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CMRR Background Briefing to Senate Foreign Relations Staff

Craig Leasure

Los Alamos National Laboratory

June 19, 2012

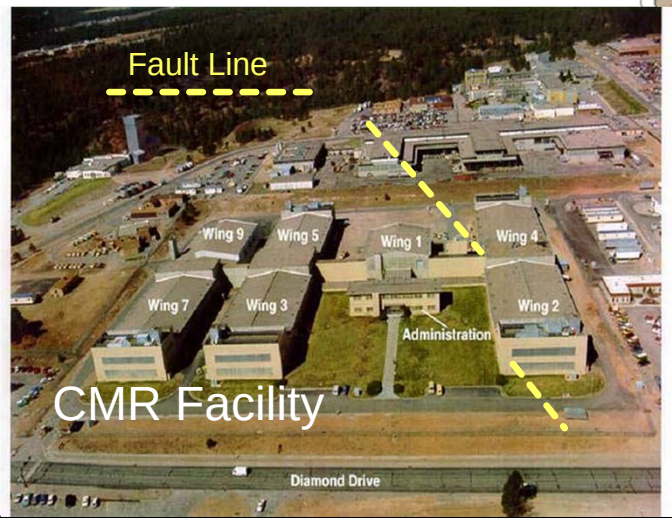
Construction of the Chemistry and Metallurgy Research (CMR) facility was completed in 1952 – facility has been operational for 60 years

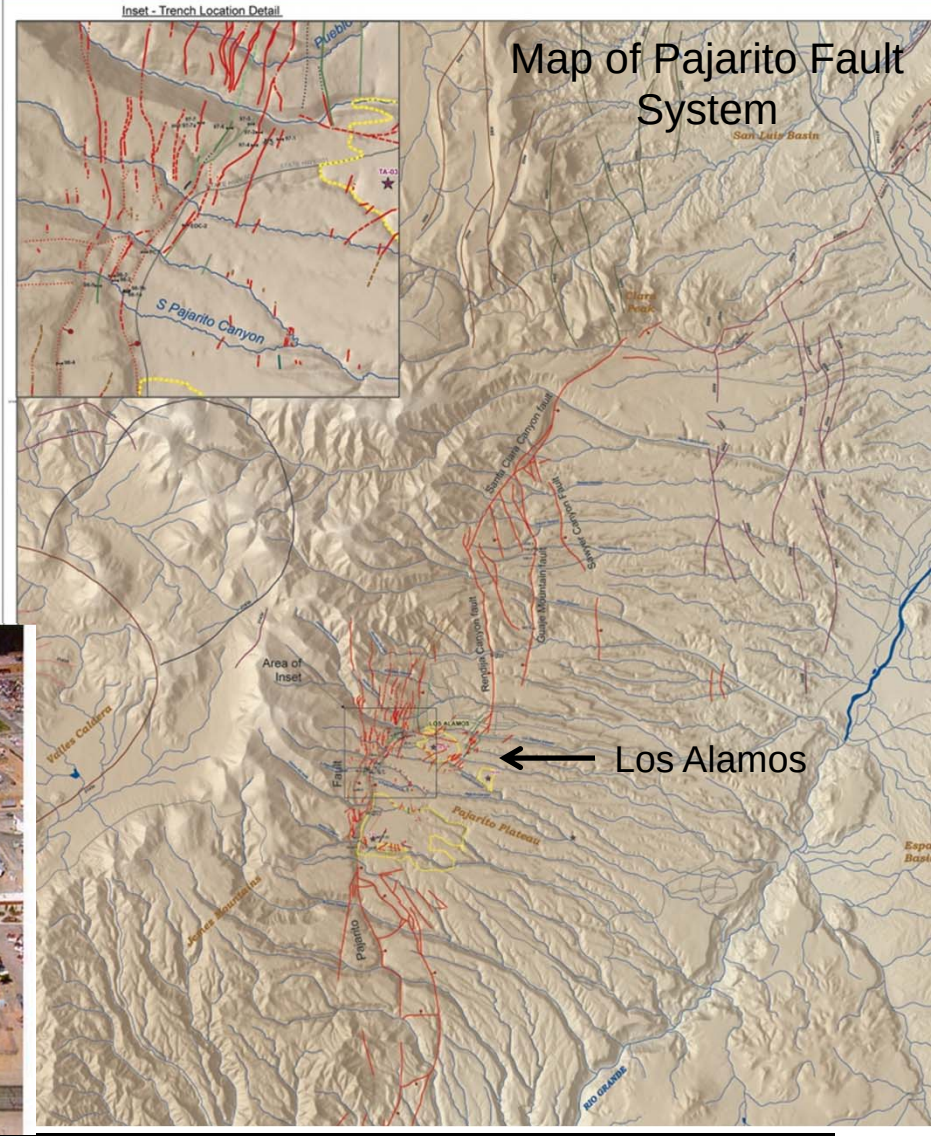
- The facility replaced a Manhattan Project-era facility that was located in what is now the Los Alamos townsite
- The facility is approximately 550,000 sq. ft.
- Originally, there were 5 operating wings (Wings 2, 3, 4, 5, and 7) for analytical chemistry and material characterization work, with the 6th (Wing 9) added in 1962 (Wing 9 contains hot cells)
- The facility was designed to provide capabilities to safely support all plutonium (and uranium for a number of years) operations and research at Los Alamos

