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LANL Executive Summary

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

- 1) (b) (5), (b) (7)(F) .
- 2) Attended the 1st Quarter Pu Sustainment Program Review in Albuquerque, NM on January 30, 2013.
- 3) Supported the Power Supply PRT Meeting in Albuquerque, NM on January 8, 2013.
- 4) Supported a System Review meeting for Power Supply in Albuquerque, NM on January 22, 2013.
- 5) Hosted the Pit Manufacturing Development IPT Meeting at LANL on January 23, 2013.

All four MRT L2 Milestones (4622-4625) associated with Plutonium Sustainment are on track for success in FY13.

The earned value metrics overall for LANL are within acceptable thresholds, so no high-level recovery plan is required. LANL costs in January account for 5.8 weeks in a planned 4-week month due to a payroll accounting problem in December (only 3.2 weeks of costs were captured in a planned 5-week month in December). This has no effect on earned value (S.P.I.) but it does have an effect on actual costs (negative C.P.I. variance for January to offset the positive variance from December).

Each of the four major LANL WBS elements are discussed in detail below with two sections at the end that are provided by KCP and LLNL.

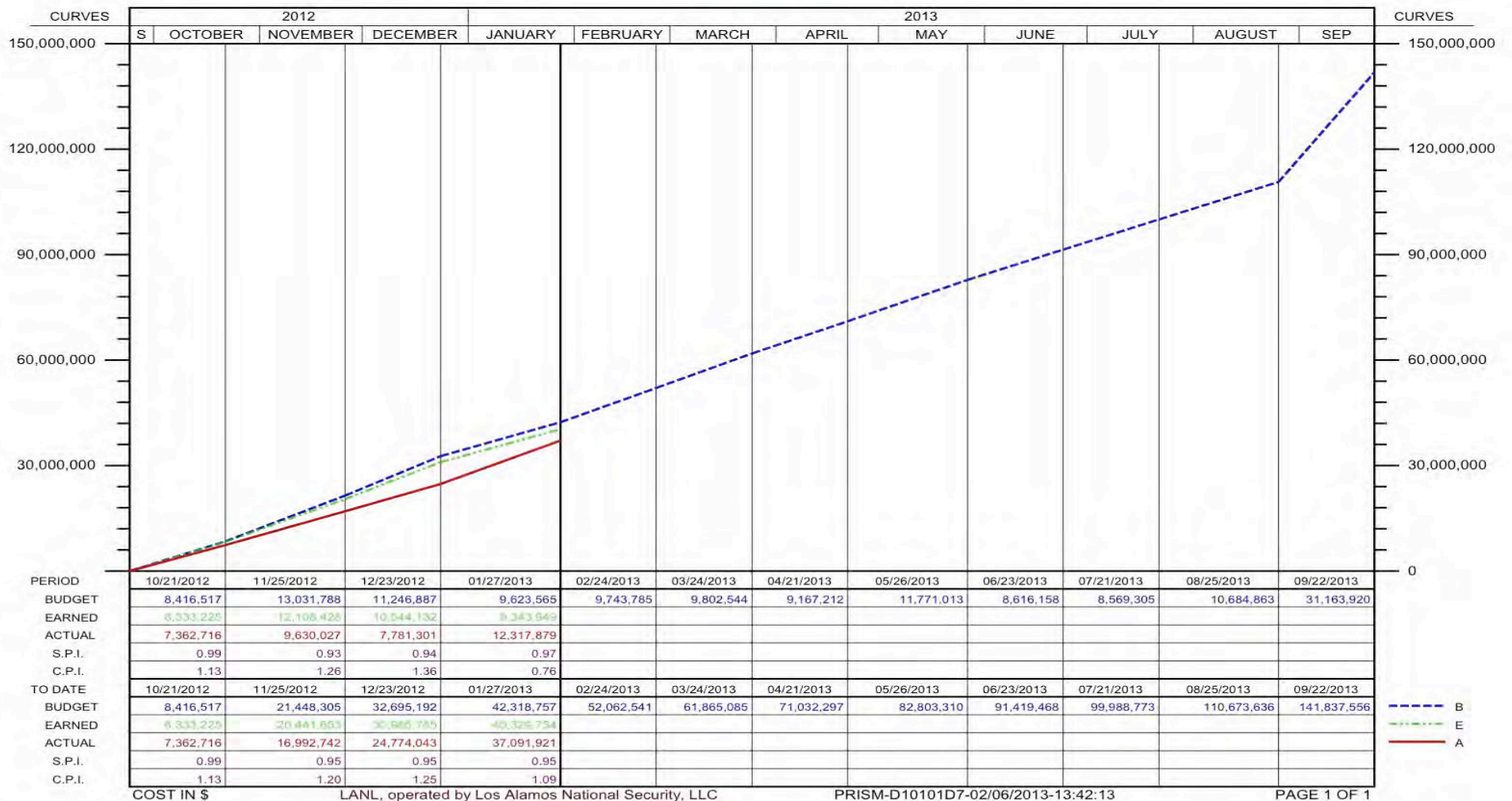
Table 1: January Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Power Supply	PSM-13-013	Adjustment to MR & TCP Due to Overhead Rate Increases	12/5/12	1/16/13	TPC	\$673k	1
Pit Equipment	PSM-13-016	CMM Replacement	12/5/12	1/24/13	Cost/Schedule	\$300k	3
Power Supply	PSM-13-020	PSAA: Engineering changes	12/5/12	1/14/13	Cost/Schedule	\$63k	3
Power Supply	PSM-13-021	PSAA: MSA	12/5/12	Working	Cost/Schedule	\$92k	3
Pit Equipment	PSM-13-022	(b) (7)(F) Replacement	12/18/12	1/14/13	Cost/Schedule	\$300k	3
Program Support	PSM-13-024	Plus up to University of Texas at Austin WP	1/7/13	1/28/13	Cost/Schedule	\$109k	3
Pit Development	PSM-13-027	Product Realization Process Integration	1/22/13	1/29/13	Cost/Schedule	\$100k	3
Pit Development	PSM-13-028	Welding & Joining – New Hires	1/22/13	1/29/13	Cost/Schedule	\$500k	3
Pit Development	PSM-13-029	Dimensional Inspection – New Hires	1/22/13	1/29/13	Cost/Schedule	\$200k	3
Power Supply	PSM-13-030	PSAA: Construction Elevator Control Relocation & Roll-up Door Installation	1/24/13	1/28/13	Cost/Schedule	\$29k	3
Power Supply	PSM-13-031	PSAA: Construction Mechanical Relocations due to Design Changes	1/24/13	1/28/13	Cost/Schedule	\$95k	3
Program Support	PSM-13-033	Dri-Train Replacements - Preventive & Corrective Maintenance	1/25/13	1/29/13	Cost/Schedule	\$500k	3

