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Monthly Program Report December 2013

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Report

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## LANL Executive Summary

As part of a required Conduct of Operations review, on June 10, several key PF-4 Operation Procedures were paused halting most SNM operations in PF-4. On June 27, Laboratory Director Charlie McMillan issued a temporary pause of all programmatic activities in PF-4. Resumption criteria, prioritization of resumption activities, procedure walk downs, procedure revisions, and approval are in process and are expected to take several months to complete. The December resumption progress includes:

- 1) The Criticality Safety Analyst staffing plan has been crafted and is being executed.
- 2) Fissile Material Handler refresher training is underway.
- 3) Fissile Material Operations Confidence Levels have been established, guiding pre-resumption and post-resumption actions.

In December of 2013 the Plutonium Sustainment program at LANL completed or addressed the following high-level activities:

- 1) Completed and issued the signed (b) (7)(F) .
- 2) Presented a program update for the LANL Production Agency at the W78/88-1 LEP Program Review. Topics included a summary of FY13 accomplishments (pit manufacturing development and Pu equipment installations and upgrades), Pu related plans through the FYNRP, and FY14 LANL PA financial status.

Two of the three NNSA Level 2 Milestones (MRT 4962 and 4963) associated with Plutonium Sustainment are on track for success in FY14. MRT 4961 is "yellow" resulting from the operational pause.

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

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

### LANL Response to November NNSA Comments

none.

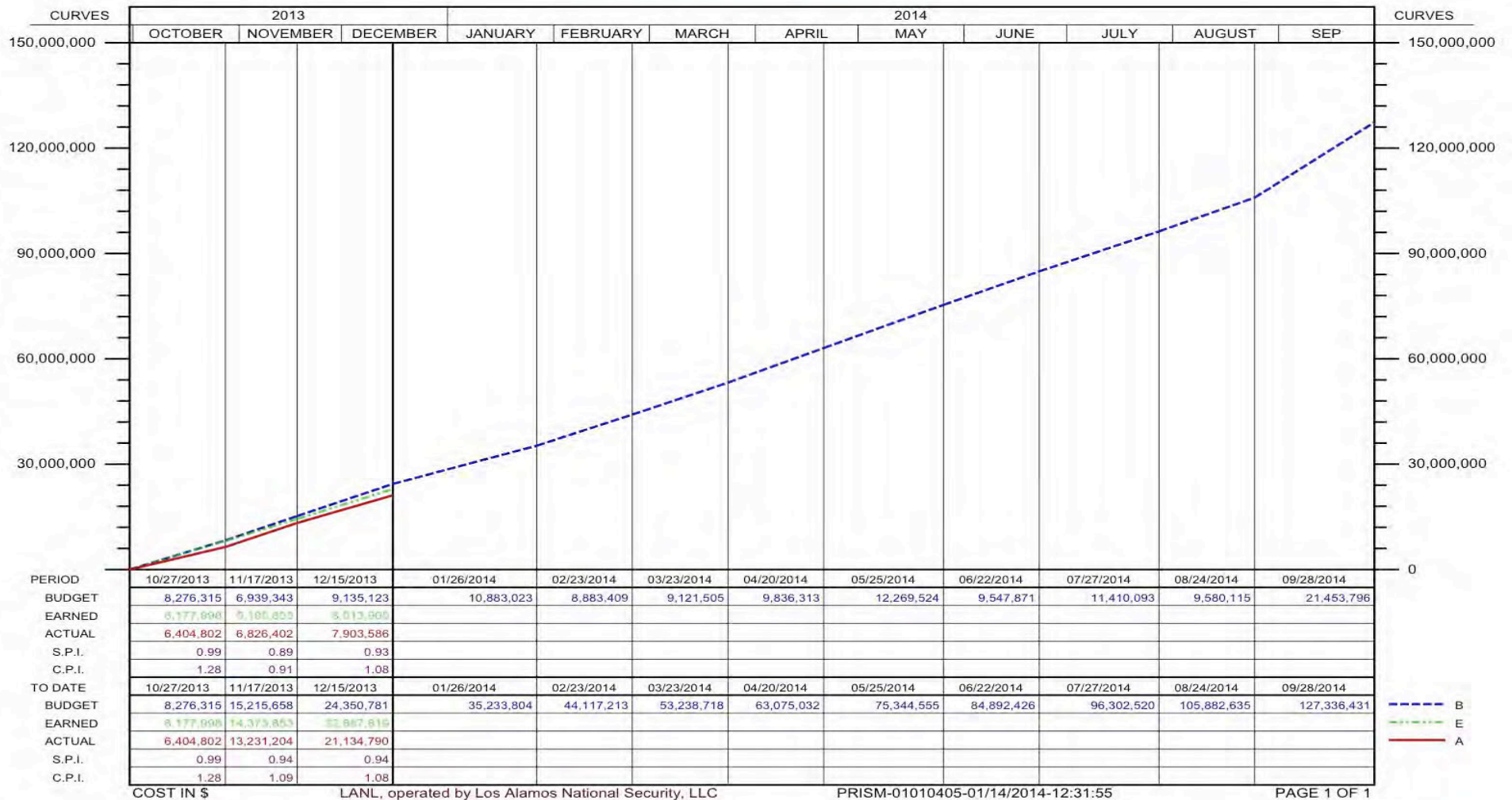
Table 1: December Baseline Change Requests

| WBS           | BCR #      | BCR Description                         | Date Assigned | Date Approved | Impact        | Cost Impact | Change Level |
|---------------|------------|-----------------------------------------|---------------|---------------|---------------|-------------|--------------|
| Pit Equipment | PSM-14-008 | ER Line – FY14 Baseline                 | 11/18/13      | 11/26/13      | Schedule only | none        | 3            |
| Pit Equipment | PSM-14-009 | (b) (7)(F) installation – FY14 Baseline | 11/18/13      | 12/13/13      | Schedule only | none        | 3            |
| Pit Equipment | PSM-14-010 | D&D XB304 & XB305 – FY14 Baseline       | 11/18/13      | 12/18/13      | Schedule only | none        | 3            |