CMR Construction site in Approximately 1950

While working to better understand the geology of the area around Los Alamos, LANL located a fault under the CMR facility

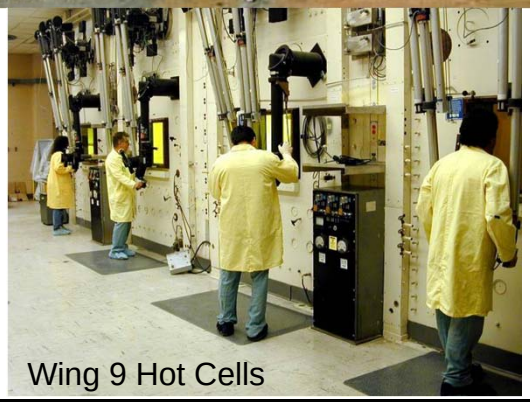
- Los Alamos surveys the geology of the Laboratory and surroundings to better understand its makeup
  - Input to the recurring 10-year update to the Probabilistic Seismic Hazard Analysis
- In 1998, Los Alamos scientists found evidence of a fault that extends under the CMR facility from the Pajarito Fault System
- Studies were performed to determine possible structural improvements that could allow long-term operations in CMR
  - Conclusions were that the best solution was to perform interim upgrades to CMR and then construct a new facility





To reduce risk, operations in CMR have been reduced over the last 10 years. Currently, only Wings 5, 7, and 9 are operating

- Operating space has been reduced by almost 50-percent
- Most metallurgical (material characterization) operations have been curtailed in CMR
  - These operations require use of more plutonium than analytical chemistry operations
- Analytical chemistry operations have been consolidated into Wings 5 and 7
- Hot cell work also continues in Wing 9 as well as a material recovery activity that will occur during FY13-16
- NNSA directed Los Alamos to continue the orderly phase out of NNSA program activities from the CMR building concluding in approximately 2019
  - Closure of CMR will take approximately 2 more years to reach cold standby status



Wing 9 Hot Cells

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The CMRR Project concept is two facilities to cost-effectively enable Analytical Chemistry and Material Characterization

CMRR Project

Radiological Lab Utility Office Building (RLUOB)

Nuclear Facility (NF)

CMRR RLUOB Facility is complete and equipment installation will be completed by September 2012

CMRR NF has met Critical Decision 0 (Mission Need) and Critical Decision 1 (approval for preliminary design)

The Chemistry and Metallurgy Research Replacement (CMRR) project was started as a 2004 Project to support the NNSA plutonium-based missions

- The initial scope for the project was based on a 2003 Conceptual Design Report
- At Critical Decision 0 in July 2002, the estimate range for the project was $420M-$955M with a planned completion date of 1Q2011
- At Critical Decision 1 in July 2005, the estimate range for the project was $745M-$975M with a planned completion date of 2013
- The 2009 President's Budget Request noted that the Total Project Cost would exceed $2,000M
- The 2012 President's Budget Request included a planned cost range of $3.7B-$5.8B. Reasons for the estimate growth include:
  - Project duration effectively doubled as a result of the government decision process and changes in project assumptions
  - Nuclear facility construction was delayed at least 5 years from original expectation
  - Requirements changed during project evolution