Earned Value Metrics

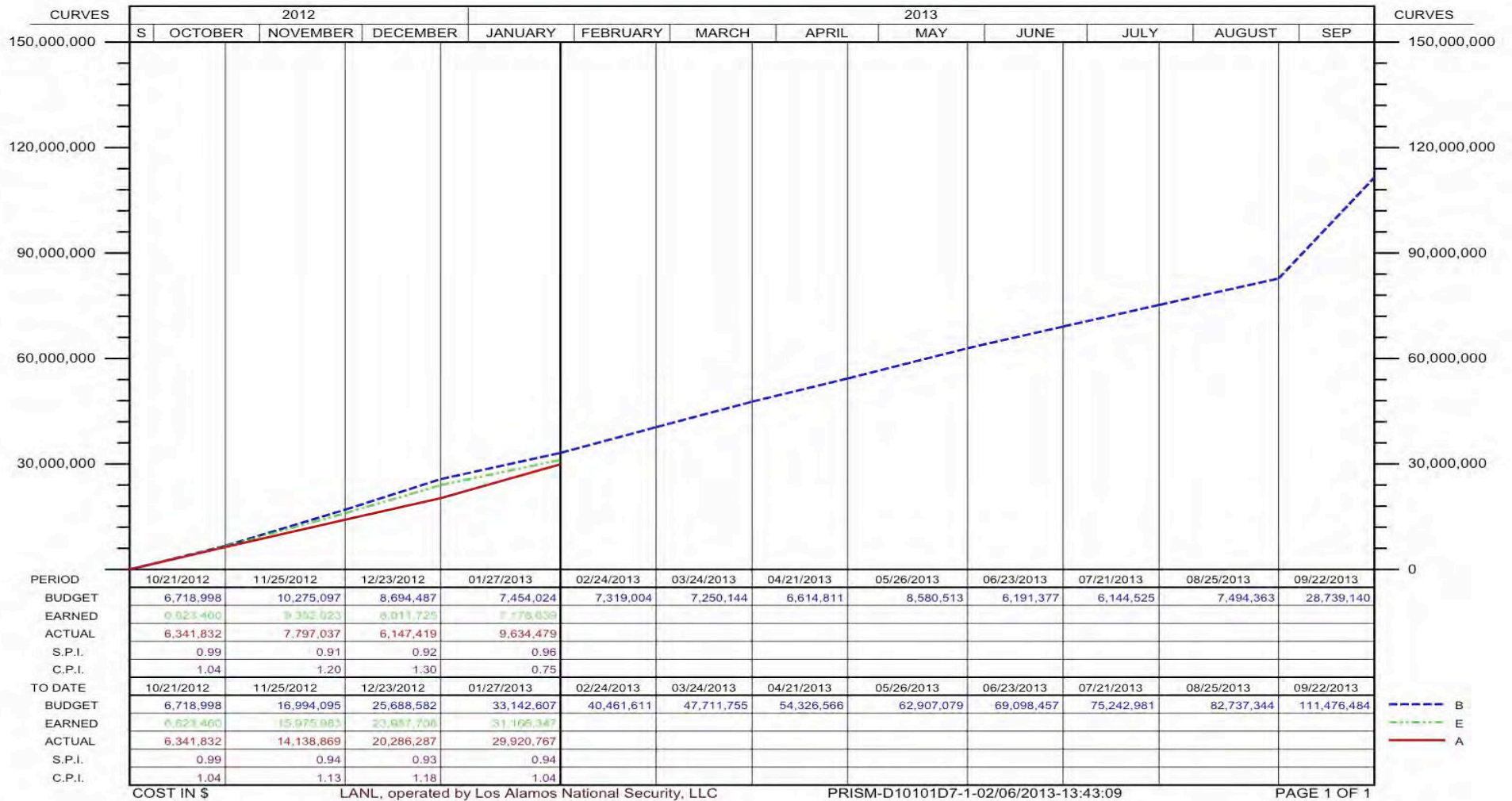
PERFORMANCE S-CURVE

Pu Sustainment



PERFORMANCE S-CURVE

Pu Sustainment W/O Facility Infrastructure



1.0 LANL - Pit Development

MRT 4622		GREEN	Perform Activities to Sustain Base Pit Material Processing and Fabrication Capability		
1.	(b) (7)(F)				
2.	Maintain pit manufacturing capability by producing (b) (7)(F) and/or exercising the pit fabrication flow sheet.				
3.	Continue to make progress on the Electro-Refining line, Plutonium Foundry, and (b) (7)(F) projects.				
				RGYB	
				BLUE	
				BLUE	
				BLUE	
				GREEN	
				BLUE	
				GREEN	
				GREEN	
				GREEN	
				GREEN	
				GREEN	
Equipment					
(b) (7)(F)		November 1, 2012		October 17, 2012	BLUE
		March 13, 2013	On track to meet milestone		GREEN
		March 21, 2013	On track to meet milestone		GREEN
		April 19, 2013	On track to meet milestone		GREEN
		June 27, 2013			GREEN
		June 30, 2013			GREEN
		July 19, 2013			GREEN
		July 26, 2013			GREEN
		July 30, 2013			GREEN
		August 29, 2013			GREEN
		September 20, 2013			GREEN
		September 30, 2013			GREEN
		September 30, 2013			GREEN
MRT 4623		GREEN	(b) (7)(F)		
1.	(b) (7)(F)				
(b) (7)(F)	(b) (7)(F)	(b) (7)(F)			GREEN

1.1 Technical Progress

- (b) (5), (b) (7)(F)
-
-
- The (b) (7)(F) was successfully performed and passed leak checking.
 - o Since all three attempted (b) (7)(F) were successful, we have eliminated from our risk table one of the highest technical risks, namely, the (b) (7)(F) operation.
- Completed machining operations on two FY13 shape castings. This completes the shape casting machining planned for April putting the machining operations 3 months ahead of schedule.

1.2 Equipment

- The plan to meet the grading criterion #3 for L2 milestone MRT 4622 includes the following:
 1. The (b) (7)(F) Upgrade - complete all planned (b) (7)(F) system upgrades and release both the “cold” and “hot” glovebox for welding operations by September 30, 2013.
 2. The Plutonium Foundry Upgrades - complete cold testing, issue an approved design for construction, and start construction on the first of three foundry gloveboxes by September 30, 2013.
