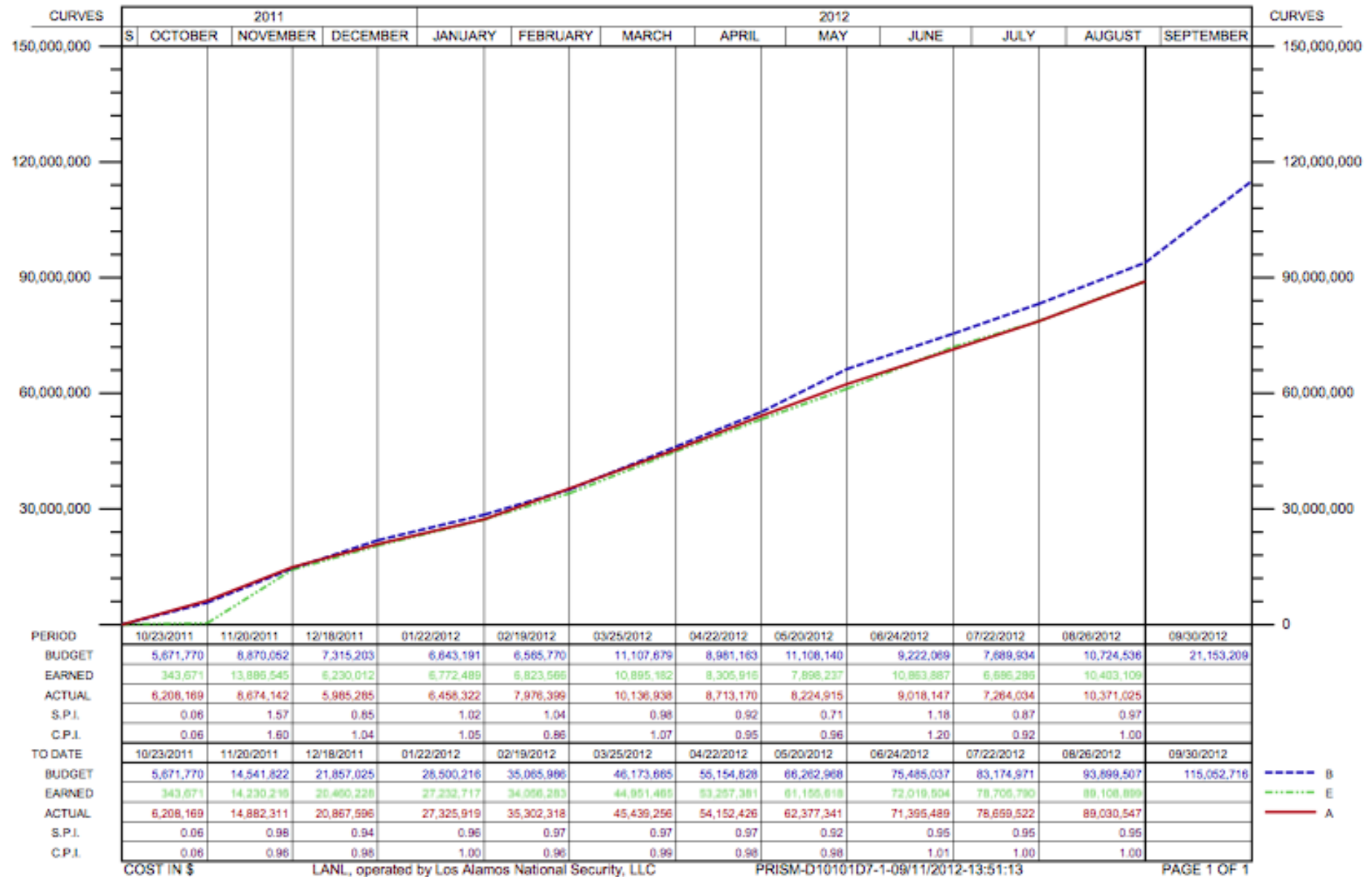
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PERFORMANCE S-CURVE

