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Report February 2013

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LANL Executive Summary

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

- 1) (b) (7)(F)
- 2) Completed the (b) (7)(F) system testing in the SM-66 cold laboratory.
- 3) Completed closeout of the Design Change Package for the (b) (7)(F).
- 4) Completed construction activities for the Radioisotope Thermoelectric Generator – Assembly & Testing Facility (RTG-ATF) excluding punch-list items and support of vendor testing and calibration.

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. A new graph is added this month with the overall Pu Sustainment earned value metrics (LANL, LLNL, and KCP elements combined).

Due to a NNSA budget pullback for unearned fee corrections, the LANL program management work package budget (Program Office Earned Value Metrics) was decremented by \$805k (BCR PSM-13-047). Accordingly, a rebate (negative cost) of equal value was realized. This has resulted in a flattening of the Budget (planned), Earned, and Actual curves in the Program Office report (§3.6). There is no change in scope or schedule associated with this accounting activity.

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. Please note, in January's report, the YTD cumulative actual costs through January were reported as January's actual costs. The February cost curve (§5.7 of this report) has the corrected costs for December and January.

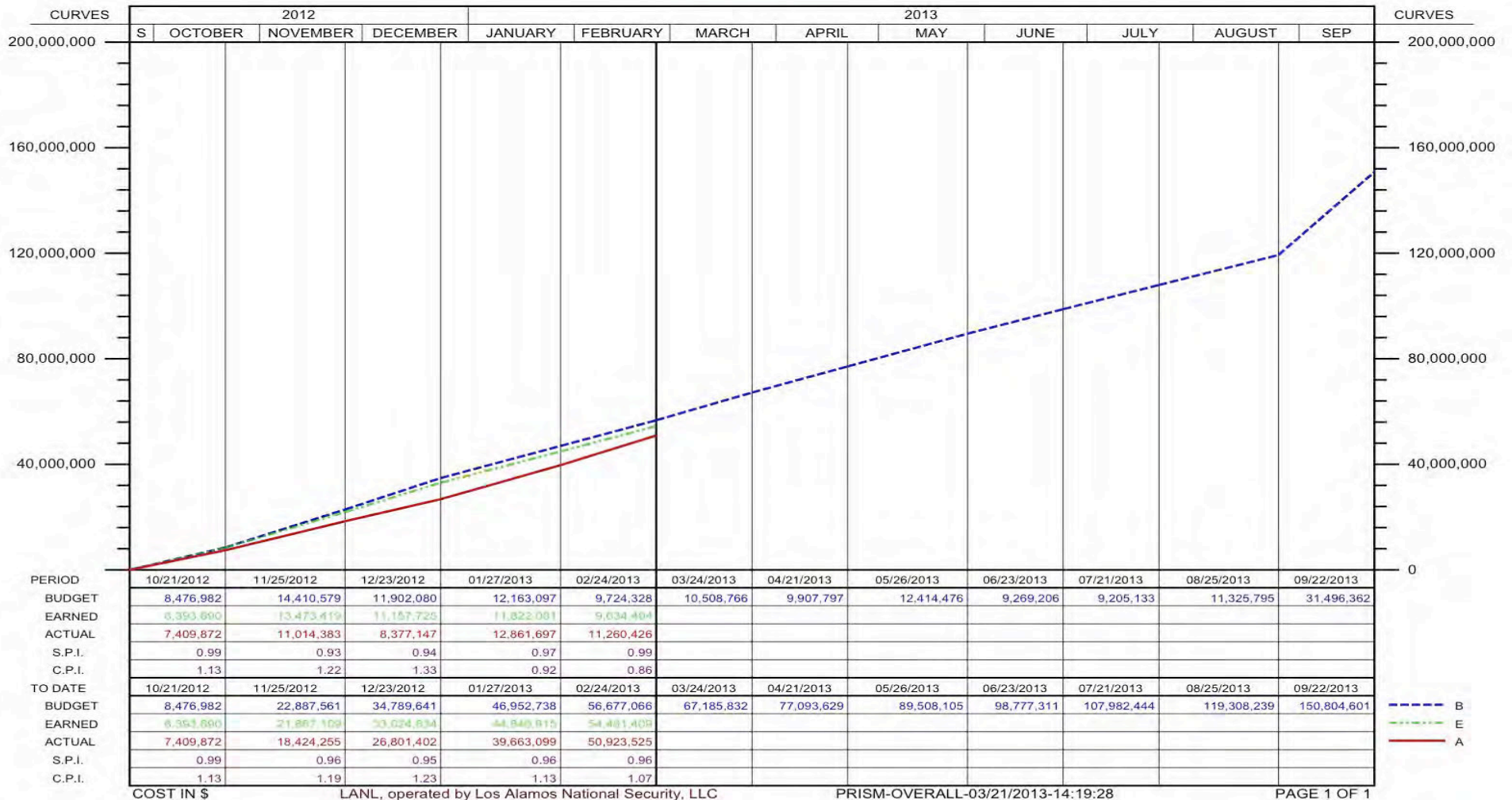
Table 1: February Baseline Change Requests