 3. The Electro-Refining Line Upgrade - complete all mechanical and electrical construction activity associated with the eleven electro-refining boxes and systems by September 30, 2013.
- (b) (7)(F) Upgrade
 - o Installation of the infrastructure to support the new motion control and (b) (7)(F) integrating systems is nearing completion.
 - o Acceptable surrogate welds have been completed with the cold test system.
 - o The Cold Skid has competent functional control of all 5 axes and is receiving signal inputs for the interlock safety systems and the (b) (7)(F).
 - o The (b) (7)(F) and is undergoing preliminary checks.
 - o Planning the PF-4 work scope continues with the generation of IWD/DOP work documents and other preparation to start PF-4 activities.
- Foundry Upgrade
 - o Submitted readiness determination to the Operational Safety Board (OSB).
 - o Completed 30% GB2 vacuum/cooling installation engineering design review.
 - o GB1 cooling IWD 80% complete.
 - o GB1 vacuum installation 75% complete.
 - o Process equipment design drawings 85% complete.
 - o Vacuum system HMI software 85% complete.
 - o Cooling system HMI software 75% complete.
- Electro-Refining Line Upgrade
 - o End panel for staging glovebox and trolley conveyor inspected and accepted from IP Systems.
 - o Procurement of the Construction Bill of Materials progressing.
 - o Service Manifolds (3) aligned on Trunkline and soldered.
 - o ALARA report completed.
 - o Preparation of Criticality Safety Evaluation Documents (CSEDs) is in process.

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 BCRs

- PSM-13-016 for \$300K: This BCR includes funds to begin the CMM replacement project
- PSM-13-022 for \$300K: This BCR includes funds to begin the (b) (7)(F) replacement project
- PSM-13-027 for \$100K: This BCR funds a Senior Engineer's expanded role in support of Pit Development
- PSM-13-028 for \$500K: This BCR funds welding engineer (3) and technician (2) new hires.
- PSM-13-029 for \$200K: This BCR funds dimensional inspector new hires – one engineer and one technician.