Pu Sustainment W/O Facility Infrastructure



1.0 LANL - Pit Development

MRT 4196	GREEN	Perform Activities to Sustain Base Pit Material Processing and Fabrication Capability		
1. Complete FY12 LANL tasks per PEP and W87 Legacy IPT necessary to support FY2013 delivery of 1 pit EDU 2. Continue installation and upgrade to pit capability equipment per PEP 3. Continue supporting W87 IPT and deliver Production Strategy and TRL/MRL assessment by September 30, 2012				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Non-nuclear components necessary for an EDU build are available for use.	July 13, 2012		June 13, 2012	BLUE
Suitable nuclear material is available as ER	September 21, 2012		May 14, 2012	BLUE
Laser Welding documentation approved • Technical Specifications & Requirements • Functional & Operations Requirements • Cold System Test Plan	September 21, 2012	TS&R Approved by PMB/WB F&OR Approved by PMB/WB	June 27, 2012 June 27, 2012	BLUE
Electron Beam Welder Corrective Maintenance Complete	June 29, 2012	Corrective Maintenance completed. Weld performed	June 28, 2012	BLUE
Preparation Unit Installed	August 14, 2012	Post installation operation demonstrated on part	June 26, 2012	BLUE
Production Strategy and TRL/MRL assessment	September 30, 2012			GREEN

1.1 Technical Progress

- Completed waste banding on the second W87 casting.
- Machined the third W87 inner and outer contour on T-Base 2.
- Started outer contour inspection on the CMM for second and third hemi-shell.
- Revised the draft of the MRL and TRL stages and completion criteria that apply to a legacy pit demonstration with comments received from the IPT.
- Continued comment resolution on flow sheet procedures.

1.2 Equipment

- Laser Welder
 - Submitted Technical Specifications and Requirements (TS&R) and the Functional and Operational Requirements (F&OR) documents to the Program Management Board/Working Board (PMB/WB). Documents were approved by the PMB/WB on June 27, 2012.
 - Submitted the Cold System Test Plan to the PMB/WB. Test plan was approved by the PMB/WB on August 23, 2012.

- Completed Milestone requirements.
- Assembling evidence package for MRT4196 closure documentation.
- Electron Beam Welder (EBW)
 - Vendor reviewed corrective maintenance performed and concurred that capability to weld had been restored.
 - On June 28, 2012, e-beam welder successfully performed a weld.
 - Completed Milestone requirements.
 - Assembling evidence package for MRT4196 closure documentation.
 - Continued E-Beam welding on test specimens.
- Surface Preparation
 - Performed functional testing on a surrogate component on May 3, 2012.
 - Software Quality Assurance documentation approved.
 - Performed functional testing of the unit with a component on June 26, 2012. Milestone met.
 - Assembling evidence package for MRT4196 closure documentation.
 - Continued preparation of backup surface preparation unit.