WBS	BCR #	BCR Description	Date Assigned	Date Approved	Impact	Cost Impact	Change Level
Power Supply	PSM-13-021	PSAA: Management Self-Assessment (MSA)	12/10/12	2/19/13	Cost/Schedule	\$91k	3
Pit Equipment	PSM-13-032	(b) (7)(F) Procurement & D&D Design	1/24/13	working	Cost/Schedule	TBD	TBD
Program Support	PSM-13-034	Wing Controller Support	1/31/13	2/27/13	Cost/Schedule	\$187k	3
Power Supply	PSM-13-035	PSAA Additional HVAC and Fire Alarm and Protection Installations	2/19/13	2/20/13	Cost/Schedule	\$78k	3
Power Supply	PSM-13-037	PSAA: Atmospheric Control Box Anchoring & Chiller Unit Piping	2/19/13	2/20/13	Cost/Schedule	\$43k	3
Program Support	PSM-13-047	Budget Adjustment due to Rebate	3/12/13	3/15/13	Cost	\$805k	3

Earned Value Metrics

PERFORMANCE S-CURVE

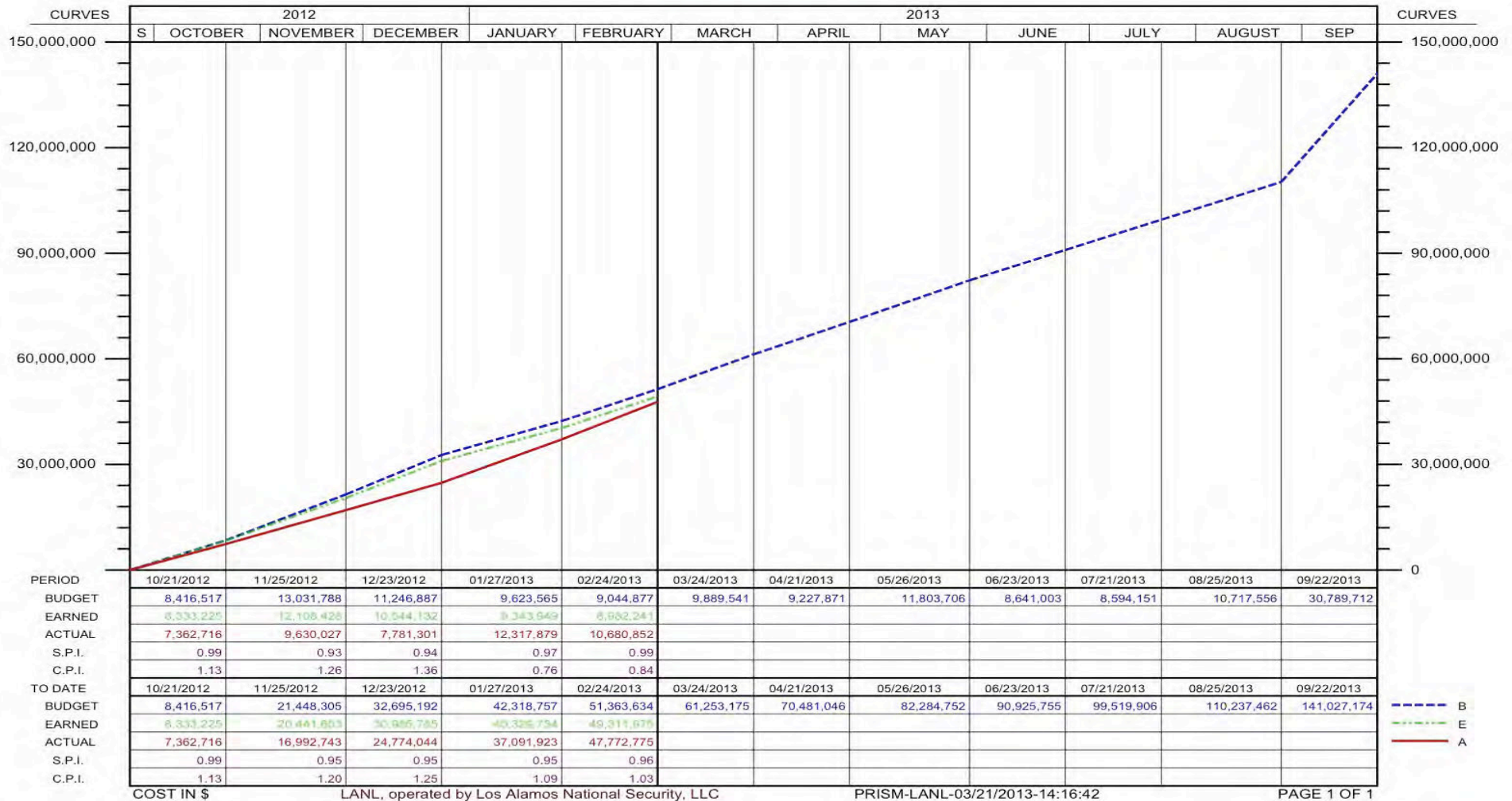
Pu Sustainment



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PERFORMANCE S-CURVE

LANL Pu Sustainment



PERFORMANCE S-CURVE

LANL Pu Sustainment W/O Facility Infrastructure



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1.1 Technical Progress

- (b) (7)(F)
 - o Completed the all downdraft assembly operations successfully.
 - o Completed the all (b) (7)(F) operations successfully.
 - o Completed the basement operations successfully.
- (b) (7)(F). Data review planned for March 20, 2013.