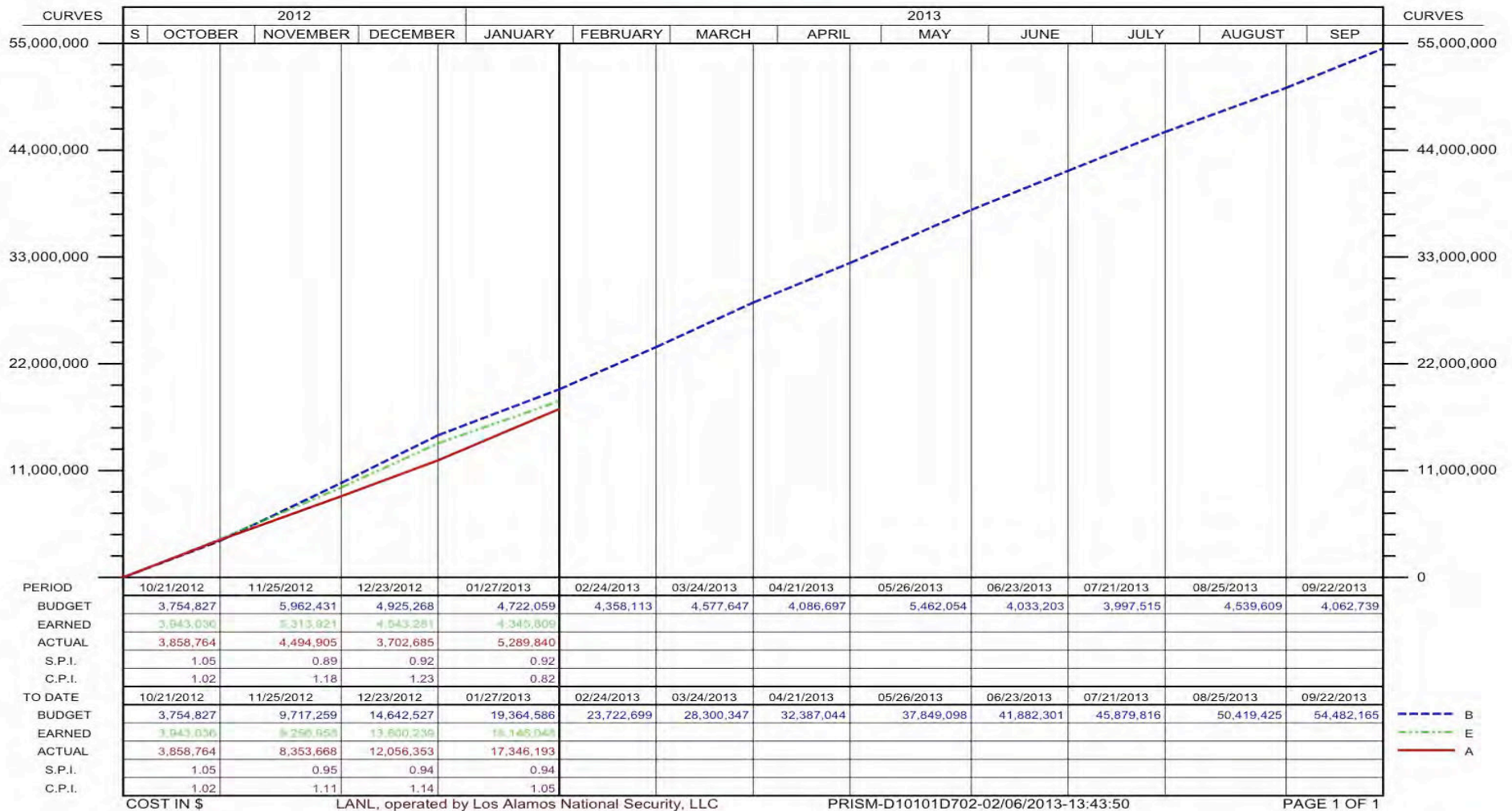
1.6 Risk Table

Work	Description	Handling Strategy	Status
(b) (7)(F) upgrades will conflict with the (b) (7)(F) attempt (Dev-3) in FY13.	(b) (7)(F) (b) (5), (b) (7)(F)	If possible the subassembly for Dev-3 will be built ahead of schedule. (b) (5), (b) (7)(F)	LLNL design for the (b) (7)(F) is still not finalized. With the delays in receiving the final design drawings for the (b) (7)(F) build, we have decided to proceed with a (b) (7)(F) as Dev-2. This build is running ahead of schedule. We plan to have all (b) (7)(F) operations completed by mid-May to allow (b) (7)(F) to proceed with minimal schedule conflicts.
(b) (7)(F)			
Analytical actinide chemistry may lose the support from other programs at LANL.	The NA-26 funded ARIES program is considering the option to transfer chemistry out of LANL. Currently the Program and ARIES are the primary funding sources for this capability. The Program has already reduced the number of samples for chemistry analysis. This potential for an ARIES elimination and Program reduction in funding could result in loss of the chemistry capability altogether for actinide samples at LANL.	1) Senior managers at LANL and LASO are working to resolve this issue. 2) The Program could increase the amount of chemistry work beyond the minimum required to explore issues of lower importance in order to maintain this competency.	Discussions continue with Chemistry Division managers with meetings planned in February to establish maintenance of core competencies during the next few transitional years.

1.7 Earned Value Metrics

PERFORMANCE S-CURVE

Pit Manufacturing



2.0 LANL - Power Supply

MRT 4624		GREEN	Complete FY 2013 RTG material recovery activities		
(b) (7)(F)					
L3 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
(b) (7)(F)					

2.1 Technical Progress

- Material Recovery

- o

(b) (7)(F)

- FSO radiography delayed due to equipment failure. The service vendor is on site the week of February 11 to determine exact cause of equipment failure.

- Process Development
 - o On Monday, January 21, 2013, the Power Supply Design Agency contacted LANL and requested a quick turn around on producing four Power Supply Mass Mocks. The mass mocks were necessary for the next Design Agency assembly testing scheduled for January 30, 2013. LANL personnel from across the laboratory diligently worked to procure the needed materials, machine all of the parts, (b) (7)(F) each so that they could be individually identified during experiments, and welded all of the components. On Tuesday, January 29th LANL delivered all four of the completed mass mocks.