## Earned Value Metrics

## PERFORMANCE S-CURVE

01.01.04.05 Plutonium Sustainment



[NOTE: September 2014 includes 6% FY15 carryover holdback of \$7.640M in addition to the four major WBS elements.]

## 1.0 LANL - Pit Development

| MRT 4961                                                                              |                     | YELLOW             | Perform Activities to Sustain Base Pit Material           |                   |       |
|---------------------------------------------------------------------------------------|---------------------|--------------------|-----------------------------------------------------------|-------------------|-------|
|                                                                                       |                     |                    | (b) (7)(F)                                                |                   |       |
| 1.                                                                                    | (b) (7)(F)          |                    |                                                           |                   |       |
| 2.                                                                                    | (b) (5), (b) (7)(F) |                    |                                                           |                   |       |
|                                                                                       |                     |                    |                                                           |                   |       |
| Activity                                                                              |                     | Baseline Date      | Status/Comments                                           | Completion Date   | RGYB  |
| (b) (7)(F)                                                                            |                     | (b) (7)(F)         |                                                           |                   |       |
| (b) (7)(F)                                                                            |                     |                    |                                                           |                   |       |
|                                                                                       |                     |                    |                                                           |                   |       |
| MRT 4962                                                                              |                     | GREEN              | Continue Key Equipment Upgrade and Replacement Activities |                   |       |
| 1. Complete ER Line Upgrades construction punchlist and execute successful cold test. |                     |                    |                                                           |                   |       |
| 2. Complete Pu Foundry GB 1 mechanical and electrical construction.                   |                     |                    |                                                           |                   |       |
| 3. Foundry GB 2 upgrade approved for installation.                                    |                     |                    |                                                           |                   |       |
| 4. Perform factory acceptance test of CMM #1 and #2                                   |                     |                    |                                                           |                   |       |
| 5. Complete CMM GB 30% design review and GB installation 30% design review.           |                     |                    |                                                           |                   |       |
| 6. Complete CDS installation 60% design review.                                       |                     |                    |                                                           |                   |       |
| 7. Finish installation (not including FCRs) on PML – Phase 2.                         |                     |                    |                                                           |                   |       |
| ER Line Dry Run/Cold Test Complete                                                    |                     | April 26, 2014     | Material Transfer System Dry Run Completed                |                   | GREEN |
| ER Line Punchlist Complete                                                            |                     | August 15, 2014    |                                                           |                   | GREEN |
| Foundry GB1 Cooling Power Supply Received                                             |                     | June 2, 2014       |                                                           |                   | GREEN |
| Foundry GB1 Cooling Furnace Housing Installation Complete                             |                     | July 3, 2014       | GB1 furnace housing cold tested and moved into PF-4       |                   | GREEN |
| Foundry GB2 Approved for Installation                                                 |                     | September 30, 2014 |                                                           |                   | GREEN |
| Complete Factory Acceptance Test of CMM #1 and #2                                     |                     | June 23, 2014      |                                                           |                   | GREEN |
| Complete location study for New GB & CMM                                              |                     | February 3, 2014   | On schedule                                               |                   | GREEN |
| Complete 30% CMM GB Preliminary Installation Design Review                            |                     | April 28, 2014     |                                                           |                   | GREEN |
| Complete 30% CMM GB Installation Design Review                                        |                     | June 30, 2014      |                                                           |                   | GREEN |
| Start CDS Engineering Development                                                     |                     | October 1, 2013    |                                                           |                   | BLUE  |
| CDS Engineering Contract Awarded                                                      |                     | February 16, 2014  |                                                           |                   | GREEN |
| CDS 30% Installation Design Complete                                                  |                     | June 1, 2014       |                                                           |                   | GREEN |
| CDS 60% D&D Design Complete                                                           |                     | August 11, 2014    |                                                           |                   | GREEN |
| PML DCP Re-Activation Complete                                                        |                     | January 10, 2014   | DCP Re-Activation Completed                               | December 12, 2013 | BLUE  |
| PML Construction Planning Complete                                                    |                     | May 22, 2014       |                                                           |                   | GREEN |
| PML Cold Testing Complete                                                             |                     | July 3, 2013       |                                                           |                   | GREEN |

## 1.1 Technical Progress

- (b) (7)(F)
- Re-activated the Precision Machining Line Design Change Package (PML DCP) one month ahead of schedule.
- The majority of pit manufacturing development is focused on resumption related activities. The documents for criticality safety review include 11 procedures and 20 Criticality Safety Limit Assessments. It is expected that criticality safety reviews will begin in January and will be completed in mid-FY14. Accordingly, most of the budget and scope through the current period is captured in a "level of effort" activity.