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 Testing of the Welding System in the SM-66 cold laboratories was completed ahead of schedule
 - o The Cold Skid has been moved into PF-4 on schedule.
 - o The Hot Skid has been built and moved into SM-66 for testing.
 - o The first glovebox boot has been accepted.
- Foundry Upgrade
 - o GB1 95% cooling installation package has been issued for design review
 - o GB1 vacuum installation 75% complete.
 - o Work on the 60% GB2 vacuum/cooling installation engineering design package continued.
 - o GB2 D&D Integrated Work Documents awaiting Authorization Basis approval.
- Electro-Refining Line Upgrade
 - o Routing and connection of the positive and negative pressure chilled water systems to the ER furnace nearing completion.
 - o Pressure testing of mechanical systems progressing
 - o Installation of wiring and I&C harnesses for the ERCS progressing
 - o ERCS software contract awarded.
 - o Preparation of Criticality Safety Evaluation Documents (CSEDs) is in process (50% complete).

1.3 Issues

- None

1.4 Variance Analysis and Recovery Plan

- None

1.5 BCRs

- PSM-13-032: The (b) (7)(F) Procurement & D&D Design BCR will fund the design and procurement of a replacement (b) (7)(F) and the dismantling and decontamination of the existing system.

1.6 Risk Table

Work	Description	Handling Strategy	Status
(b) (5), (b) (7)(F)	(b) (7)(F)	(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 and anticipating a lack of parts available in time for process development, we have decided to proceed with (b) (7)(F) build, through (b) (7)(F) in April. If the (b) (7)(F) design may be too late to be through (b) (7)(F) prior to taking the (b) (7)(F) off-line for upgrades (mid-May?).
(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 LAFO 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 have resulted in a first pass estimate of approximately \$10M (including CMR RTBF recovery) to maintain 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)					
MRT 4625		GREEN	Install the RTG-ATF equipment and upgrades		
1. Complete construction of the RTG-ATF by September 30, 2013					
2. Turnover RTG-ATF facility to Operations by September 30, 2013					
L3/L4 Milestone	Baseline Date	Status/Comments	Completion Date	RGYB	
Duct bank Installation Complete	October 12, 2012		October 18, 2012	BLUE	
Process Equipment Ready for Delivery to PF-5 Basement	November 19, 2012		January 15, 2013	BLUE	
HVAC Installation Complete	November 21, 2012		January 18, 2013	BLUE	
Installation of Process Equipment Complete	December 13, 2012		January 29, 2013	BLUE	
Construction Complete	February 19, 2013		March 1, 2013	BLUE	
Release to Operations	June 3, 2013			GREEN	

2.1 Technical Progress

☐ Material Recovery

(b) (7)(F)

- Process Development
 - Started testing of Government Furnished Equipment (GFE) in the PF-5 basement.
 - Continue to receive development part from Kansas City Plant.
 - Initiated cross organization discussions on chemical analyses readiness, presentation of analytical results and documentation status.
 - Reviewed inventory-tracking modules within the production control system. Addressed questions regarding automatic re-ordering triggers based on Min-Max definitions.

2.2 Equipment

- Radioisotope Thermoelectric Generator - Assembly & Testing Facility (RTG-ATF)
 - Completed construction excluding punch-list items and support of vendor testing and calibration.
 - Activated badge readers.
 - Completed installation of interior doors.
 - Completed 3-phase power to both Atmospheric Control Box Lines (ACBs A2 & B2).
 - Continued with second coat of paint in test rooms.
 - Completed fire alarm system final acceptance testing.
 - Released the "A" line ACBs to the LANL operations group and vendors for testing and calibration.
 - Flushed stainless steel pipe for the (b) (7)(F) and chiller units.
- The (b) (7)(F)
 - Completed closure of the Design Change Package.
 - Completed the Management Self-Assessment (MSA) Plan
 - Approved the operations and maintenance procedures for use.
 - Prepared for the MSA scheduled to start March 14, 2013.
- Analytical Chemistry glove boxes (Pu Assay and Radiochemistry)
 - Continued Zone 1 fabrication and installation.
 - Continued electrical installation.
 - Started installation of Fire Skirting and Fire Foe tubing.
 - Continued development of operations and maintenance procedures.
- SM-39 Development Laboratory
 - Continued to (b) (7)(F) for establishing weld parameters.
 - Started review of non-destructive inspection requirements and equipment status.

2.3 Issues

- None

2.4 Variance Analysis and Recovery Plan

- CPI: Spending deviated from planning basis due to addition of In-Scope scope, which required the utilization of night and overtime shifts to maintain scheduled completion dates. In-Scope scope is any design change, engineering, and/or associated construction that was added after the initial baseline design (FY11) and that was either required for facility occupancy or requested by the operating organization to meet production requirements.

2.5 BCRs

- PSM-13-021 for \$91.1K: This BCR includes funds specified for a larger MSA team and more definitive review of documentation required and more support during the GFE testing and acceptance than originally estimated.