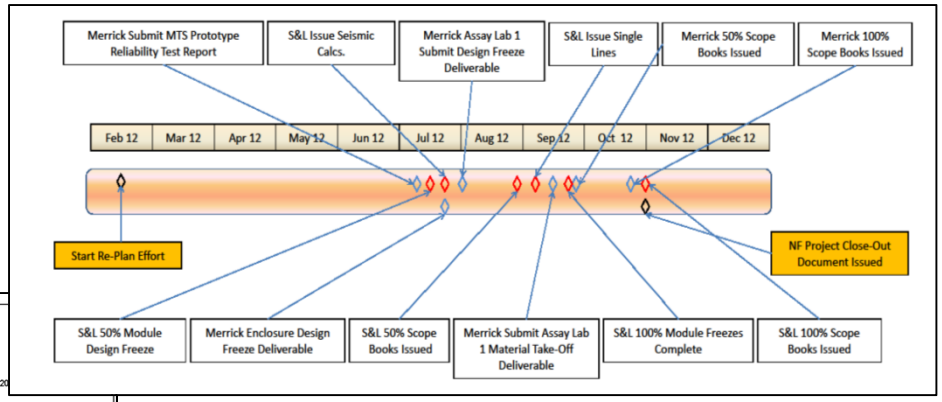
The requirement for NNSA to produce 50-80 pits per year is documented in the Memorandum of Agreement between SecDef and SecEnergy in 2010

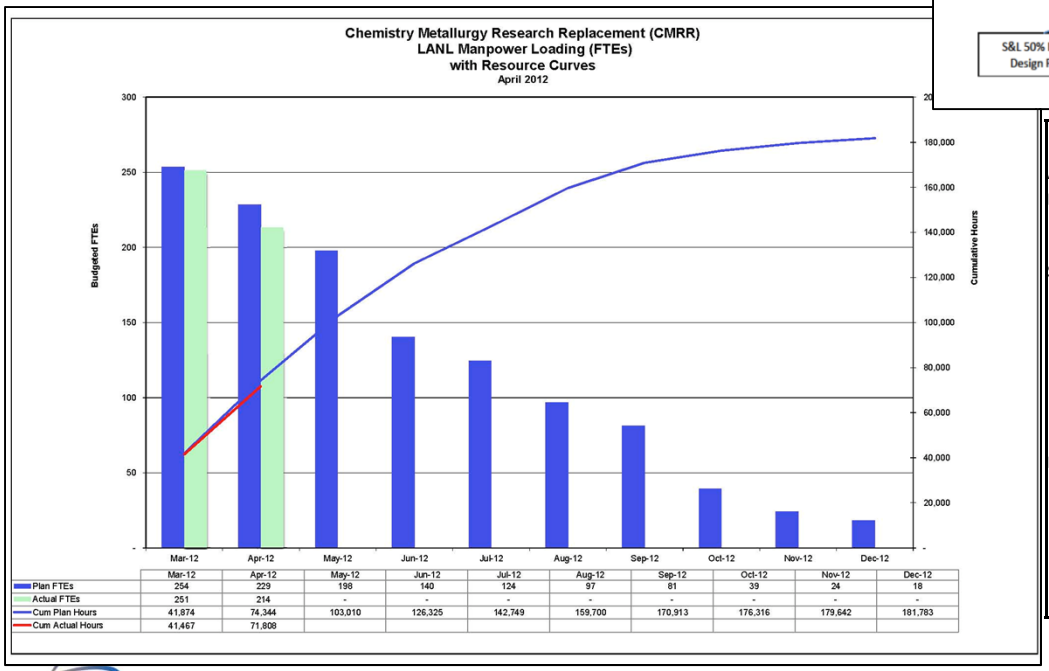
The CMRR Supplemental EIS was completed with a Record of Decision in 2011

- The purpose and need for the CMRR-NF has not changed since the issuance of the 2003 CMRR EIS
- Litigation is ongoing with local activist group demanding complete project stand down while a full EIS is prepared.

The substantially complete CMRR NF design will be finished in October 2012 while the project team is drawn down to zero

- Outcome of funding needs based on closeout plan leaves approximately $120M remaining in the project
  - Total funding available (BOY + BA) $275M
  - Project funding used from Oct. to Feb. 2012 $65 M
  - Completion of RLUOB Equipment Installation $40M
  - Develop NF substantially complete design $50M
  - Funding Available after project suspended $120M

