

Energy Facilities Contractors Group Project Management Working Group

Chemistry and Metallurgy Research Building
Replacement (CMRR) Project
Los Alamos National Laboratory (LANL)
Construction Experience

Rick Holmes, PMP
CMRR Project Manager

July 21, 2009



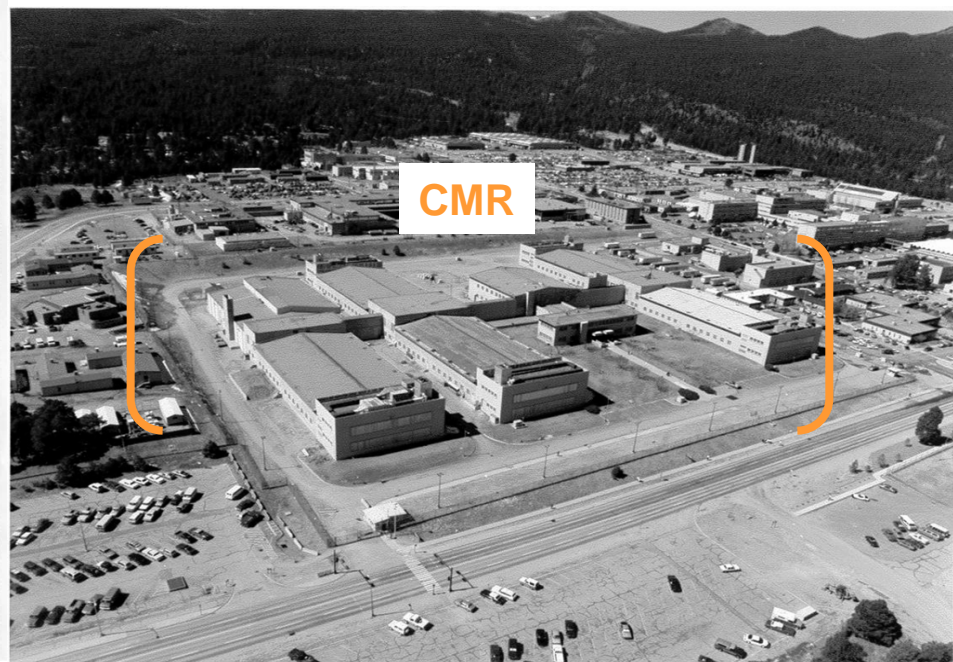
CMRR Mission Need Statement

“The CMR Replacement (CMRR) Project seeks to relocate and consolidate mission critical CMR Capabilities at LANL to ensure continuous support of NNSA stockpile stewardship and management strategic objectives; these capabilities are necessary to support the current and directed stockpile work and campaign activities at LANL beyond 2010”

1949 CMR Construction Site



Existing Chemistry and Metallurgy Research Building



CMRR Overall Project Structure

CMRR Project

Two closely interrelated facilities in differing phases of development

Nuclear Facility



- Baseline under Development:
- CMR Laboratory Replacement Capability
- Nuclear “Hazard Category 2” Facility
- 22,500 Net Square Feet Lab Space
- Special Nuclear Material storage (6M tons)
- Special Facility Equipment
- Robust “Security Category 1”

Status: In design

Radiological Lab Utility Office Building (RLUOB)



Building Shell

- Facility Performance Baseline (\$164M TPC):
- 19,500 NSF radiological lab space (<8.4g 239 Pu equivalent)
- Centralized utilities/services for all CMRR facility elements
- Office space for 350 CMRR workers
- Consolidated training facility
- Facility incident command; emergency response capabilities

Status: Nearing Construction Finish

Equipment

- RLUOB Equipment and Installation (REI)
- Operational equipment to complete functionality of RLUOB