## 1.2 Equipment

- The plan to meet the grading criterion L2 milestone MRT 4962 includes the following by September 30, 2014:
  1. Complete ER Line Upgrades construction punch list and execute successful cold test.
  2. Complete Pu Foundry GB 1 mechanical and electrical construction complete.
  3. Foundry GB 2 upgrade approved for installation.
  4. Perform factory acceptance test of CMM
  5. Complete CMM GB 30% design review and GB installation 30% design review.
  6. Complete CDS installation 60% design review.
  7. Finish installation (not including FCRs) on PML – Phase 2.
- Electro-Refining Line Upgrade (b) (3)
  - o Final record drawings 25% complete.
  - o LANL review of DCN for fire protection requirements including oxygen analyzers completed.
  - o Installation of Ethernet and fire skirting on gloveboxes started.
- Foundry Upgrade (b) (3)
  - o Continued cold testing. Started the sequence of Bismuth-Magnesium castings to determine and optimize the frequencies for the new power supply.
  - o New GB-1 furnace housing moved into PF-4. Removal of existing housing and installation of new housing scheduled for January.
- Coordinate Measuring Machine (b) (3)
  - o Started engineering evaluation of CMM location environments.
  - o Vibration data gathered. Analysis indicates vendor active attenuation dampers may be necessary.
  - o Lessons learned meetings resulted in a re-evaluation of the CMM options. Scope of work and procurement costs with enhanced sensitivity, temperature control, calibration, and maintenance requirements are under revision.
- Chlorine Distribution & Detection System (b) (3)
  - o Technical Evaluation of A/E Proposal completed.
  - o Contract award for A/E design services on schedule.
- Precision Machining Line (b) (3)
  - o A/E design services contract awarded.
  - o Design Change Notices (DCNs) generated for drop box skirting, O<sub>2</sub> sensor connection to fire alarm panel, and airlock door control box.
  - o Design Change Package (DCP) review by system engineers completed. DCP reactivation complete.

## 1.3 Issues

- None

## 1.4 Variance Analysis and Recovery Plan

- None

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### 1.5 BCRs

- PSM-14-008: This BCR establishes the FY14 resource loaded schedule for the ER line project.
- PSM-14-009: This BCR establishes the FY14 resource loaded schedule for the (b) (7)(F) project.
- PSM-14-010: This BCR establishes the FY14 resource loaded schedule for the Decommissioning and Dismantlement two auxiliary boxes.

## 1.6 Risk Table

| Work               | Description                                                                                                                                                                                                                                                                                                                                                                                                                                    | Handling Strategy                                                                                                                                                                                                                                                                                                           | Status     |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| (b) (7)(F)         | (b) (7)(F)                                                                                                                                                                                                                                                                                                                                                                                                                                     | (b) (7)(F)                                                                                                                                                                                                                                                                                                                  | (b) (7)(F) |
| Completion of DCP  | Equipment projects all require new or revised CSEs and procedures. Without CSEs these DCPs cannot be closed.                                                                                                                                                                                                                                                                                                                                   | Identify all installation project CSEs & related DOPs, and prioritize by schedule/complexity. Complete supporting activities and request project resources available when needed. If resources are unavailable due to conflict with PF-4 Resumption, then the DCP closure will be removed for the L2 milestone requirement. |            |
| Equipment Upgrades | <p>The resumption process and related demands on criticality engineering and other project support create significant uncertainties for the FY14 equipment execution.</p> <ul style="list-style-type: none"> <li>ER Line activities that may be impacted include cold testing, Zone 1 tie-in, and NPCCW tie-in.</li> <li>Foundry Upgrade activities include criticality design/construction support and waste management processes.</li> </ul> | Equipment project resource requirements will be reviewed and prioritized by Program. The projects will alternate work methods as contingencies. If necessary the milestone may be renegotiated.                                                                                                                             |            |

(b) (5)

(b) (7)(F)