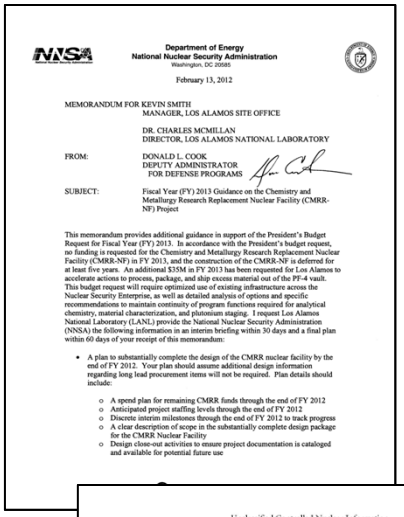




Activity ID	Interim Activities for Substantially Complete Design	Finish
ENGR W - LANL Engineering & Design		30-Oct-12
LLMS1120	NF Project Closeout Document Issued	30-Oct-12
SL-FDX-4 W - Final Design Schedule - S&L		30-Oct-12
MS6005	Issue Structural Calc (Seismic) (SAP-2000)	24-Jul-12
MS6003	Module Freeze (50%) - (17 of 34 Modules Design Frozen)	30-Jul-12
MS6001	Issue Scope Books (50%) - (18 of 37 Scope Books Issued)	29-Aug-12
MS6006	Issue Single Lines - (Last of the 5 Groups)	11-Sep-12
MS6004	Module Freeze (100%)- (All 34 Modules Design Frozen)	1-Oct-12
MS6002	Issue All Scope Books (100%) - (37 Scope Books Issued)	30-Oct-12
MER-FD-22 W - I3 and SFE Remaining Design 04FEB10 Mer (ID-3 Working)		6-Nov-12
MF00000535	Submit MTS Prototype Reliability Test Report	11-Jul-12
MF00000545	Submit Enclosure Design Freeze Deliverable	13-Jul-12
MF00000555	Submit Assay Lab 1 Design Freeze Deliverable	1-Aug-12
MF00000525	Submit Assay Lab 1 Material Takeoff Deliverable	18-Sep-12
MF00000565	Issue Scope Books (50%) - (12 out of 24 Scope Books Issued)	27-Sep-12
MF00000575	Issue All Scope Books (100%) - (24 Scope Books Issued)	6-Nov-12

With the CMRR Nuclear Facility project deferred at least 5-years, Los Alamos produced a study to substantially complete the design, and provide options for an interim capability

- The result of this study is that Los Alamos, by itself, cannot support a 20-30 pit per year production rate
  - Interim capability plan is to maximize the use of the CMRR-RLUOB (Radiological Laboratory) for Analytical Chemistry at a limit of 26 grams Weapons Grade plutonium for the building to reach a limited capacity
    - Capacity can be expanded through several different means, including use of offsite labs
  - Will also require use of lab space in PF-4 and support from Lawrence Livermore National Laboratory
  - Recovering vault space in PF-4 and managing transuranic waste effectively will be important
- The most likely outcome will be to work with offsite labs to create a plan that can meet the Pu mission needs to provide NNSA and other sponsors with sustainable capabilities



NNSA
Department of Energy
National Nuclear Security Administration
Washington, DC 20585

February 13, 2012

MEMORANDUM FOR KEVIN SMITH
MANAGER, LOS ALAMOS SITE OFFICE

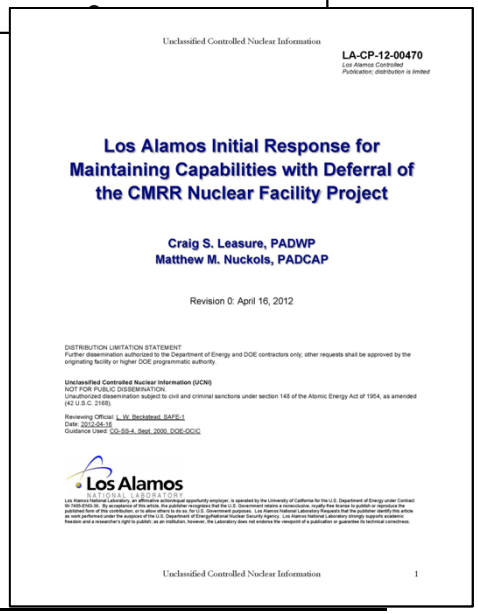
DR. CHARLES MCMILLAN
DIRECTOR, LOS ALAMOS NATIONAL LABORATORY

FROM: DONALD L. COOK
DEPUTY ADMINISTRATOR
FOR DEFENSE PROGRAMS

SUBJECT: Fiscal Year (FY) 2013 Guidance on the Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) Project