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- PSM-13-035 for \$78.1K: This BCR incorporates work scope added for the tie-in of the PF-5 fire alarm with the TA-55 Operations Center, installation of the HVAC control system and installation of two additional fire dampers that were not included as part of the original design.
- PSM-13-037 for \$42.8K: This BCR incorporated the installation of seismic anchors for the ACBs and an additional run of piping between the condensing unit and the chiller, which was not part of the original LANL design or cost estimate.

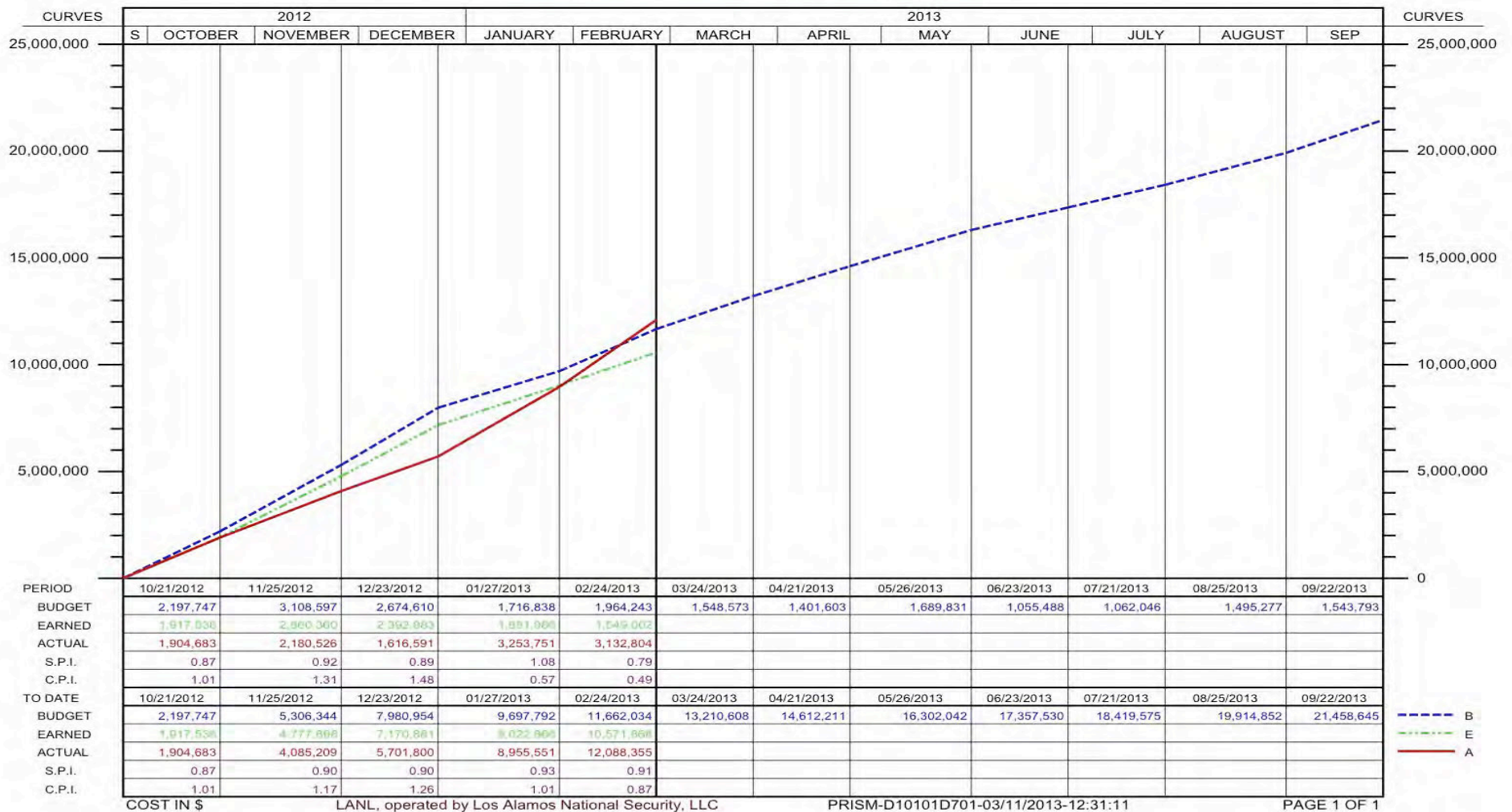
2.6 Risk Table

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. Continued out year schedule development with Line Management to identify future strategic hires.
(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 February 13, 2013.
- Continued out-year FYNSP planning for all Pu Sustainment Program elements.