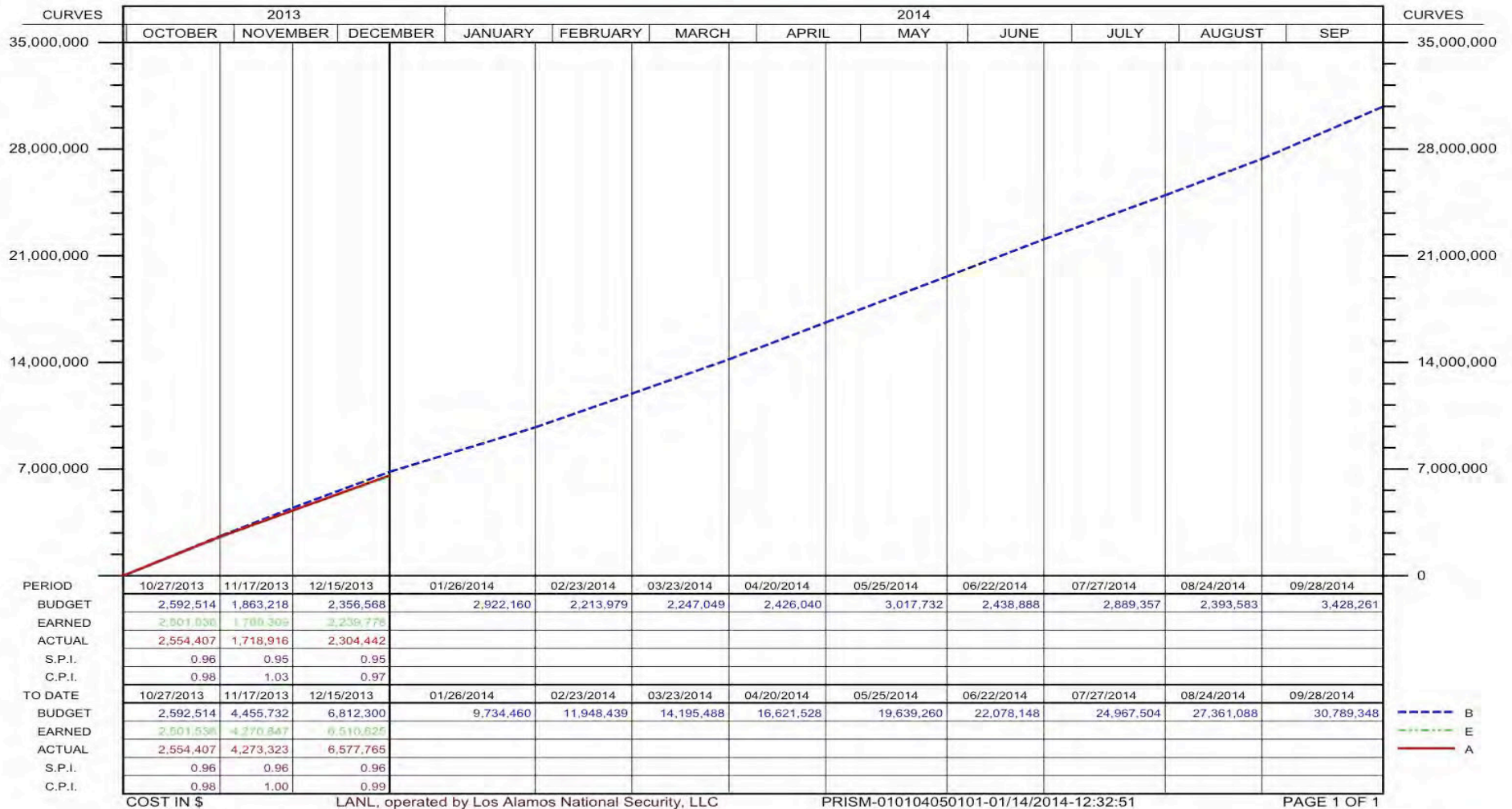
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| Work       | Description | Handling Strategy | Status |
|------------|-------------|-------------------|--------|
| (b) (7)(F) |             |                   |        |

## 1.7 Earned Value Metrics

## PERFORMANCE S-CURVE

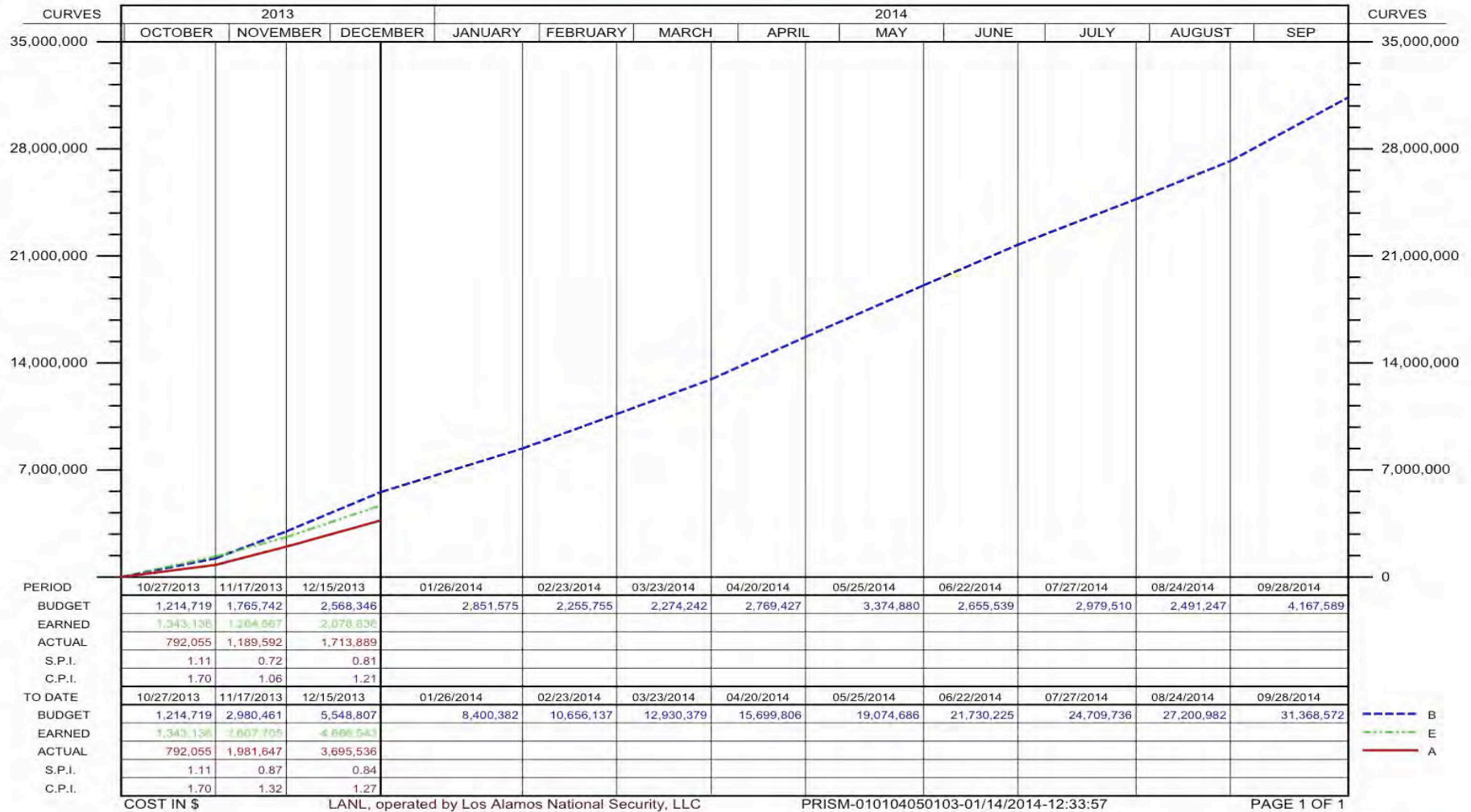
Pit Manufacturing &amp; Design Development