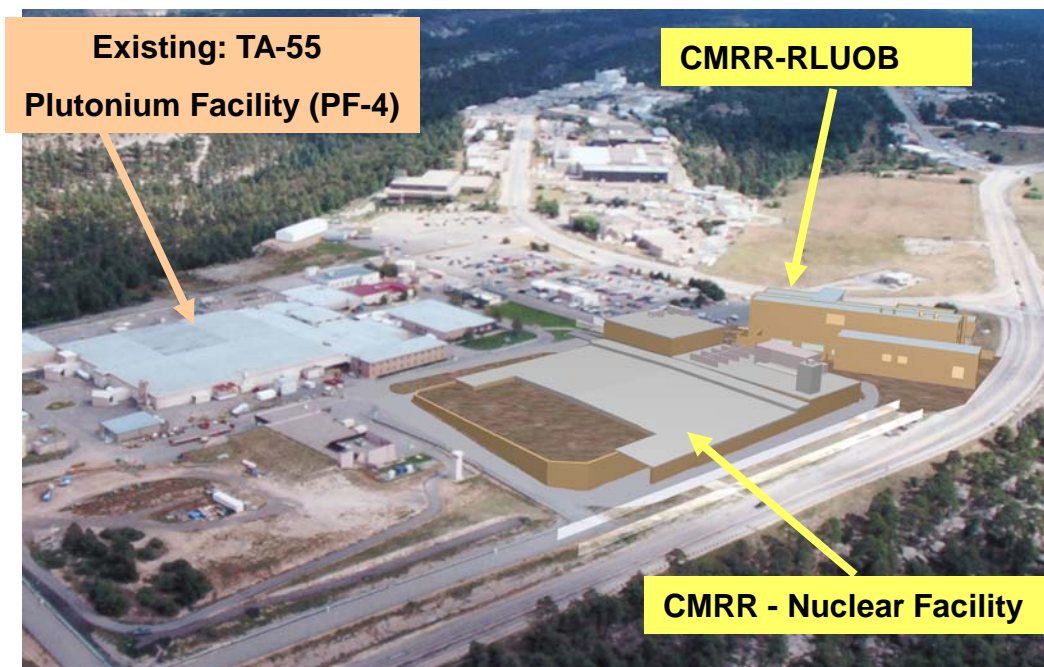
Status: CD 2/3 Ready

CMR: NNSA commitment to Decontaminate and Decommission upon CMRR completion.
(Execution in the (2018 - 202X timeframe))

Status: CD 0 approved

Consolidated Plutonium Complex

- CMRR Environmental Impact Statement (EIS) –Record of Decision (ROD) February 2004
- CD-1 (entire project) approved on May 2005



RLUOB

- Building Construction Completion September 2009

REI

- CD 2/3 proposed July 2009

Nuclear Facility

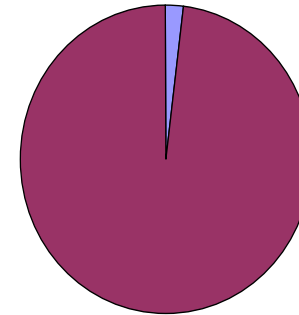
- In design, consistent with Dec 2008 ROD on Complex Transformation Supplemental Programmatic EIS
- Decision to Construct Pending: 2009 Nuclear Posture Review – US Department of Defense
 - The NPR will address: “The nuclear weapons complex required for implementing the US national and military strategy, including any plans to modernize or modify the complex.”



People Based Safety : 11730 Total Observations

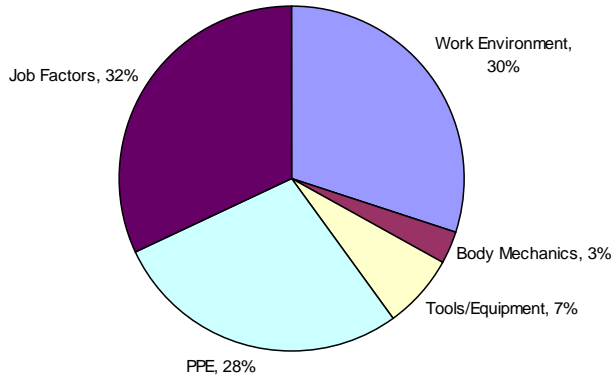


Behavior Observations at risk, 2%



Safe,
98%

At Risk Behaviors



RLUOB

Centralized Utilities Building

Secured "limited" access side

Atrium

Uncleared Side

Floors

- Level 3 – Training
- Level 2 – Office Space
- Level 1 – Office Space
- Radiological labs
- Basement Utilities (below grade)



Over million man-hours worked with no lost time accident
Leadership in Energy and Environmental Design (LEED) – Certified "Silver" green building
Nuclear Quality Assurance (NQA-1)

Subcontractor Management - RLUOB

Summary of problem and initial issues:

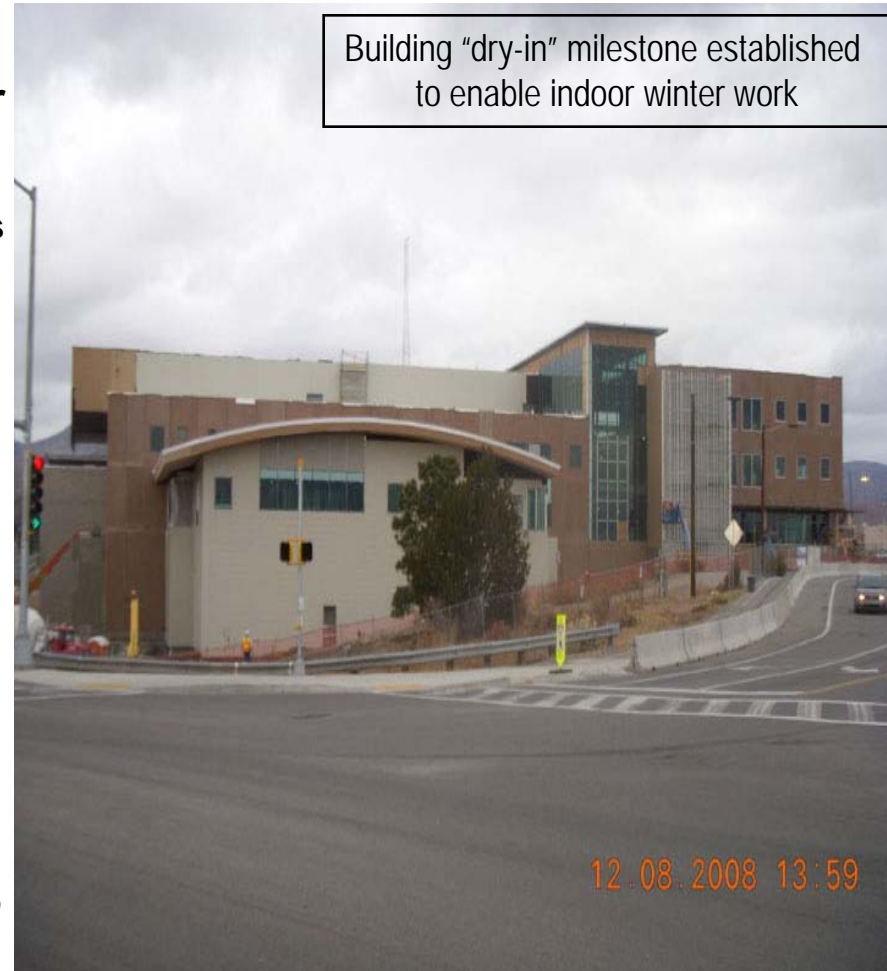
- **Problem**
 - Subcontractor did not perform as awarded in respect to both schedule and cost
- **Issues**
 - Project awarded and in existence when transition took place. Subcontractor Technical Representative (STR) program did not exist until JAN 07
 - RLUOB design/build Subcontractor is primarily a labor broker and construction management coordinator with no design capability that has failed in the CM role particularly in management of design
 - Contractor had NO NQA-1 experience
 - Lack of dedicated LANL engineering & construction staff early in project (contract award through 2006)
 - Contractor performance from initial engineering release through completion of concrete placement significantly impacted subsequent work activities
 - Lack of contractor experience in the integration of subcontractor's work sequence impacted work progress
 - Contract disputes between the contractor and design hindered timely resolution of field issues



Subcontractor Management - RLUOB

Project actions taken:

- **Developed MOU (Fall 08) with subcontractor which has resulted in better coordination, safer work place, and greater certainty of outcome**
 - Developed joint teams to address critical areas
 - LANS provided additional design support
 - Contract Change for on-site design agency support.
- **LANS provided area superintendents which resulted in better coordination of field work, safer work environment and quicker identification of restraints. Established the plan for tomorrow and “huddle-up” coordination meeting approaches.**
- **LANS modified LDs which has resulted in continuing subcontractor support for LANS increased involvement in managing the work effort – incentivized schedule.**
- **LANS now manages the schedule and coordination of the subcontractor’s day to day activities**