1.3 Issues

- None

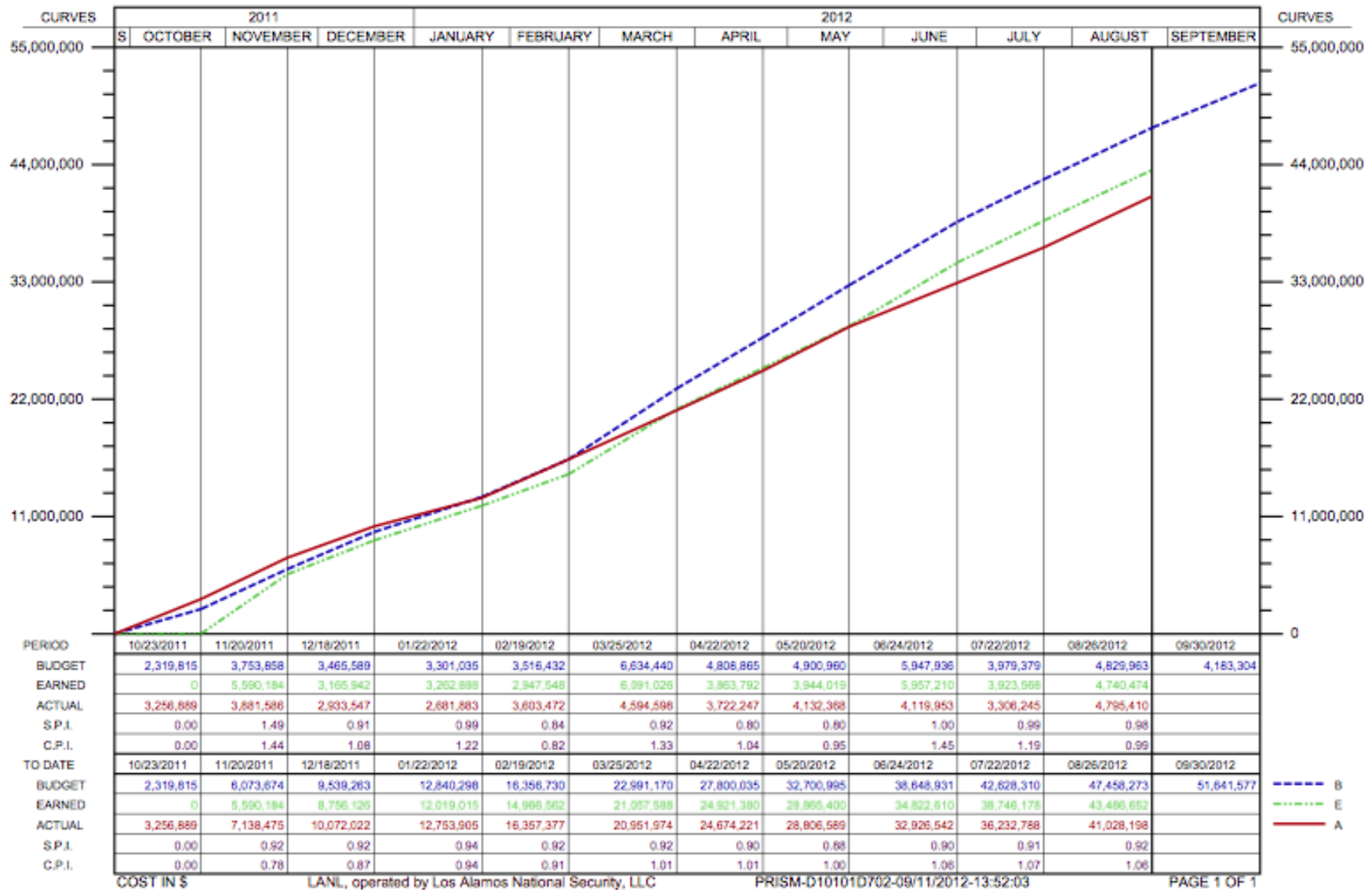
1.4 Variance Analysis and Recovery Plan

- None

1.6 Earned Value Metrics

PERFORMANCE S-CURVE

Pit Manufacturing



2.0 LANL – Experimental Component

4198	BLUE	Perform activities to sustain base pit material processing and fabrication capability through Experimental Component Fabrication		
1. Experimental Component Fabrication and Shipment of Gemini / Pollux in accordance with PEP but no later than September 30, 2012				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Start Cold Machining	January 10, 2012		Nov 18, 2011	BLUE
Start Hot Machining	February 21, 2012		March 23, 2012	BLUE
Casting Complete	February 27, 2012		February 27, 2012	BLUE
Complete Castor Sub-Assembly	May 3, 2012		May 31, 2012	BLUE
Start Hot Development Assembly	May 7, 2012	First assembly chosen as a shipping fixture test in lieu of hot assembly.	May 14, 2012	BLUE
Complete Machining Lot 1 – DEV	June 14, 2012	MET-2 has elected not to perform a hot DEV build		BLACK
Complete Machining Lot 2 – Pollux	August 1, 2012			BLUE
Start Pollux Assembly	August 13, 2012			BLACK
Pollux Complete	September 6, 2012			BLACK

2.1 Technical Progress

- Completed machining (lathe and mill) the first set of two pairs of parts from Lot 2 of Pu parts and first part from Lot 3 (5 parts total) on Precitech lathe and DMU-35 mill. Parts were inspected and accepted by LANL DA. Parts are ready for assembly.
- Received all non-nuclear parts and assembly tooling and fixtures for assembly.
- Completed assembly procedure approvals. Started Pollux assembly. On track for September completion.

2.2 Equipment

- none

2.3 Issues

- Receiving at NNSS has yet to be confirmed for preferred shipping schedule.
- Milestone revised to reflect October shipping window and accept progress (DA acceptance) as complete.

2.4 Variance Analysis and Recovery Plan

- SPI – Decision to forego the development build has resulted in a 8% schedule variance.
- CPI – Line organizations have revised the cost estimate for the remaining scope for Pollux. Additional budget will be made available from Pu Sustainment reserve. No BCR is planned and a variance will occur.