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## PERFORMANCE S-CURVE

Pit Manufacturing Equipment



(b) (7)(F)

[NOTE: Several projects (ER Line, (b) (7)(F) and associated D&D) have not been scheduled yet. Budget is currently pushed to year-end and will be scheduled in the first quarter (November and December BCRs).]

## 2.0 LANL - Power Supply

| MRT 4963                                         |                   | GREEN                                                             | Progress Power Supply Development |       |  |
|--------------------------------------------------|-------------------|-------------------------------------------------------------------|-----------------------------------|-------|--|
| 1. Complete (b) (7)(F) of inert heat sources.    |                   |                                                                   |                                   |       |  |
| 2. Start (b) (7)(F) of assembled Power Supplies. |                   |                                                                   |                                   |       |  |
| L3 Milestone                                     | Baseline Date     | Status/Comments                                                   | Completion Date                   | RGYB  |  |
| (b) (3)                                          | January 13, 2014  | 10 completed with impact, thermal, and percussion testing.        | November 15, 2013                 | BLUE  |  |
|                                                  | February 17, 2014 | 10 completed with abnormal condition impact and pressure testing. | November 15, 2013                 | BLUE  |  |
|                                                  | March 10, 2014    | 6 of 10 completed.                                                |                                   | GREEN |  |
|                                                  | June 20, 2014     |                                                                   |                                   | GREEN |  |
|                                                  | August 29, 2014   |                                                                   |                                   | GREEN |  |
|                                                  | May 25, 2014      | Completed 7 months ahead of schedule.                             | October 15, 2013                  | BLUE  |  |

### 2.1 Technical Progress

- (b) (7)(F)  
O (b) (3)
- (b) (7)(F)  
O (b) (3)  
O  
O

### 2.2 Equipment

- A faulty control board was identified and replaced in the shock tower controllers. Drop tests are being repeated to ensure the tower is functioning properly.
- The E-Tester is still being tested with the Thermal Chamber environment. Tests were performed at ambient, 30C and 90C and at -55C. Data are being collected and will be analyzed with KCP test engineers. Several ergonomic and data display changes have been identified and forwarded to KCP for incorporation into the next set of testers.
- (b) (3)

### 2.3 Issues

- The continued Pause in PF-4 operations coupled with procedural activities for resumptions, is affecting power supply production in the following areas:
  - FY14 Demo Fuel Run (Aqueous Processing and Fuel Fabrication)
  - Harvesting support activities: FSI opening and location/identification of fuel to increase current amounts
- FY14 funding cancellation for AMET Controller replacement in PF-4 and UT Development for installation at SM-39 will delay (b) (7)(F) activities.