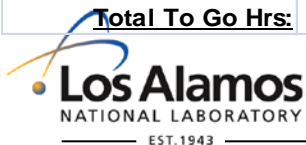


RLUOB Weekly Activity – 07/05/09

Remaining Major Bulk Commodity



Bulk Commodity	UOM	Estimate							Totals	Total Installed	Total To-Go	Unit Rate	Remain Hrs
		(Incl. Mezz.)	1st Floor	2nd Floor	3rd Floor	4th Floor	Site						
Conduit/Raceway	LF							411,761	275,678	136,083	0.14/LF	19,052	
Wire	LF							361,411	236,792	124,619	0.014/LF	1,787	
Cable	LF							152,689	122,312	30,377	0.034/LF	1,048	
Power Terminations	EA							3,521	1,845	1,676	0.285/EA	478	
Lighting Fixtures	EA	610	516	571	325	235	36	2,293	100	2,193	3/EA	4,208	
Fire Protection Pipe	LF	12,000	8,450	7,150	5,500	5,000	2,000	40,100	36,728	-	0.34/LF	0	
Acoustic Ceilings	SF	5,305	13,800	31,850	26,752	16,823	0	94,530	0	94,530	0.06/SF	2,848	
Interior Drywall	SF	227,159	199,188	189,403	138,058	91,475	0	845,283	739,886	105,397	0.04/SF	4,324	
Stairs	EA							9	8.9	0.1	200/EA	20	
Doors	EA	64	93	171	119	52	0	499	23	476	5/EA	2,380	
NDC	SF	55,754	38,364					94,118	6,500	87,618	0.09/SF	7,886	
Piping	LF	36660	17160	14040	5460	4680	0	78,000	76,758	1,242	1.3/LF	1,615	
Sheet metal	LB	195000	180000	165000	105000	105000	0	750,000	720,948	29,052	.08/LB	2,324	
Architectural Coatings	SF							845,283	0	845,283	0.007	5,917	
Elevators	EA							5	3.83	1.17	1248	1,460	
Mav Conduit	LF							11,500	5,325	6,175	0.37652	2,325	
Mav Wire	LF							68,000	200	67,800	0.035	2,373	
ICS Conduit	LF							30,000	22,410	7,590	0.1333	1,012	
ICS Wire	LF							80,000	0	80,000	0.01875	1,500	
Tile	SF							25,330	0	25,330	0.142	3,597	
Carpet	SF							63,262	0	63,262	0.0075	474	
Total To Go Hrs:												66,626	