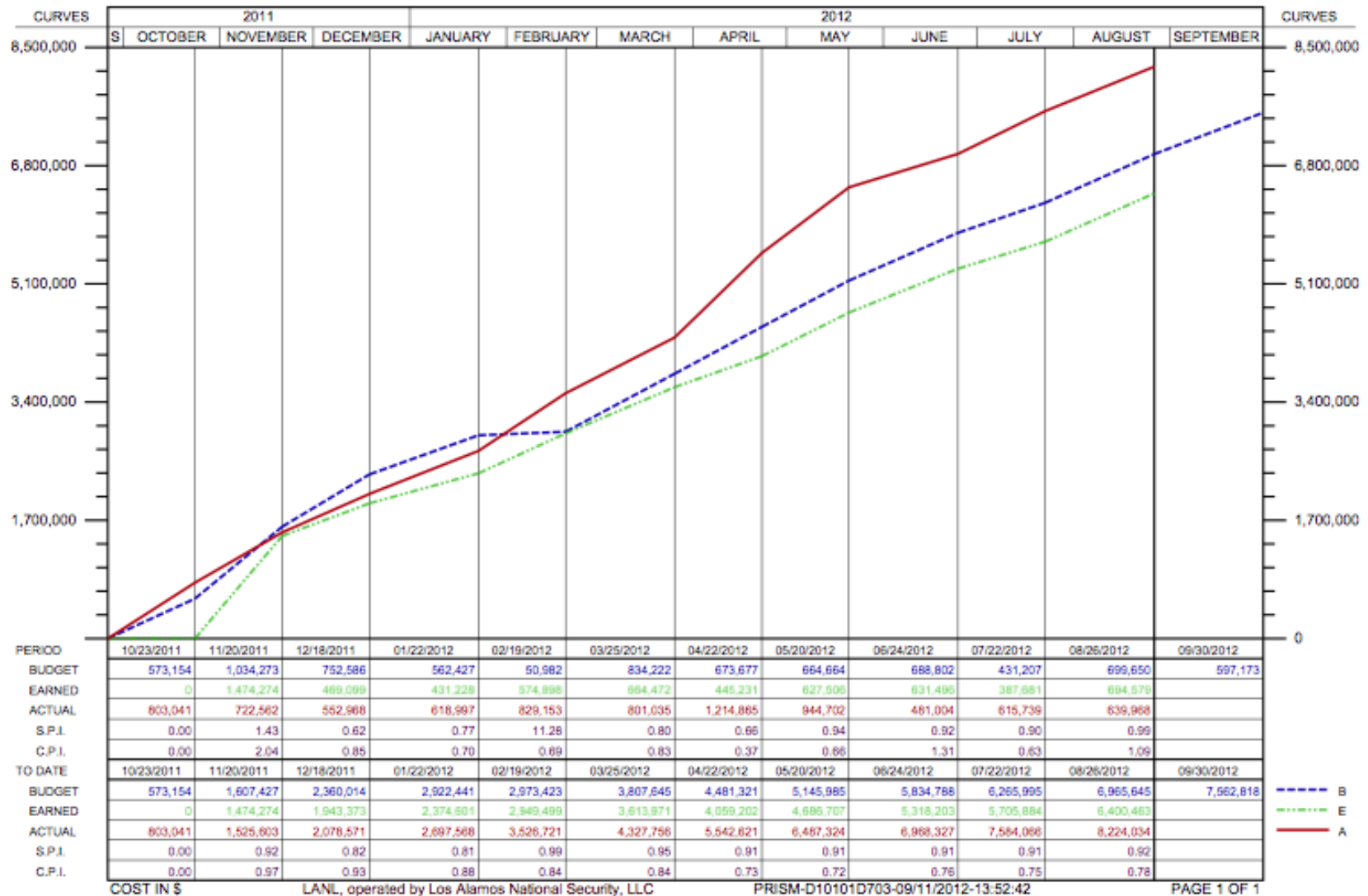
2.5 BCRs

- None

2.6 Earned Value Metrics

PERFORMANCE S-CURVE

Experimental Component Manufacturing



COST IN \$

LANL, operated by Los Alamos National Security, LLC

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3.0 LANL - Power Supply

4195	BLUE	Install the Power Supply Assembly Area Equipment and Upgrades per the FY2012 Power Supply PEP		
1. Begin construction on the PSAA by March 31, 2012. 2. Start installation of the Analytical Chemistry GBs by June 30, 2012. 3. Start installation of the low voltage E-Beam Welder by June 30, 2012.				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Start Construction – Capital (PSAA)	December 15, 2011		Dec 7, 2011	BLUE
Start Construction – Facility (PSAA)	December 15, 2011		Dec 7, 2011	BLUE
GB-1240 - Construction Field Start (Pu Assay)	March 1, 2012		May 7, 2012	BLUE
GB-1241 - Construction Field Start (Radiochemistry)	March 9, 2012		May 7, 2012	BLUE
Mobilize and Field Start (LVEBW)	June 14, 2012		April 30, 2012	BLUE