3.2 Support

- Document Control, Records Management, and Training
 - A total of 108 document requests were received in February.
 - A total of 72 document action requests were completed in February.
 - The Document Review System was implemented for pilot testing to improve formality and consistency of document review and comment resolution.
 - Programmatic Qualification development for pit assembly and casting operational areas has commenced. Pyrochemical operations are completed.
- Production Control
 - Continued to provide shop floor control and daily schedule status to Enduring Stockpile and Power Supply projects.
 - Continued development of Power Supply Electronic Travelers.
 - Provided M&TE and classified parts coordination support.
- Maintenance
 - Corrective Maintenance: Worked on furnaces, GB electrical replacements, several process repairs, Wet Vacuum system, and completed the Nitric Acid Air Break.
 - Preventative Maintenance: Completed preventative maintenance on five systems. Developed work authorizing documents and maintenance plans for inspecting liquid transfer lines.
 - Supported (b) (7)(F) Installation, Dri-Train removal and replacement engineering, and the Vacuum Pumps Replacement.
 - Work Management & Control: Continued to collect specific history and determine how to view, report, and analyze. Worked on Auto-Cad installation issues (supports Configuration Management plans) and provided procurement engineering support.
- Calibration
 - Perform Monthly Calibrations: The Standards & Calibration Laboratory (S&CL) has calibrated approximately 120 Pu Sustainment items through Feb 28.
 - Quality Engineering/Continuous Improvement:
 - The S&CL's ultra-low pressure calibration system was made operational. This system will be certified and will enable the S&CL to calibrate 100+ low-pressure gages that had previously been outsourced. Gages in this area supporting Pu Sustainment include magnahelics, photohelics, and absolute low pressure gages. In house calibration of these items will allow S&CL can provide the calibrations at a lower overall cost.
 - Datasheets for temperature calibrations have been written for use within the new MudCats metrology software. Measurement uncertainty calculations were integrated into the software. These will improve the S&CL's turnaround time in the temperature area and improve formality. The S&CL provides a large amount of calibrations for Pu Sustainment temperature probes, thermocouples, PRTs, etc.
 - Customer Liaison Support: The S&CL is working with dimensional inspection at TA-55 to develop a process for re-certifying surface roughness measurement systems in glove boxes that most benefits the Laboratory in regards to minimizing waste and maximizing the useful life of surface roughness M&TE.

- Warehousing and Procurement
 - o 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).
 - o The procurement team successfully processed multiple Pu Sustainment programmatic procurement requests in February and was able to work through the period without the development of a substantial (> 1 week) or permanent backlog.
 - o The project warehousing team successfully turned over material pedigree in support of the (b) (7)(F) project DCP close out efforts.

3.3 Issues

- None

3.4 Variance Analysis and Recovery Plan

- Please note: actual costs for February include a rebate (negative cost) of \$805k. Budget has also dropped by \$805k.