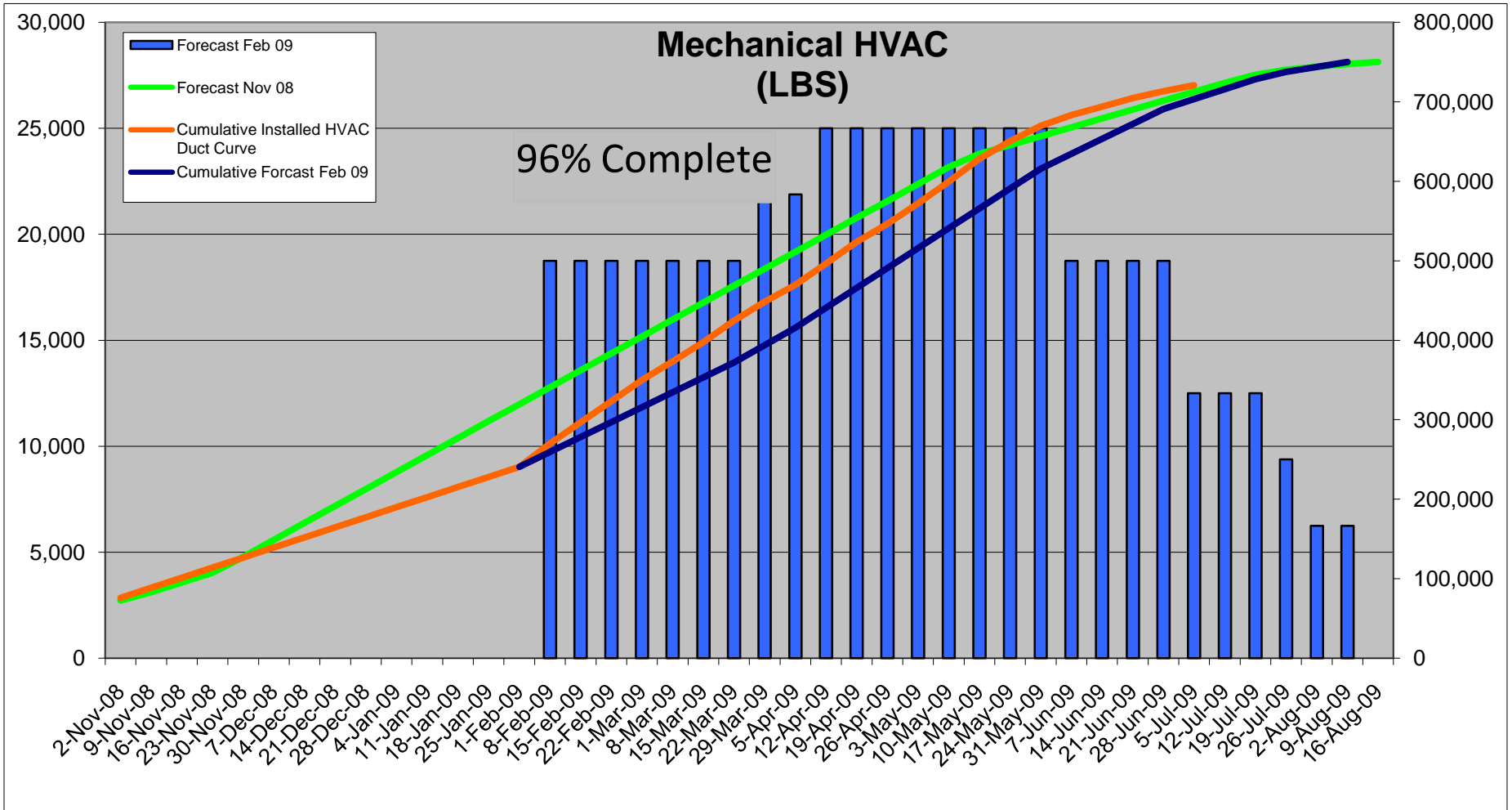


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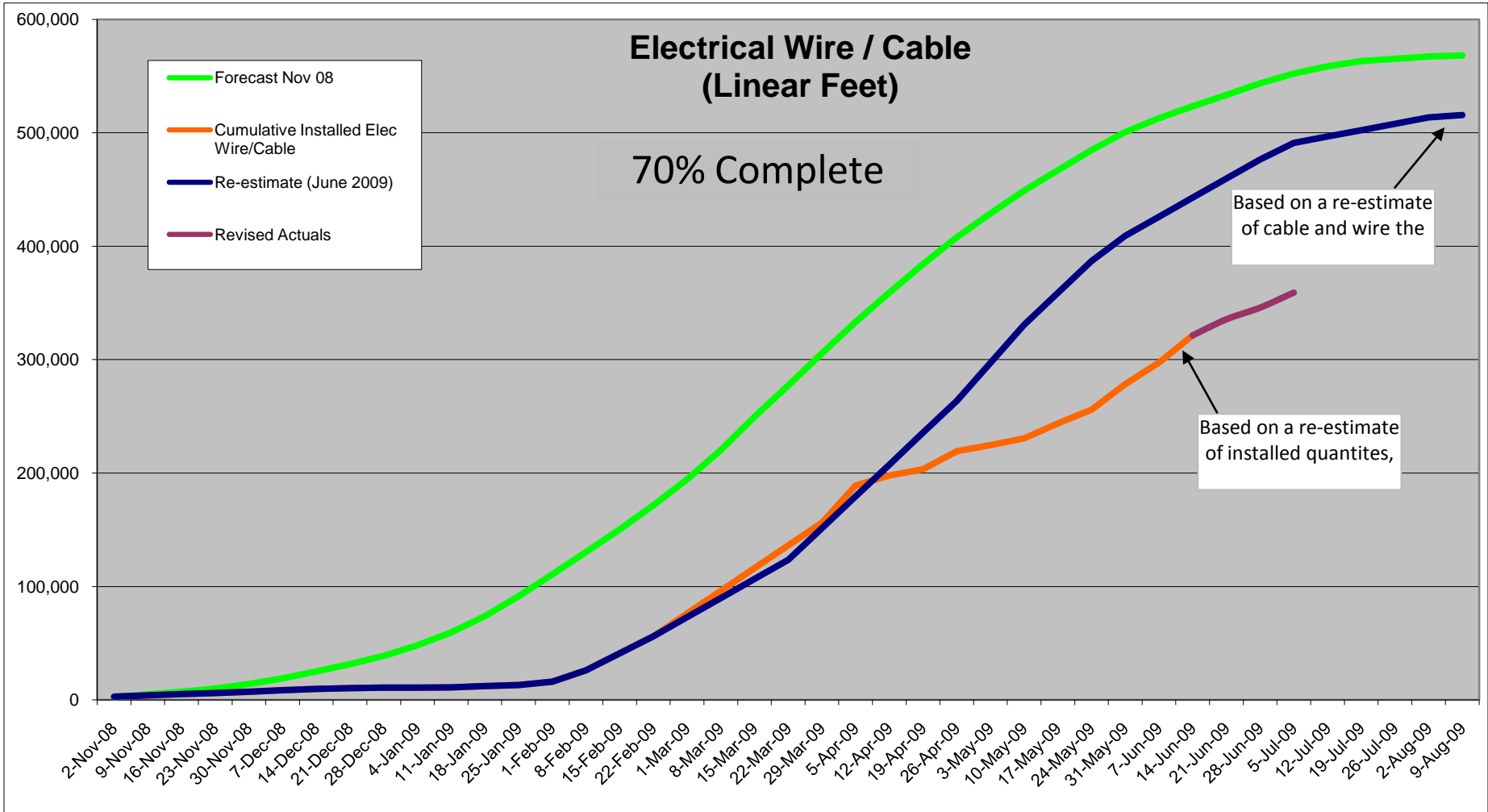
RLUOB Weekly Activity – 07/05/09