4197	BLUE	Complete FY 2012 Power Supply material recovery activities IAW the Plutonium Sustainment PEP		
1. Dismantle lesser of 480 units or 95% of the Pantex items received by June 30, 2012 2. Recover and store the oxide by Sept 30, 2012				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
Material Recovery Complete Shipment #1	October 18, 2011		Oct 18, 2012	BLUE
Material Recovery Complete Shipment #2	January 4, 2012		Dec 22, 2011	BLUE
Material Recovery Complete Shipment #3	March 8, 2012		Feb 15, 2012	BLUE
Material Recovery Complete Shipment #4	April 25, 2012		Mar 15, 2012	BLUE
Material Recovery Complete Shipment #5	June 27, 2012		June 21, 2012	BLUE

3.1 Technical Progress

- Material Recovery
 - Completed Shipment #6 (received in July) harvesting.
 - All material received before June 30, 2012 has been recovered (milestone 4197 is complete).

3.2 Equipment

- Power Supply Assembly Area (PSAA)
 - Construction continues and is on track.
 - Continued installation of new sheetrock walls;
 - Completed exterior electrical raceways to switchgear;
 - Started concrete formwork for the vibration blower pad;
 - Continued installation of ventilation ductwork and associated insulation;
 - Started concrete formwork and rebar placement for the exterior west wall.
- The Low Voltage Electron Beam (LVEB) Welder
 - Continued installation (vendor at LANL to work with LANL SMEs).
- Analytical Chemistry glove boxes (Pu Assay and Radiochemistry)
 - Moved glove boxes into PF-4 and secured to floor.
- SM-39 Development Laboratory
 - Started electricity installation for process equipment.