(b) (3)

2.2 Equipment

- Radioisotope Thermoelectric Generator - Assembly & Testing Facility (RTG-ATF)
 - o Started install of acoustical ceiling.
 - o Continued install of HVAC controls.
 - o Continued install of devices for the fire alarm system.
 - o Continued install of raceways for the Yellow Net system.
 - o Complete install of one of the two new fire dampers required.
 - o Completed installation of HVAC exterior fresh air intake ductwork.
 - o Argon tank and vaporizer were shipped, will arrive the week of Feb 11, 2013.
 - o Completed ACBs install and bolting together completed, utility connections started.
- The (b) (7)(F)
 - o Completed the Technical Assist Team review. The Assist Team identified 30 items to be resolved prior to the Management Self-Assessment (MSA). The project team is currently working on resolving those items in preparation of the March MSA.
 - o Initiated the review and approval process for the operations and maintenance procedures.
- Analytical Chemistry glove boxes (Pu Assay and Radiochemistry)
 - o Completed the Zone 2 ductwork.
 - o Completed installation of mechanical work.
 - o Initiated Zone 1 ductwork.
- SM-39 Development Laboratory
 - o (b) (7)(F) operational and has welded liners for establishing weld parameters
 - o (b) (7)(F) is operational and completed correcting beam profile issue.

2.3 Issues

- None

2.4 Variance Analysis and Recovery Plan

- None

2.5 BCRs

- BCP-024-13-030 for \$29K: This BCR includes funds specified for installation of a fire rated roll up door and the relocation of the elevator controls due to the installation of the roll up door. These changes were required to meet the facility two-hour fire rating.

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- BCP-024-13-031 for \$94.5K: Changes in this BCP incorporated the relocation and installation of the shaker table vacuum blower, re-routing the chilled water piping, and fabrication and installation of the A/C Unit Stand. All of these changes were due to design changes necessary to account for facility interferences.

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 RTG manufacturing development. The plan to start hiring in FY13 for dedicated staffing will 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) Communicate and integrate frequently with RTG surveillance, NE-75, and other programs to make the best use of available staff. 2) Request LANL and LA Field Office management to allow for increase dose in staff assigned to this work. 3) Delay non-critical path activities until they become critical path for FPU.	Daily work planning meetings continue to ensure availability of staffing resources. Started working with Line Management to identify future strategic hires through out-year schedule planning.
(b) (7)(F)	(b) (7)(F)	(b) (7)(F)	

2.7 Earned Value Metrics

PERFORMANCE S-CURVE

Reconstitution of Power Supply Manufacturing



3.0 Program Management and Support

3.1 Program Management

- Supported the Power Supply PRT Meeting in Albuquerque, NM on January 8, 2013.
- Supported a System Review meeting for Power Supply in Albuquerque, NM on January 22, 2013.
- Hosted the Pit Manufacturing Development IPT Meeting at LANL on January 23, 2013.
- Supported the 1st Quarter Pu Sustainment Program Review in Albuquerque, NM on January 30, 2013.
- Initiated out-year FYNSP planning for all Pu Sustainment Program elements.

3.2 Support

- Document Control, Records Management, and Training
 - A total of 167 document requests were received in January
 - A total of 72 document action requests were completed in January
 - The TA-55/PF-28 facility is now fully turned over to operations for a classified/NQA-1/QC-1 compliant temporary records assembly location
 - Formal On the Job Training documents for pyro chemical operations are nearly complete.
- Calibration
 - Performed Monthly Calibrations: The LANL Standards & Calibration Laboratory (S&CL) has calibrated approximately 92 Pu Sustainment items through January 23, 2013
 - Quality Engineering/Continuous Improvement: With the help of engineering support made available with the S&CL's Pu Sustainment work package, the S&CL continues to develop specification sheets and automated procedures using SpecTrack and Calibration Process Manager modules of its new Mudcats metrology database. Spec sheets have been developed for areas such as pressure gages, pressure transducers, and thermocouples. These improvements are expected to reduce turnaround time for Pu Sustainment equipment and improve the overall quality of the calibration process.
- Warehousing and Procurement
 - Continue to effectively procure and manage material for multiple Pu Sustainment projects (ER, PU ASSAY, Foundry cold testing and Foundry Vacuum upgrades, and IPG laser upgrades.)
 - The procurement team successfully processed over 235 procurement requests for TA55 in January and was able to work through the period without the development of a substantial (> 1 week) and permanent backlog.
 - The Consolidated Bill of Materials Database Version 3 was released. It includes a material request pick list to be used by construction to request material from the warehouse team. It also includes the capability to receive and issue items into the database.

3.3 Issues

- None

3.4 Variance Analysis and Recovery Plan

- None

3.5 BCRs

- PSM-13-024 for \$108.9K: This BCR adds additional funding to our student pipeline work package. The specific scope funded is level of effort funding to support student research of current-torque mapping and high bandwidth control. This BCR will allow LANL the opportunity to integrate the performance of industrial