### 2.4 Variance Analysis and Recovery Plan

- None

### 2.5 BCRs

- None

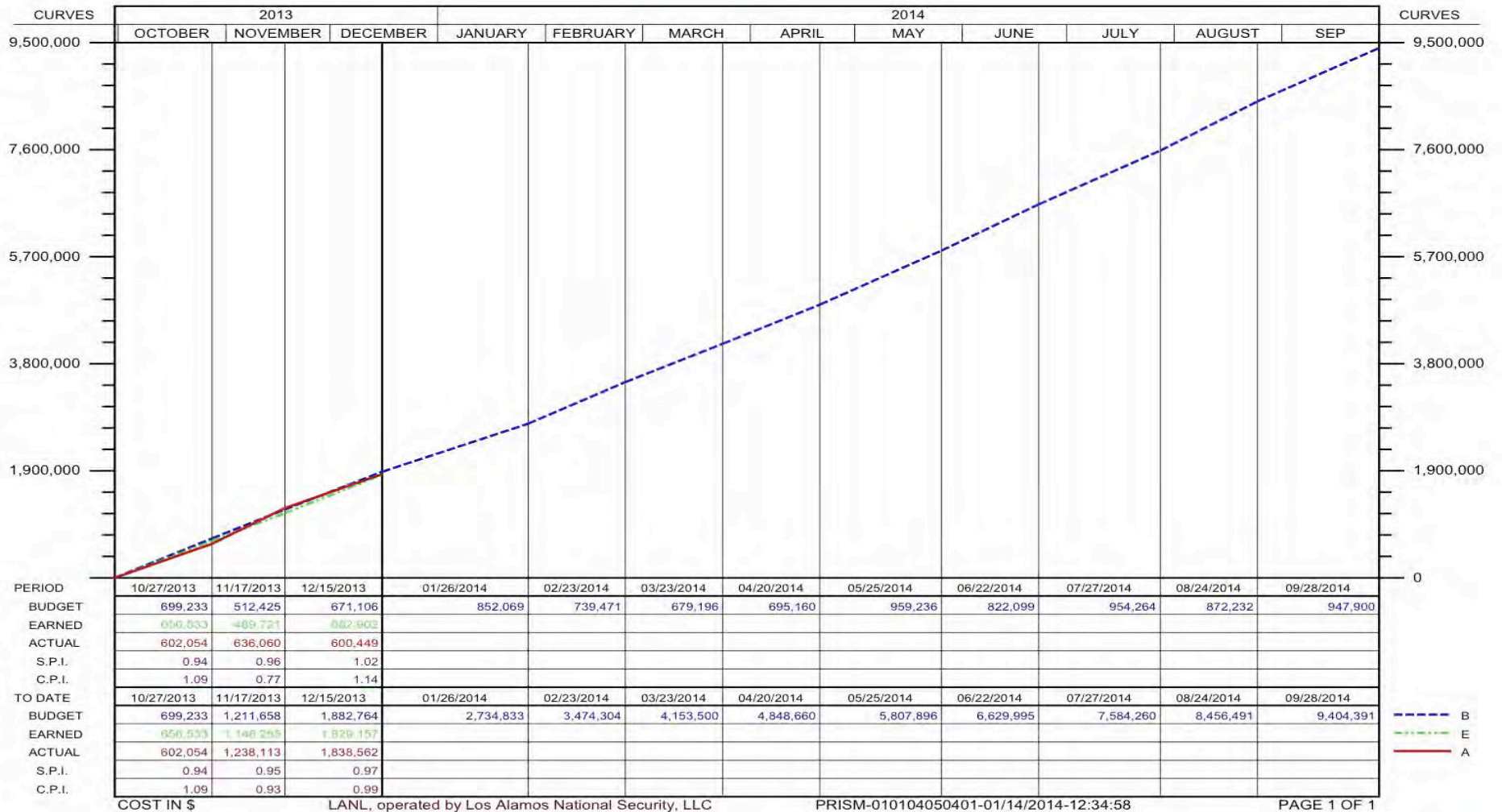
## 2.6 Risk Table

| 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. | <ol style="list-style-type: none"> <li>1. Communicate and integrate frequently with Power Supply surveillance, NE-75, and other programs to make the best use of available staff.</li> <li>2. Request LANL and LAFO management to allow for increase in dose to staff assigned to this work.</li> <li>3. Delay non-critical path activities until they become critical path for FPU.</li> </ol> | LANL performed a cross-program review in October of the baselined P6 schedules with NE-75.                                                          |
| 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 delivering the FPU.                                                                                                                                                                                                                                                                                                                    | <ol style="list-style-type: none"> <li>1. Communicate and integrate frequently with the PRT on LANL design needs.</li> <li>2. Provide monthly input into the PRT's Integrated Schedule to manage formally any delays.</li> </ol>                                                                                                                                                                | LANL continues to provide input at the monthly PRT meeting. Topics of the October meeting included review of the most recent fuel specification.    |
| (b) (7)(F)                            | (b) (7)(F)                                                                                                                                                                                                                                                                                                                                                                                                                                          | (b) (7)(F)                                                                                                                                                                                                                                                                                                                                                                                      | (b) (7)(F)                                                                                                                                          |
| AMET Controllers Replacement          | (b) (7)(F)                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Delay until FY15 unless funding becomes available in FY14 (will not effect FPU schedule).</li> </ol>                                                                                                                                                                                                                                                  | LANL to procure hardware, let contract for reps to be on-site and start disassembly/re-assembly and testing activities. Funding cancelled for FY14. |
| UT Cold Development                   | Develop and install a cold UT inspection station at SM39 that will be used for (b) (7)(F) t.                                                                                                                                                                                                                                                                                                                                                        | <ol style="list-style-type: none"> <li>1. Working with other LANL groups to determine if equipment and resources are available to inspect (b) (7)(F) at another LANL location.</li> </ol>                                                                                                                                                                                                       | Hardware bought and on-hand. Equipment delivered at SM39 but installation/integration on-hold due to cancelled of FY14 funds.                       |

## 2.7 Earned Value Metrics

## PERFORMANCE S-CURVE

Power Supply Production



## 3.0 Program Management and Support

### 3.1 Program Management

- Submitted the allocation 0.1 matrix with the baseline Primavera schedule. Work packages are in final review and will be signed in November.

### 3.2 Support

- Document Control, Records Management, and Training
  - Supporting the review of all operations greater than 2300 grams.
- Production Control
  - Provided M&TE and classified parts coordination support.
  - Continued to provide shop floor control and daily schedule status to Enduring Stockpile and Power Supply projects.
  - Provided restart scheduling and performance tracking.
- Maintenance
  - Corrective Maintenance:
    - Replaced Delta F O2 analyzer on (b) (7)(F) Heat treat box
    - Replaced belts on house dry vac pump PVD-44
    - Responded to a trouble-call for a positively pressurized glovebox. After placing the system in a safe configuration, applied administrative locks to the inert gas services.
    - Continuing work on the dri-vacuum, initiated install design.
    - Started routine glovebox decon by room.
    - Provided decon support to Wet vac pump room.
  - Preventative Maintenance:
    - Completing preventative maintenance on systems requiring maintenance while in pause.
    - Conducted a window glass and gasket failure analysis.
    - Designed a HEPA filter change tool.
    - Completed the He gas line leak check plan and liquid utility line leak repair plans.
    - Monthly bubbler PM – 300 wing.
    - Completed monthly and Weekly Bostomatic Mill PM.
    - Completed monthly and weekly (b) (7)(F).
    - Completed monthly TNC Hoist and podlift (manlift) inspections.
    - Developed standing Integrated Work Document for glovebox door maintenance
  - Work Management & Control:
    - Continued to collect specific history and determine how to view, report, and analyze.
    - Supported several procedure development initiatives for improved Conduct of Operations and Criticality Safety.
    - Supported recertification efforts of Fissile Material Handlers.
- Warehousing and Procurement
  - Redesigned and updated the TA55 Procurement and Warehousing team website. Added TA55 Projects Material Management info, links to CBOM, process flow charts, etc.
  - The procurement team successfully processed over 150 procurement requests for TA55 in December. The team was able to work through the period without the development of a substantial (> 1 week) and permanent backlog. The procurement team successfully processed procurement requests in a timely manner
  - Processed 549 warehouse distributions at a cost of \$33,755 and 726 warehouse receipts at a cost of \$149,640. The net change in warehouse valuation in December was \$115,885.