3.3 Issues

- None

3.4 Variance Analysis and Recovery Plan

- None

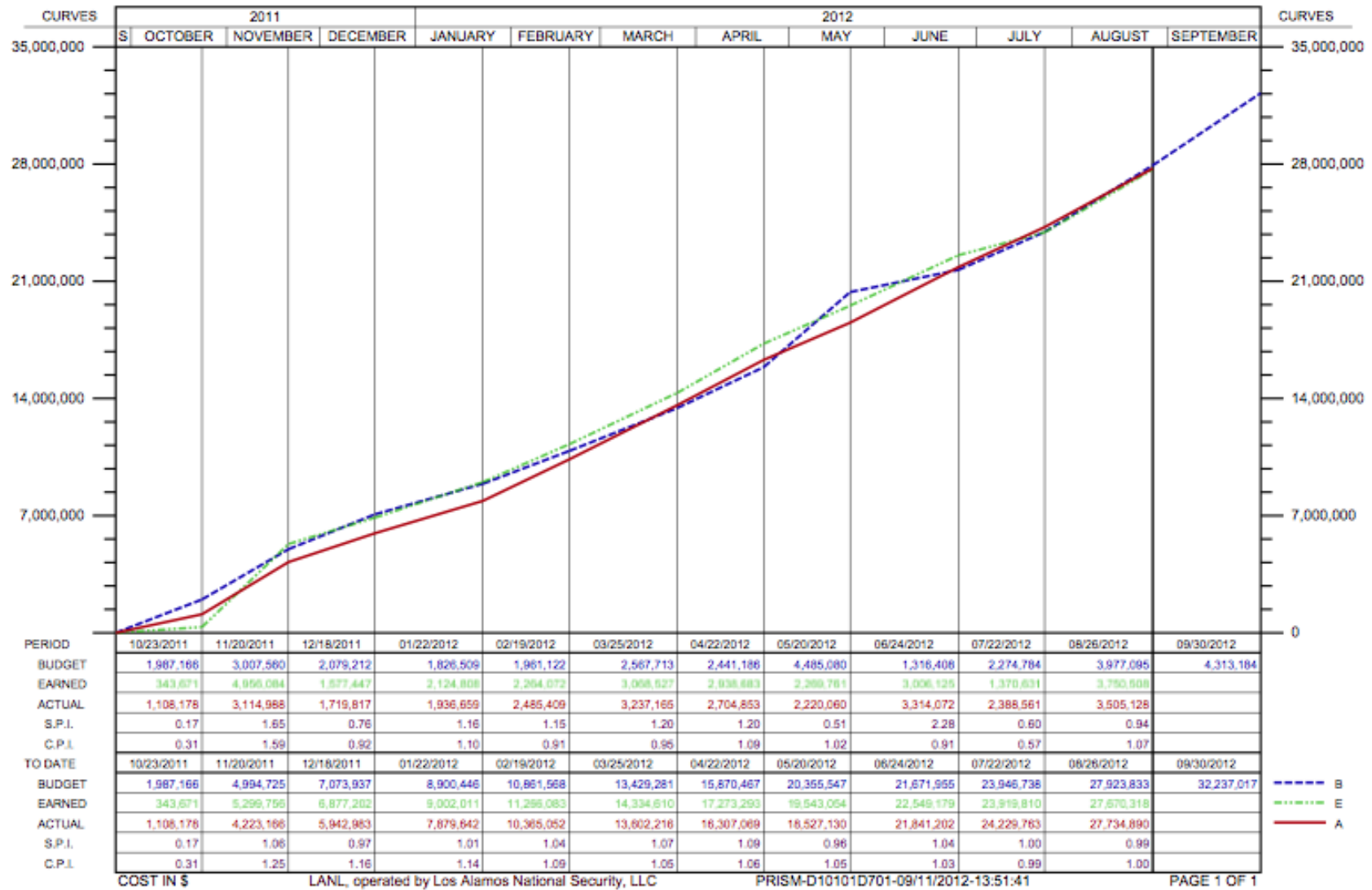
3.5 BCRs

- None

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

Reconstitution of Power Supply Manufacturing



4.0 Program Management and Support

4.1 Technical Progress

- Attended the August Power Supply PRT at KCP, which included discussions on:
 - Power supply design progress,
 - Material modeling and characterization report,
 - Procurement and schedule status and revisions, and
 - Quality plan development.
- Continued integration of work package schedules for Fiscal Year 2013.
- Continued budget planning for Fiscal Year 2013.