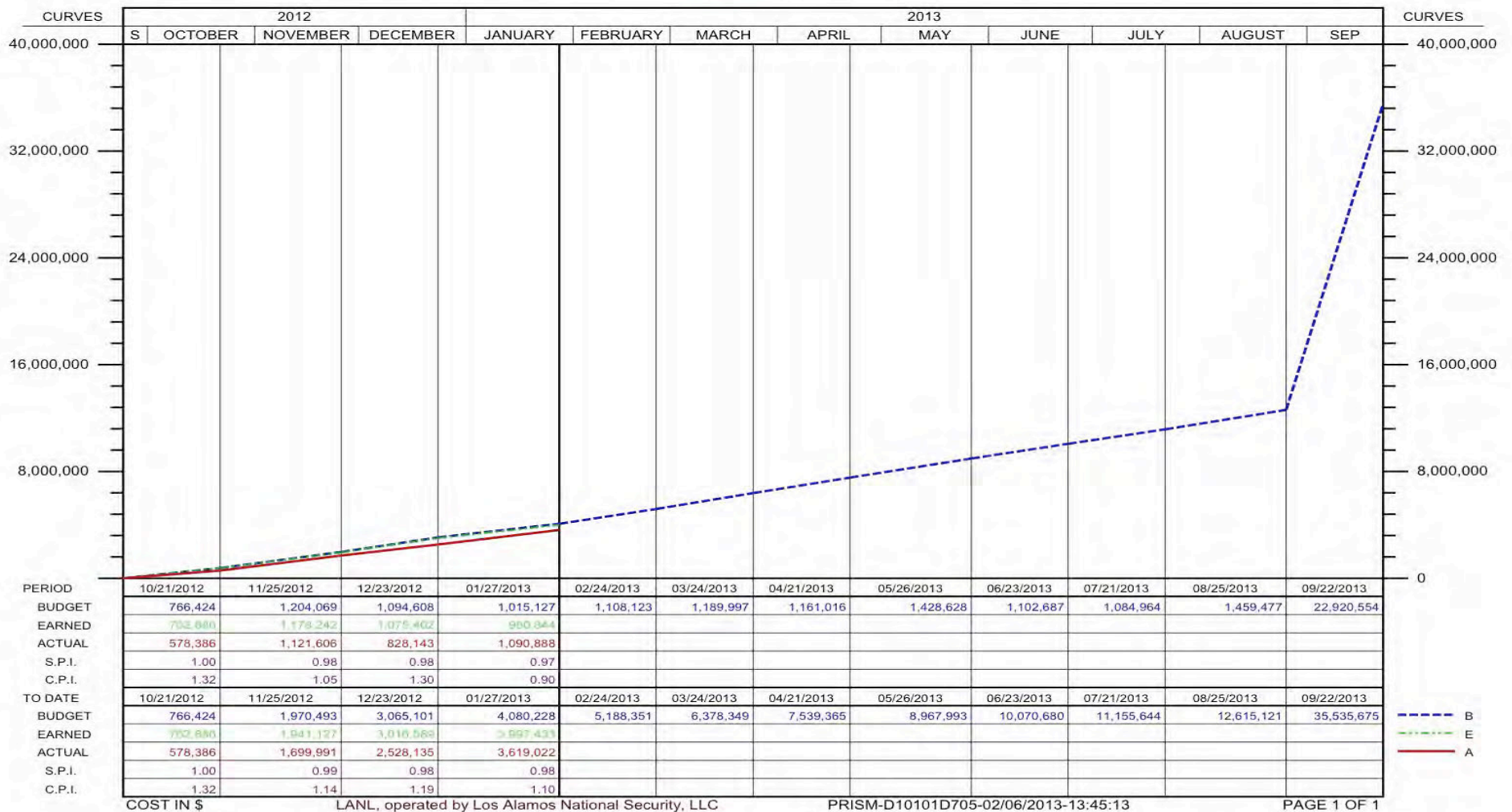
manipulators with advanced compliant control and other techniques while meeting the demanding manufacturing requirements for safety, payload, reliability, etc.

- PSM-13-033 for \$500K: Amend scope within the Maintenance Work Package to include the removal of two existing air purification systems (Dri-Train) supporting component welding operations and to provide an estimate and proposed design for replacement of these two systems. To achieve the required production rate over the next ~10 years, a reliable purification system is necessary to prevent unwanted oxidation of the Pu parts, weld joint contamination, and in extreme cases Pu fires.

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

Program Office



4.0 Facilities, Waste and Institutional Support

4.1 Technical Progress

- AD-NHHO: 13-026 January 2013 Progress Report on PF-4 Seismic/Structural Analyses and Facility Upgrades transmitted to Los Alamos Field Office.
- Rad-Con and LASO Training Assessment and Operations Center Certifications

4.2 Equipment

- TA-55 Reinvestment Project – (b) (7)(F)