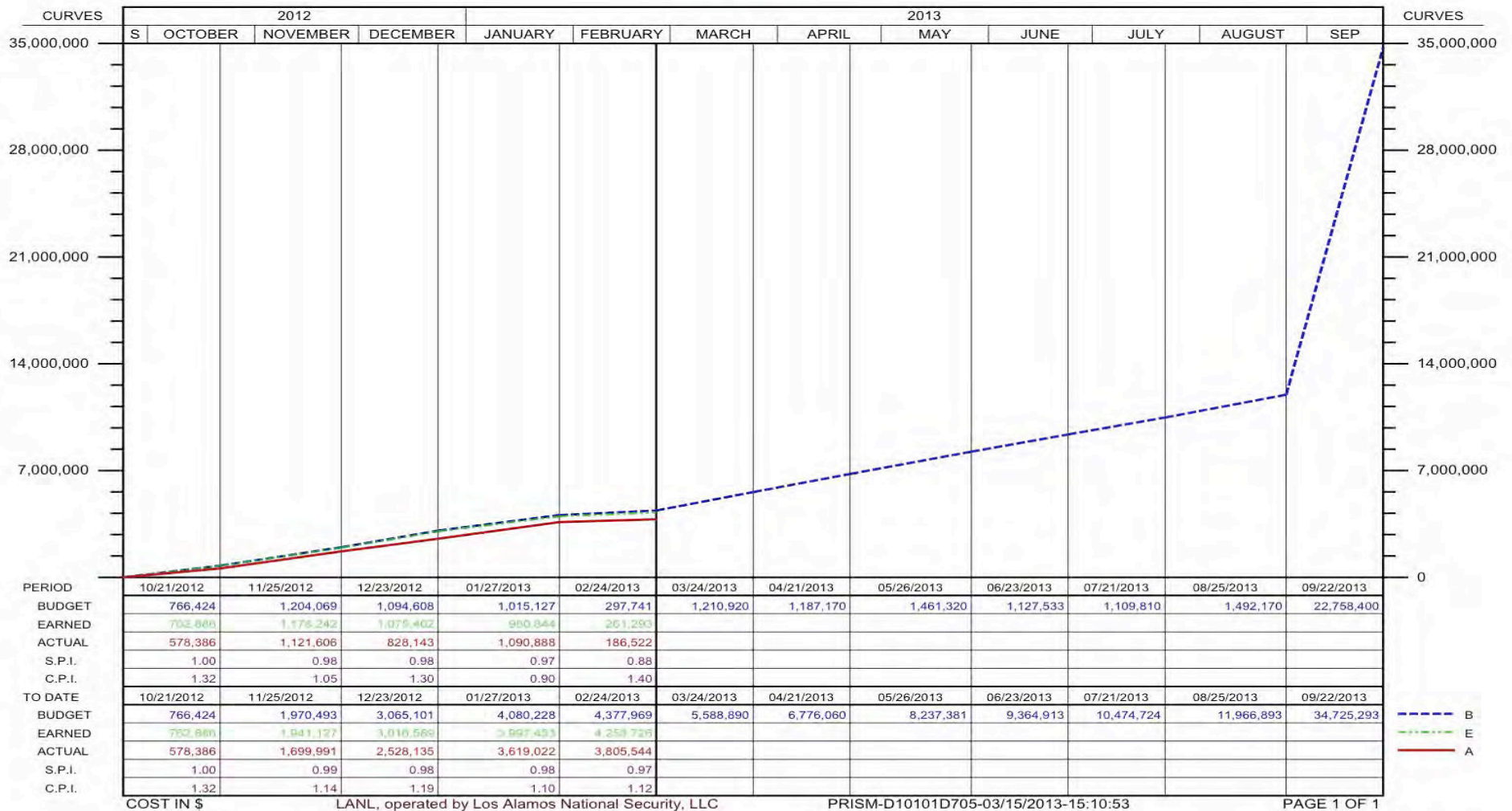
3.5 BCRs

- PSM-13-034 for \$187K: This BCR adds budget and scope for the newly created PF-4 Wing Controller position. This funding and scope is shared across all PF-4 tenants.
- PSM-13-047 for \$805K: This BCR reflects the NNSA budget pull-back and an equal rebate in the LANL's Pu Sustainment Program Management work package due to the unearned fee accounting action.

3.6 Earned Value Metrics

PERFORMANCE S-CURVE

Program Office



4.0 Facilities, Waste and Institutional Support

4.1 Technical Progress

- The NPI-8 procurement team successfully processed over 225 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 NPI-8 Consolidated Bill of Material (CBOM) Database Version 3 was released. It includes a material request pick list to be used by construction to request material from the NPI-8 warehouse team. It also includes the capability to receive and issue out project related material.
- The TA55 warehouse team has made considerable progress in cleaning out the PF-5 space savers.