Remaining Major Bulk Commodity



RLUOB Weekly Activity – 07/05/09

Remaining Major Bulk Commodity



RLUOB Construction



RLUOB Construction – Utility Systems



CMRR Quality Assurance Program Adequacy, Implementation, Effectiveness

- **Requirements are flowed into all subcontract general/special terms and conditions, exhibits, specifications:**
 - 10CFR830, Subpart A, *Quality Assurance Requirements*
 - ASME/NQA-1, 2000, *Quality Assurance Requirements for Nuclear Facility Applications*
 - DOE Order 414.1C, *Quality Assurance Requirements*
 - LANL SD 330.0, *Quality Assurance Program*
- **One program for all project phases (RLUOB, REI, and NF) – maximize use of project documentation (Plans and Procedures) to integrate work efforts**
- **Implementation/Effectiveness Reviewed:**
 - “The QA Implementation Plan is a well-written and technically robust document. It provides linkage between the Quality Assurance Plan and specific Project implementation procedures.”
 - “The Project utilizes a matrix to verify that all applicable QA requirements of 10CFR 830, Subpart A, DOE Order 414.1C, and ASME-NQA-1-2000 have been addressed.”
 - “The current LANS Integrated Project Team, key personnel are well-qualified, experienced and committed to improved management performance.”

-National Nuclear Security Administration (NNSA) –External Independent Review of the CMRR RLUOB Equipment Installation Project for CD-2 and CD-3 (Final Report February 2009)

RLUOB Equipment Installation (REI) Performance Baseline – What happens next

Scope

Work elements include:

- Radioactive liquid waste tie-in
- Fuel oil storage tank
- Laboratory Floor build out and laboratory equipment
- Furniture
- Telecommunication services
- Radiation Protection Health Physics Equipment
- Physical security features (sensor field panels, card readers, installation tie-in, etc.)
- Parking for occupants