4.2 Equipment

- None

4.3 Issues

- None

4.4 Variance Analysis and Recovery Plan

- None

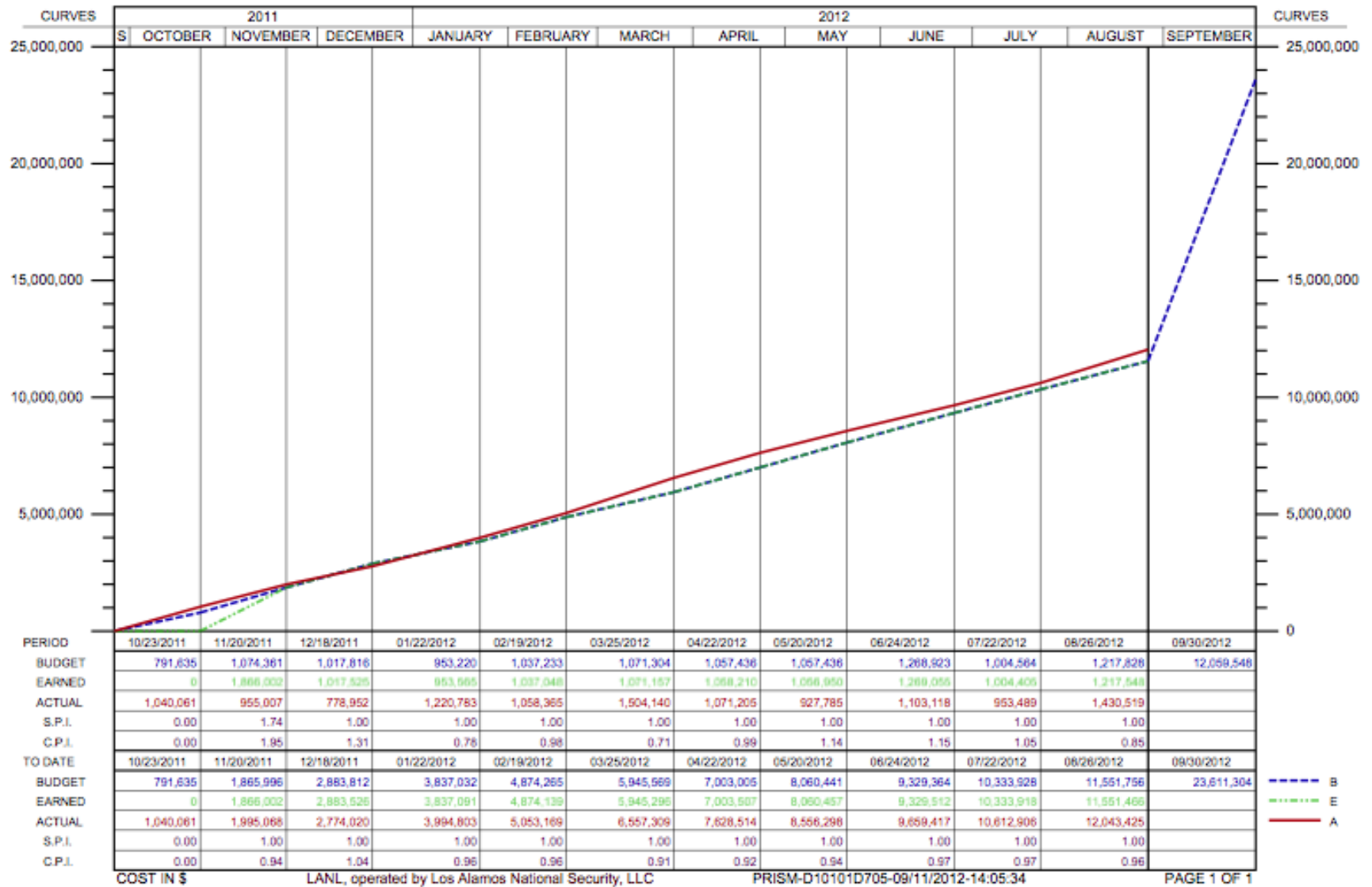
4.5 BCRs

- None

4.6 Earned Value Metrics

PERFORMANCE S-CURVE

Program Office



5.0 Facilities, Waste and Institutional Support

5.1 Technical Progress

- PF-4 Facility Availability: August 95.64%
 - 100 Area: 99.43%
 - 200 Area: 84.28%
 - 300 Area: 99.79%
 - 400 Area: 99.07%