4.2 Equipment

- None

4.3 Issues

- None

4.4 Variance Analysis and Recovery Plan

- None

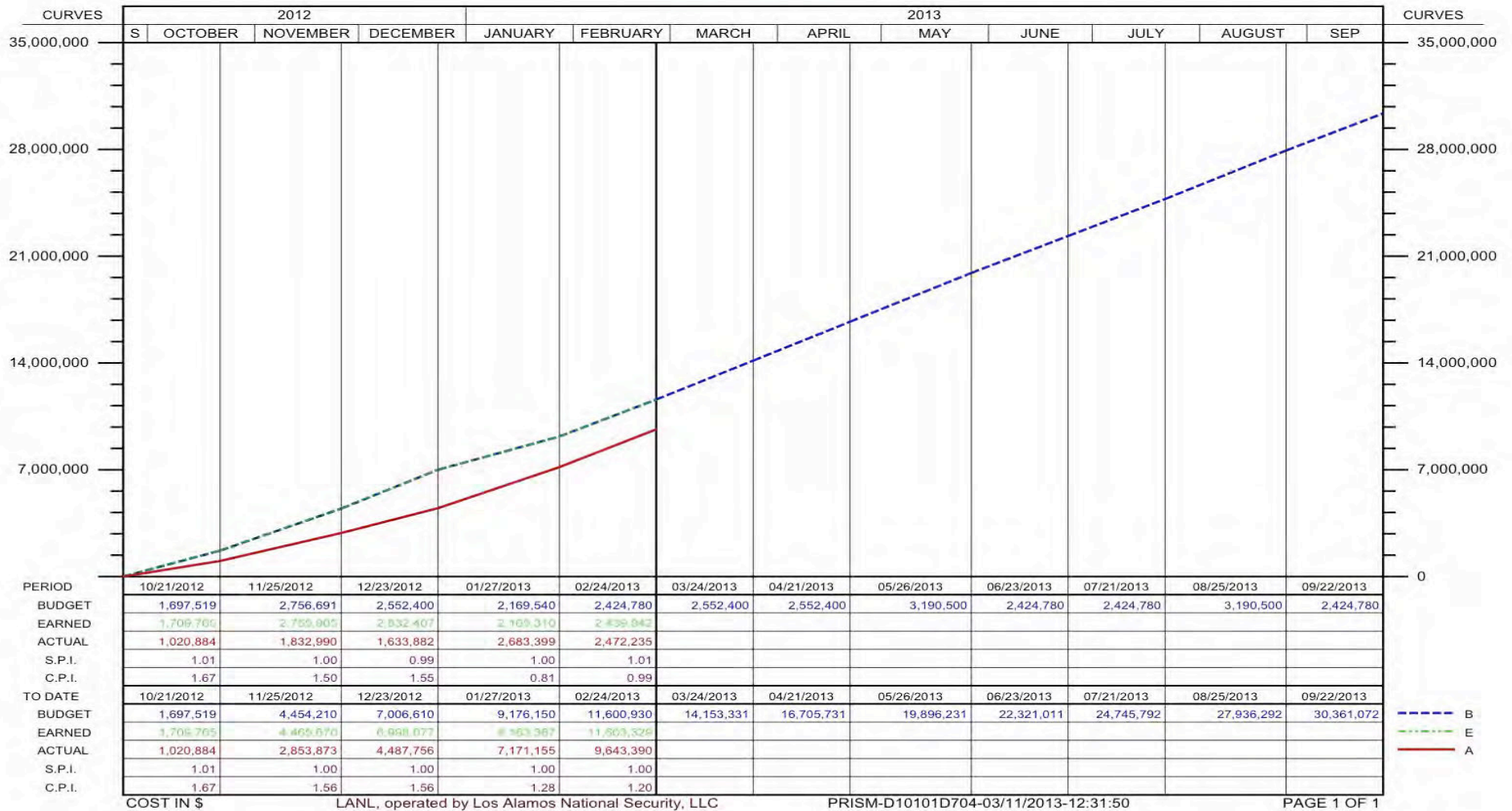
4.5 BCRs

- None

4.6 Earned Value Metrics

PERFORMANCE S-CURVE

Facility Infrastructure



LANL, operated by Los Alamos National Security, LLC

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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 precision lathes	9/30/2013	P.O. placed with Moore Nanotechnology Systems 2/28/13		GREEN
Procure development material	7/31/2013	Surrogate development material procured		GREEN
Start fabrication of (b) (7)(F)	8/31/2013	4th quarter FY13		GREEN

5.1 Technical Progress

- ☐ KCP received a quote from MSC for cross-rolled 21-6-9 plates and a no-quote from Metalwerks because they did not have a heavy duty enough roller.
- ☐ (b) (6), (b) (7)(F) was contacted to see if they could roll the 21-6-9 material to provide competitive price comparison. KCP received a quote from (b) (6), (b) (7)(F) to roll one slab of material. We are expecting 45 usable plates from the slab. The rolling order is expected to be placed in March, with a delivery in May
- ☐ The hydroforming initial development activities were delayed in February to get an approved security plan to perform classified work in the area where the Hydroform is located. The surrogate material and tooling are ready and waiting for the approval. Initial efforts are to determine the starting material blank size so new blanks can be procured and a determination made of LANL's offer of 50 plates.
- ☐ KCP and LLNL held a drawing review of all the unclassified parts. KCP will create a set of drawing to update the definitions, remove specifications and notes that do not support this effort and add ITAR notes. These drawing will be provided to LLNL for their review and comments prior to sending to a supplier for quoting. LLNL will issue a DER to document the drawings and authorize procurement of initial development hardware up to 40 sets of parts. The drawing will be a 7 digit KC number containing D01 in the part number for development use only.

5.2 Equipment

- ☐ The order for (b) (7)(F) was placed with Moore Nanotechnology Systems of Swanzey, NH. The delivery of the (b) (7)(F) is expected by August 29th at the new National Security Campus in KC. The (b) (7)(F) will be used to support final machining.
- ☐ Protective handling cradles have been designed to fit in existing rolling cabinets to move parts between work centers. The sterolith models will prevent damage and movement while the carts will cover the parts from visual access.
- ☐ CMM probing activity will utilizes the sterolith fixture to program different probing methods and patterns. Once the programming is complete multiple inspection runs will be made to evaluate the probing techniques.
- ☐ The tooling for the rough machine operation is in work and expected to be delivered by May 15th.

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.	LANL responded on the material request they could supply 50 plates. KCP has evaluated the hydroform process and determined that the LANL plates will work with our equipment, tooling and process. KCP is in the process of generating an ICO for the material.
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 quote from (b) (6), (b) (7)(F) was received for new material and will support all schedules. The cost of the material is the new risk and will and take some planning under the current budget constraints.
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.	KCP received (b) (6), (b) (7)(F) quote for new material which is higher than expected. KCP is requesting if small lots could be made that fit funding cycles.
(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.	The order for (b) (7)(F) was placed with Moore Nanotechnology Systems of Swanzey, NH. The delivery of the (b) (7)(F) is expected by August 29th at the new National Security Campus in KC. The contract delivery date will support the Level 2 milestone, but supplier delays and the substitution of the stronger spindle may incur delays. 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.	The CMM acceptance activities are progressing and different probing techniques being evaluated. These activities support initial efforts to resolving the inspection method discrepancy between the (b) (7)(F) and CMM.

5.7 Earned Value Metrics

PERFORMANCE S-CURVE

KCP Pu Sustainment



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	Complete	February 2013	BLUE
(b) (7)(F)		7/30/2013	Testing and analysis of samples continued		GREEN
Complete	(b) (7)(F)	3/31/2013	Part machining for weld tests nearly complete		GREEN
Initiate readiness review for compatibility tests		9/30/2013	Assessing safety basis changes at LANL and DAF		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.	November 2012	BLUE
(b) (7)(F)		9/30/2013	Currently scheduled as fourth build		GREEN

6.1 Technical Progress

- ☐ (b) (7)(F) Some additional comments were received and are being incorporated into the design to accommodate existing fixtures and fittings.
- ☐ (b) (7)(F)
- ☐ Livermore Field Office (LFO) is presently reviewing the MD-2 Shipping Package procedure. After LFO comments are resolved, if any, the document is sent to Office of Packaging and Transportation. Additional MD-2 packing components (e.g., spacer can, spacer cap, and drum support) have been fabricated and awaiting shipment to NNSA. The NSTec work package is being drafted and the security plan is being finalized. Forklift attachments for lifting the MD-2 shipping package have been ordered.
- ☐ (b) (7)(F)
- ☐ A meeting was held to review LANL scope for the compatibility test. LLNL was asked to review LANL boundaries for authorization basis approval and specifications for testing.
- ☐ Using material from a LLNL die-casting, a test specimen was fabricated, tested, and is presently being prepared for further analysis. Blending and fabrication of additional test specimens is continuing.