Cost

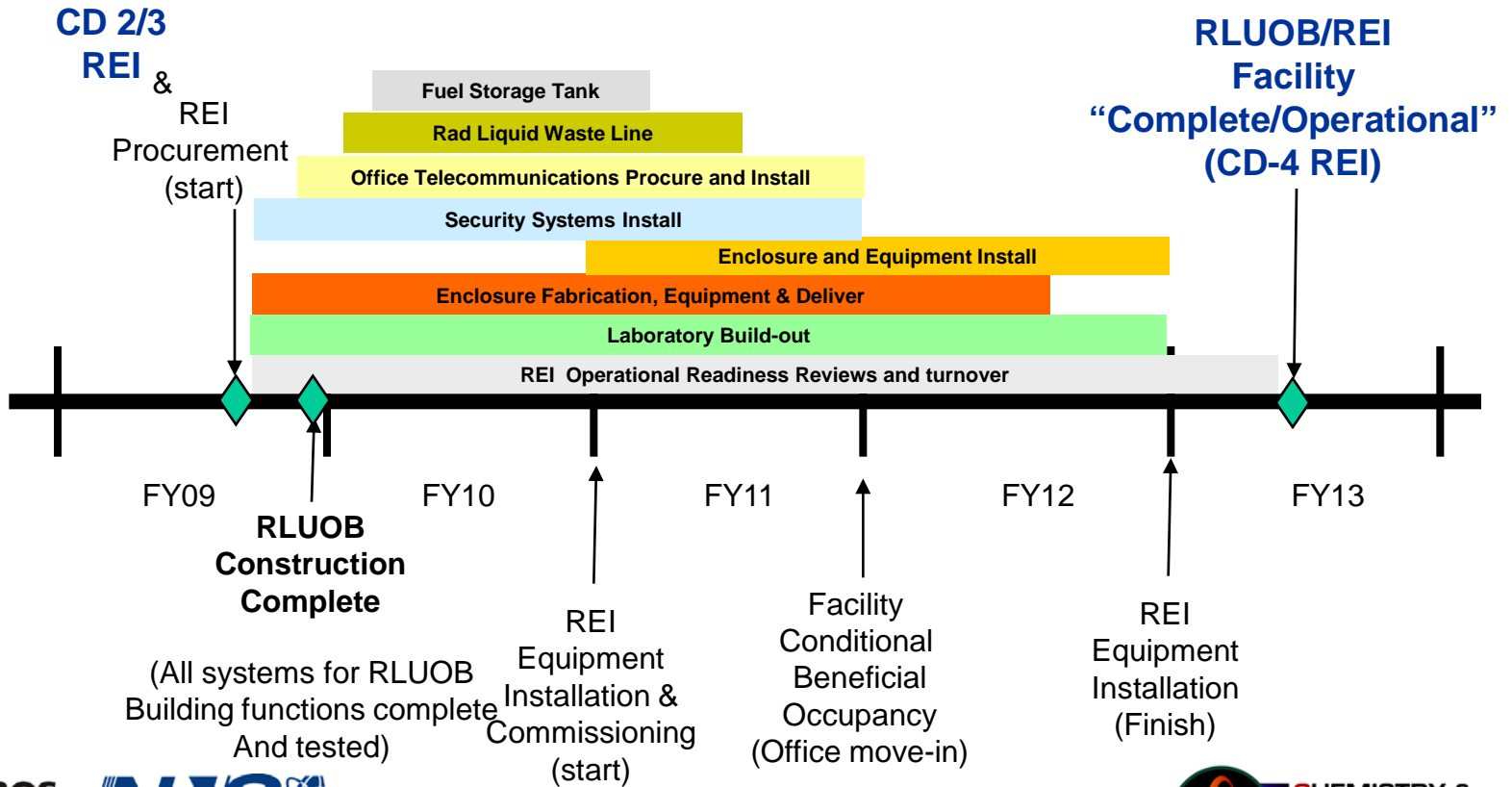
- TEC w/contingency - \$152.9M
- OPC w/contingency - \$46.5M
- TPC \$199.4M

Schedule

- Conditional Beneficial Occupancy (staff move-in) 1QFY12
 - Final Facility Systems and Systems readiness achieved 3QFY13
- Contingency (\$41.6M, 26%) summary – confidence level at 85%

Summary RLUOB & REI Timeline

CD-0 Entire Project – July 2002
 CD-1 Entire Project – May 2005
 CD-2/3 RLUOB – October 2005



Closing Comments/Questions

- CMRR is multiple projects within a single congressional data sheet
- Single team established to provide continuity and increasing maturity of program elements, i.e. quality and safety
- Strong relationship between FPD, Fed team, and project team – collocation of people increases communication and coordination
- Initial understanding of subcontractor's performance risks and continued response to subcontractor's performance necessary success