5.2 Equipment

- None

5.3 Issues

- None

5.4 Variance Analysis and Recovery Plan

- None

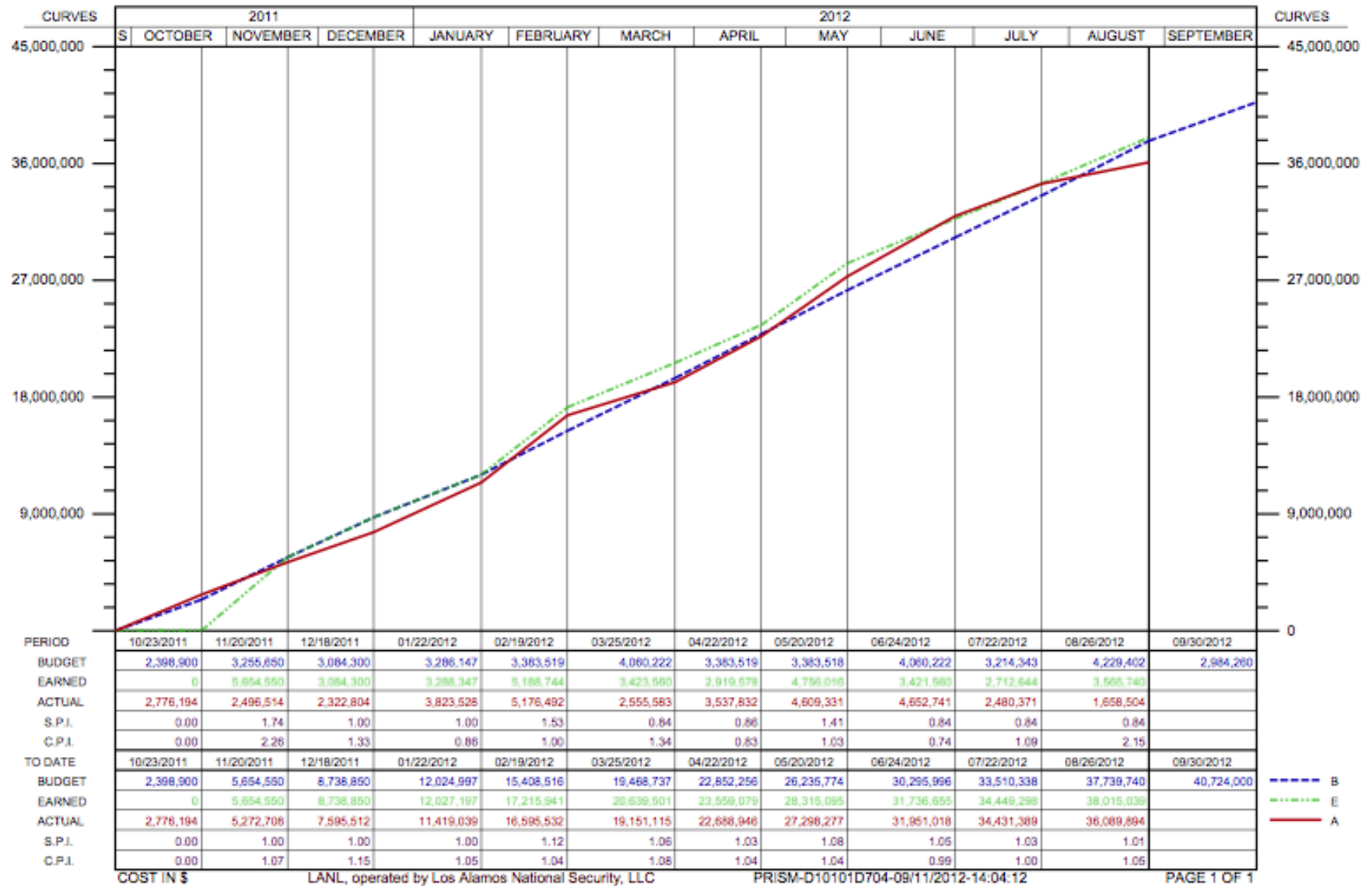
5.5 BCRs

- None

5.6 Earned Value Metrics

PERFORMANCE S-CURVE

Facility Infrastructure



6.0 LLNL

MRT 4196	GREEN	Perform Activities to Sustain Base Pit Material Processing and Fabrication Capability		
1. Complete FY12 LLNL tasks per PEP and W87 Legacy IPT necessary to support FY2013 delivery of 1 pit EDU 2. Perform initial cold testing of modern foundry 3. Evaluate selected Pit Manufacturing Processes for initial phase of "W87 -Like" fabrication by Sept 30, 2012 4. No later then June 30, 2012, Package and Ship Pu metal to LANL				
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB
LLNL Tasks to supports FY2013 EDU	9/30/2013	Design Definition complete for EDU Working chemistry specification		GREEN
Initial cold testing of modern foundry	9/30/2012	Several systems have been cold tested		GREEN
Evaluate selected Pit Manufacturing Processes for initial phase of "W87 -Like" fabrication	9/30/2012	Machining In-Progress		GREEN
Package and Ship Pu metal to LANL	6/30/2012	Shipments completed	6/28/2012	BLUE

6.1 Technical Progress

- The pit production IPT met on Tuesday the 21st of August. Discussions focused on EDU status, design definition status, and Non-Nuclear Materials issues. LANL presented a document outlining their proposed product development strategy. LLNL is currently reviewing this document and will provide comments to LANL.
- The Sheffield inspection fixture was sent to LANL. Work continued on writing the Sheffield inspection program. Inspection procedure has been approved for use at LANL.
- Programming of the Moore T-Base lathe #1 was completed. Additionally, outer machining of the first shell was completed.
- LLNL continued to evaluate hot press samples for metallurgical properties.

6.2 Equipment

- Modern Foundry:
 - Completed initial cold testing of the Mold and Die glove box furnaces. Completed the exhaust ventilation system for the Mold and Die and one of the Build and Breakdown glove boxes. The induction power supply and furnaces are in the final checkout, verifying wiring and communication and then initial heat up to complete initial cold testing. The exhaust ventilation system for the remaining glove boxes is making significant progress and is scheduled to be completed by the end of September.

6.3 Issues

- None

6.4 Variance Analysis and Recovery Plan

- CPI and SPI - Spending and Progress was back on target with additional staff to work at LANL in August.
- Recovery Plan – Full staffing in September will allow completion of projects and will fully use the funds allocated.

6.5 BCRs

- Money received (\$250k) to prepare for FY13 special item work.

6.6 Earned Value Metrics

PERFORMANCE S-CURVE

LLNL