4.3 Issues

- None

4.4 Variance Analysis and Recovery Plan

- None

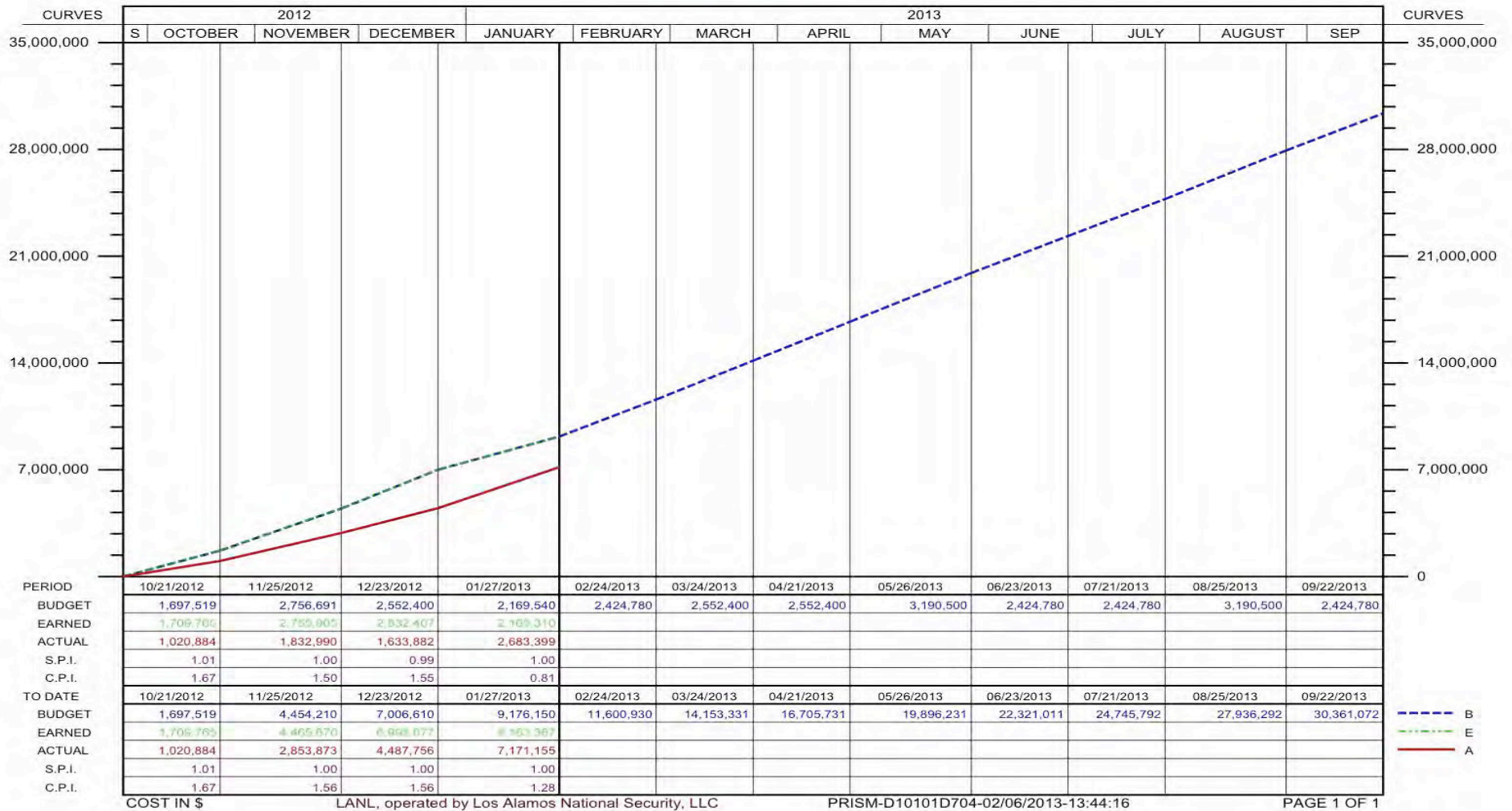
4.5 BCRs

- RTBF allocation of an additional 2% to the Base Facility Operations for the Master Resource Dictionary impacts: RLW, RLUOB, and TA-55 non-distributed work package Baseline Change Requests complete

4.6 Earned Value Metrics

PERFORMANCE S-CURVE

Facility Infrastructure



COST IN \$

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5.0 KCP

MRT 4750		GREEN	Begin Development of Non-Nuclear Component Manufacturing capability		
1. Purchase and install new (b) (7)(F) by 9/30/13					
2. Procure development material by 7/31/13					
3. Start fabrication of (b) (7)(F) sets by 8/31/13					
L2 Milestone 4750	Baseline Date	Status/Comments	Completion Date	RGYB	
Purchase and install new (b) (7)(F)	9/30/2013	Quotes received from two vendors. P.O. to be placed end of Feb 2013		GREEN	
Procure development material	7/31/2013	Surrogate development material procured		GREEN	
Start fabrication of (b) (7)(F) ets	8/31/2013	4th quarter FY13		GREEN	

5.1 Technical Progress

- ☐ KCP finalized the specification and requested a quote for cross-rolled 21-6-9 from MSC and Metalwerks to roll and cut blanks from KCP supplied material.
- ☐ KCP finalized the specification and requested a quote from (b) (6) to cross roll material supplied by KCP.
- ☐ Tubing from KCP stores was identified and pulled to support the procurement of the unclassified components.
- ☐ Surrogate material cut into blanks of various sizes to determine the starting blank size required for the hydro form process. A security plan is in work to allow the classified parts to be processed on the hydro form machine. This is expected to be approved and ready by the end of February. Hydro form tooling was completed in January.
- ☐ Drawings for the unclassified parts reviewed and changes identified. A VTC is planned in February to review and implement the changes. KCP has requested LLNL DTER the drawings to KCP to expedite and simplify the drawing change process.
- ☐ A stereolythe fixture was made to hold the two sample parts from LLNL for CMM inspection development.

5.2 Equipment

- ☐ Initial quotes received on the (b) (7)(F) and were within budget. Additional follow up with the vendors is needed to ensure all aspects of the contract are met and included in the quote. It is expected the order will be placed by the end of February.