- Calibration
  - o The Standards and Calibration Laboratory (S&CL) supported the development of a causal analysis to determine underlying causes behind the low rate of submission of measurement and test equipment (M&TE) for recalibration.
  - o Purchased a new dial indicator calibrator to support processing of program equipment. This calibrator was a replacement for an aging item that was no longer providing reliable results.
  - o The S&CL continues to work with dimensional inspection to develop processes for re-certifying various M&TE in glove boxes that most benefits the Laboratory in regards to minimizing waste and maximizing the useful life of the M&TE.
  - o Continued working with detonator project leads to ensure the availability of calibrated M&TE to meet production needs.
  - o Calibrated 17 M&TE items in December and 87 for the first quarter. Successfully and consistently achieved target cycle time rates for equipment turn around so as to avoid mission and deliverable impacts.

### **3.3 Issues**

- Although funded to meet anticipated M&TE calibration requirements, calibration equipment replacement is not currently funded. Aging calibration equipment is beginning to fail (one item failed in November) and replacement will be required to avoid impacts.

### **3.4 Variance Analysis and Recovery Plan**

- None

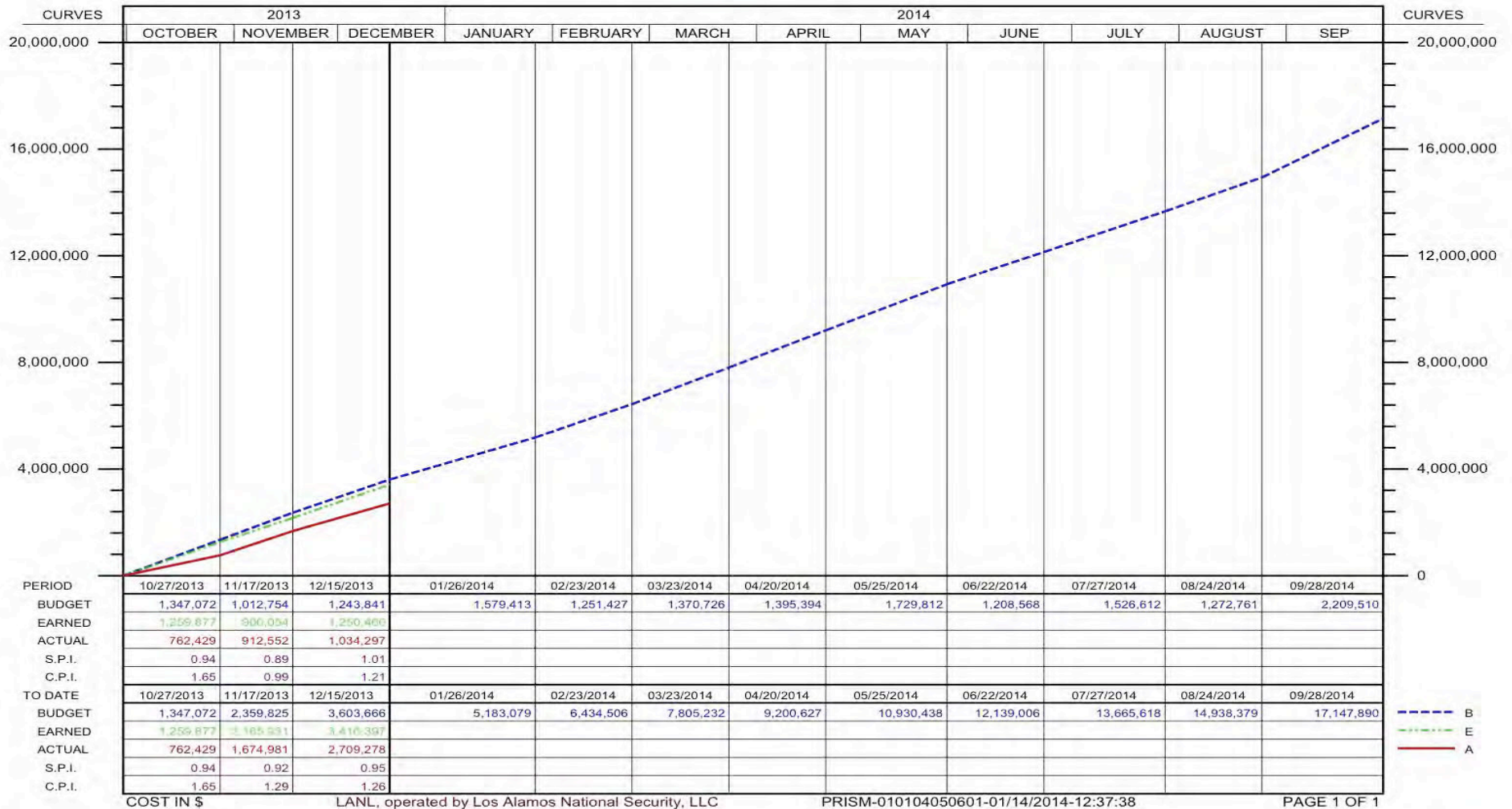
### **3.5 BCRs**

- None

## 3.6 Earned Value Metrics

## PERFORMANCE S-CURVE

Program Office



## **4.0 Facilities, Waste and Institutional Support**

### **4.1 Technical Progress**

- PF-4 Facility availability in December 98.03%
- TA-55 corrective maintenance backlog work orders was 10 ML-1, 65 ML-2 and 235 ML3 & 4.
- 283 work packages were completed in December; 70 work packages were unscheduled tasks and 106 work packages were expedited.
- 139 preventive maintenance tasks were completed in December and 9 were deferred.

### **4.2 Equipment**

- None.

### **4.3 Issues**

- None

### **4.4 Variance Analysis and Recovery Plan**

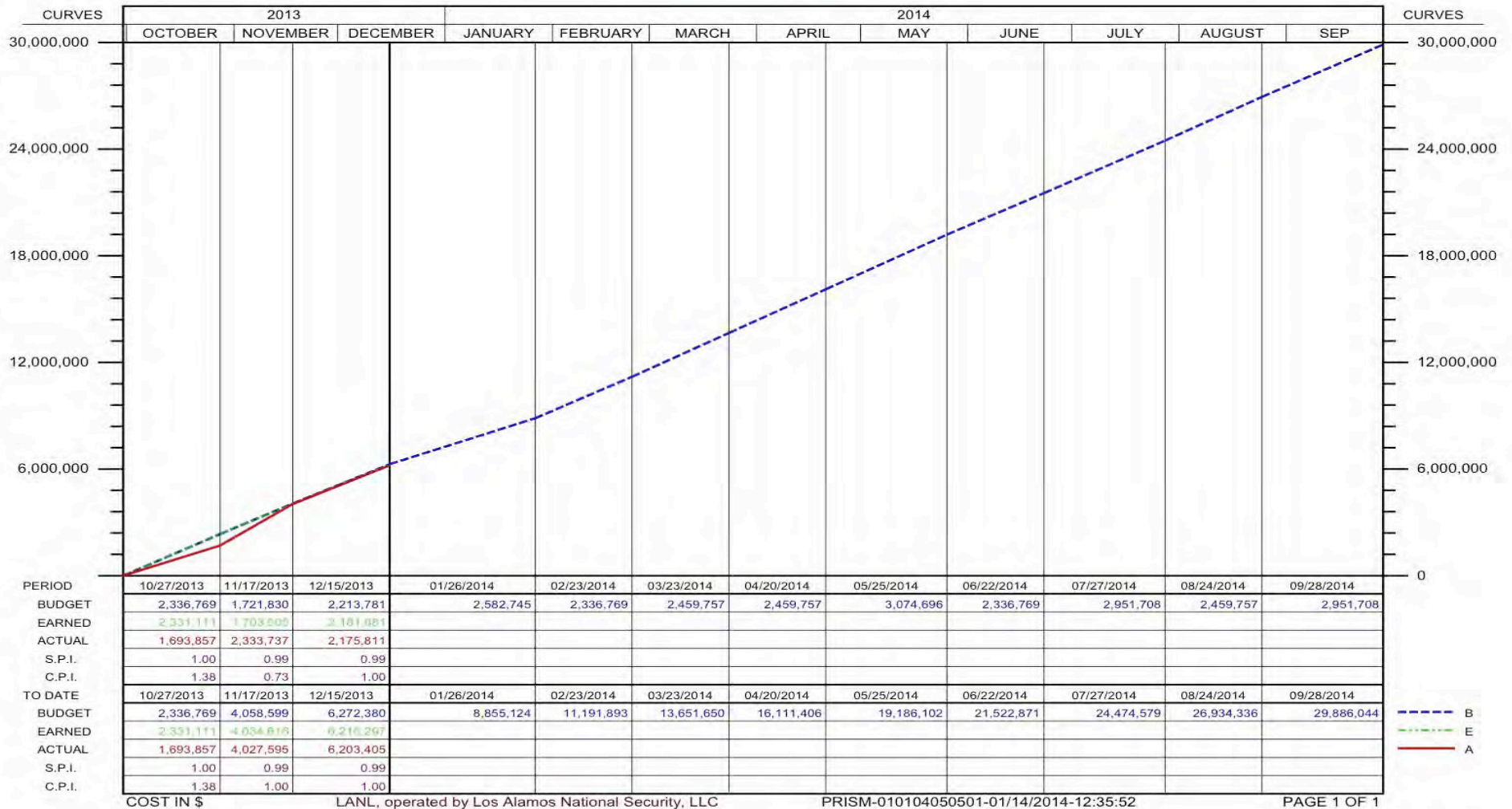
- None

### **4.5 BCRs**

- None

## 4.6 Earned Value Metrics

# PERFORMANCE S-CURVE RTBF Recovery



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## PERFORMANCE S-CURVE

Waste & Other Landlord Recovery