6.2 Equipment

- ☐ None

6.3 Issues

- (b) (7)(F)
Vendors have indicated that they cannot meet this schedule. We are examining if using LLNL shops can fabricate the parts by the end of March. (b) (5), (b) (7)(F)

6.4 Variance Analysis and Recovery Plan

- None

6.5 BCRs

- None

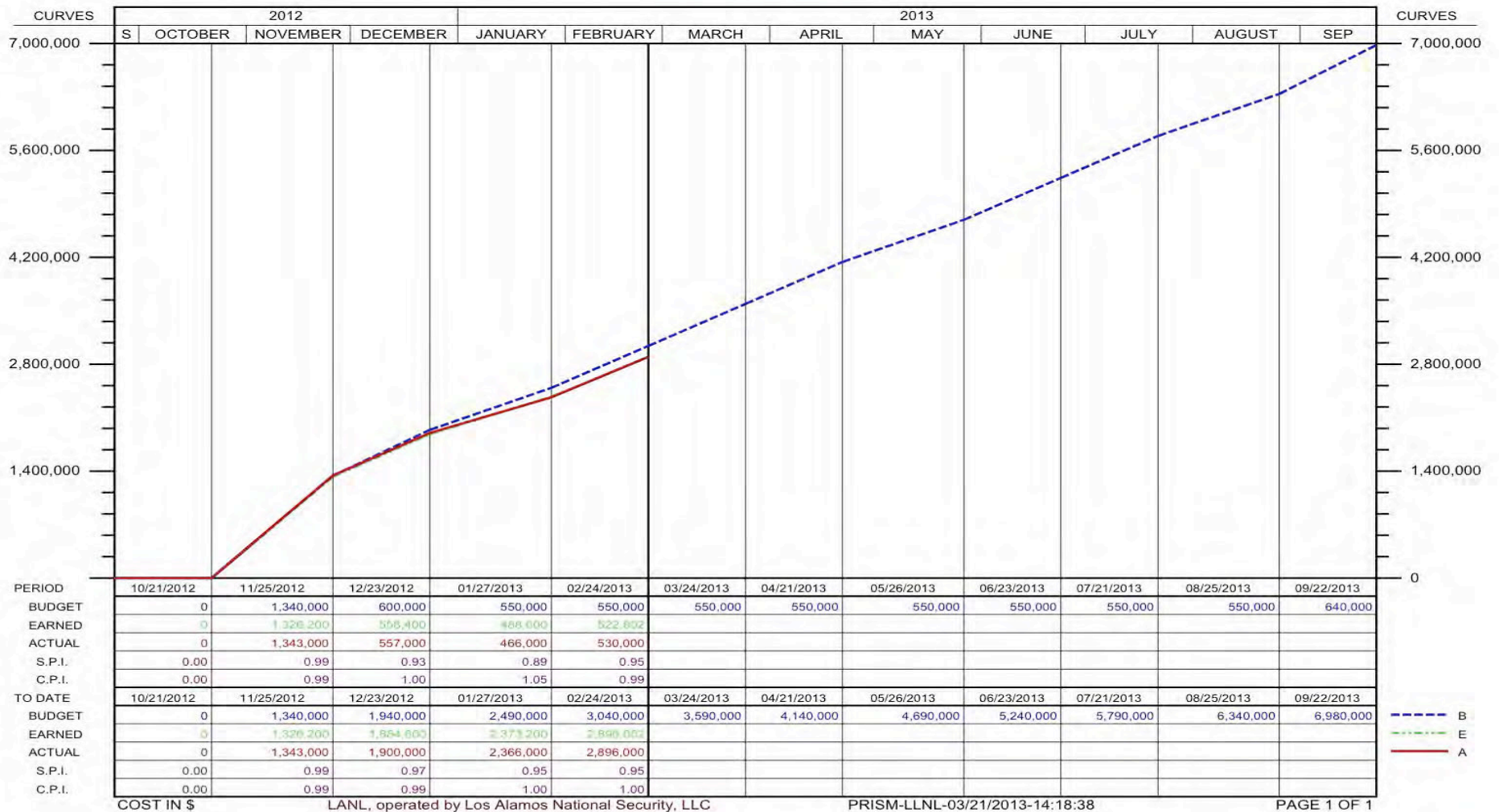
6.6 Risk Table

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)	Design incompatible with LANL welding and assembly hardware	Adjust design or provide equipment fixtures as needed	(b) (5)
(b) (7)(F)	Fabrication of initial components to support PF-4 schedule for placing required equipment out of service	Expedite either commercial or LLNL fabrication of components and delivery to LANL	(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

PERFORMANCE S-CURVE

LLNL Pu Sustainment



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