5.3 Issues

- ☐ None

5.4 Variance Analysis and Recovery Plan

- ☐ None

5.5 BCRs

- ☐ None

5.6 Risk Table

Work	Description	Handling Strategy	Status
Development material availability	If suitable material in appropriate quantities is not readily available, then additional lead time will be required to obtain raw material, possibly delaying KCP support of PPI schedules.	Mitigate. In order to start hydroforming development, surrogate material is being purchased to develop initial forming and machining parameters. LANL has offered approximately 10 plates of one of the materials that will be used to support 5 of the development lot. Additional plates will be rolled from existing material at KCP.	The surrogate material was received in early January. LANL responded on the material request they could supply 50 plates. KCP is evaluating the process to determine if the smaller size of the plates will work with our equipment, tooling and process. KCP has request for quotes out to obtain development material. Expected delivery will support development schedule.
PPI and Qual material availability	If existing material at KCP is restricted from use then new material will be required. The procurement time on new material is (6 to 18 months) before they start making and rolling the material. The material may not be available to support PPI and Qual schedules.	Mitigate. Efforts are underway to update the material specification and work with the supplier to reduce cost and time to delivery. Alternate suppliers are also being considered provided the material can meet the specification.	The (b) (6) visit provided a path forward that will meet schedule and Level 2 milestones. (b) (6) is quoting rolling KCP material and providing new material that will meet the development schedule and Level 2 milestones.
Funds availability	The timing of funding becoming available to KCP is critical to enabling KCP's support of this new mission.	Mitigate. KCP is working with LLNL to redefine the specification and material processing requirements, which will reduce cost. Multi-year procurement and timed procurement can spread the cost over different funding years. Combining procurement needs between sites (LLNL, LANL and KCP) can increase quantities and reduce cost.	The (b) (6) visit provided insight to new material procurement and existing material processing and delivery times that can support program needs. KCP and LLNL agreed on the material specification that should be released in spring of 2013. KCP is waiting on quotes for all material procurements that will define cost impact. The quotes are expected to be less than originally figured.
(b) (7)(F) availability at Bannister Facility	The (b) (7)(F) currently installed in the "cold room" at the Bannister facility is the only machine currently available upon which to begin process development. It has marginal capability to hold the required tolerances in production. Its availability is critical to begin process development while new equipment is being procured & installed.	Mitigate. The first phase of process development would have to be eliminated in order to use the (b) (7)(F), which is moving during that time period. This compression may not allow enough time to develop adequate WR processes.	Procurement activities are in final approval and expected to have an order placed by March 1st. Due to substituting the stronger spindle required to support the parts the delivery and set up of the machines may incur delay. At this time the equipment is not expected to miss the level 2 milestone, but this is an elevated risk.
Hydroforming equipment	Hydroforming equipment is required for this project and the current equipment is not planned to be moved to Botts.	Mitigate. Procurement cost (\$1M) of required equipment has been included in contingency in FY13.	Procurement activities continue and are on track to mitigate the risk.
CMM Part Acceptance	The current inspection method utilizes the (b) (7)(F) and a fixture (\$250K) which both are unavailable at KCP. If an alternate method to verify part acceptance is approved it will take a team to determine the probing density and fixturing requirements which may exceed the funding allocated to this activity.	Mitigate. LLNL is going to send two representative parts to KCP for fixturing design and practice CMM probing. The teaming activities will be included around IPT meetings to minimize travel. Data sets will be transmitted electronically for team member review.	Two parts from LLNL were received by KCP in January. LLNL is working on providing the models for the parts. KCP is proceeding with building a fixture and performing initial CMM scanning techniques.

5.7 Earned Value Metrics (January data is for December and January combined)

PERFORMANCE S-CURVE KCP



6.0 LLNL

MRT 4749		GREEN	Perform Activities to Enable Plutonium Sustainment Goals		
1.	(b) (7)(F)				
2.	In coordination with LANL PA, maintain (b) (7)(F) measuring device for process qualification				
3.	(b) (7)(F)				
4.	(b) (7)(F)				
5.	(b) (7)(F)				
L2/L3 Milestone		Baseline Date	Status/Comments	Completion Date	RGYB
(b) (7)(F)		9/30/2013	Continued to provide EDU development support		GREEN
(b) (7)(F)		7/30/2013	Received metal from LANL for next set of coupon studies		GREEN
Complete	(b) (7)(F)	3/31/2013	Parts are being machined for weld tests		GREEN
Initiate readiness review for compatibility tests		9/30/2013	Identified LANL work scope and equipment needs		GREEN
(b) (7)(F)					
Complete initial demonstration of purification and recovery of desired materials		6/30/2013	Awaiting NNSA approval for equipment installation		GREEN
(b) (7)(F)		12/31/2012	Design provided to NNSA and LANL.	11/30/12	BLUE
(b) (7)(F)		9/30/2013	Currently scheduled as third or fourth build		GREEN

6.1 Technical Progress

- ☐ (b) (7)(F)
- ☐ (b) (7)(F) The MD-2s are now projected to be available in late May/early June per Y-12. NSTec is reviewing authorization basis issues to determine if over packing can occur within an Area 5 facility.
- ☐ (b) (7)(F)
- ☐ LANL review of the compatibility test was held. LANL contacts and funding source have changed, so the cost estimate to LANL for support was cancelled.
- ☐ (b) (7)(F)
- ☐ (b) (7)(F)

6.2 Equipment

- ☐ None

6.3 Issues

- ☐ None

6.4 Variance Analysis and Recovery Plan

- None

6.5 BCRs

- None

6.6 Risk Table

Work	Description	Handling Strategy	Status
All work packages	Availability of required unit operations at LANL or LLNL	Work to integrated schedule and adjusts as needed	Not realized
(b) (7)(F)	(b) (7)(F)	(b) (7)(F)	(b) (7)(F)
(b) (7)(F)	Design incompatible with LANL welding and assembly hardware	Adjust design or provide equipment fixtures as needed	(b) (5)
Modern Foundry Cold Testing	Loss of key personnel due to medical issues or retirement	Adjust schedule if loss is temporary or adjust staff to critical needs if loss is permanent	Not realized

6.7 Earned Value Metrics

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