This memorandum provides additional guidance in support of the President's Budget Request for Fiscal Year (FY) 2013. In accordance with the President's budget request, no funding is requested for the Chemistry and Metallurgy Research Replacement Nuclear Facility (CMRR-NF) in FY 2013, and the construction of the CMRR-NF is deferred for at least five years. An additional $35M in FY 2013 has been requested for Los Alamos to accelerate actions to process, package, and ship excess material out of the PF-4 vault. This budget request will require optimized use of existing infrastructure across the Nuclear Security Enterprise, as well as detailed analysis of options and specific recommendations to maintain continuity of program functions required for analytical chemistry, material characterization, and plutonium staging. I request Los Alamos National Laboratory (LANL) provide the National Nuclear Security Administration (NNSA) the following information in an interim briefing within 30 days and a final plan within 60 days of your receipt of this memorandum:

- A plan to substantially complete the design of the CMRR nuclear facility by the end of FY 2012. Your plan should assume additional design information regarding long lead procurement items will not be required. Plan details should include:
  - A spend plan for remaining CMRR funds through the end of FY 2012
  - Anticipated project staffing levels through the end of FY 2012
  - Discrete interim milestones through the end of FY 2012 to track progress
  - A clear description of scope in the substantially complete design package for the CMRR Nuclear Facility
  - Design close-out activities to ensure project documentation is cataloged and available for potential future use



Unclassified Controlled Nuclear Information

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Los Alamos Controlled Publication; distribution is limited

Los Alamos Initial Response for Maintaining Capabilities with Deferral of the CMRR Nuclear Facility Project

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Matthew M. Nuckols, PADCAP

Revision 0: April 16, 2012

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Reviewing Official: L. W. Beckstead, RAFE-1
Date: 2012-04-16
Guidance Used: CG-SS-4, Sept. 2000, DOE-OCIC

Los Alamos NATIONAL LABORATORY

Unclassified Controlled Nuclear Information 1

It will take significant effort to reach a 20-30 pit per year support capacity

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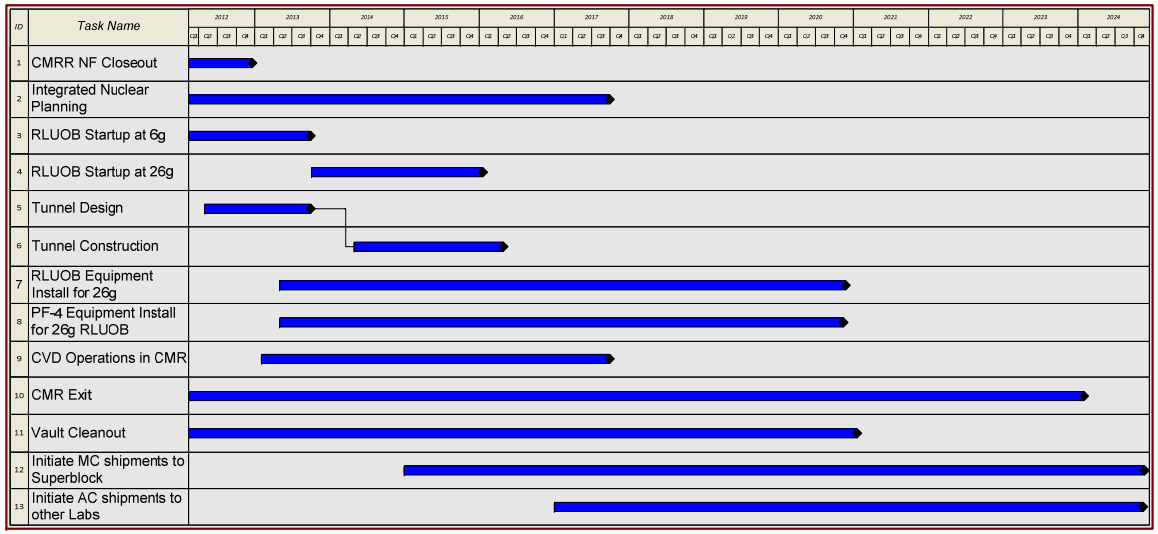
The revised Plutonium Strategy results in a plan that takes 10 years to complete costing about $800M to provide approximately 30 pit-per-year support capacity

- The schedule for completing all the actions described in the 60-day report will take about 8 years to substantially complete
- If funding is available starting in FY13, significant progress can be made
- Planning to successfully execute this revised strategy will take between 18-24 months to accomplish

Major risks exist that will be difficult to mitigate

Proposed Schedule to Execute Strategy



Integrated Risk Assessment

Risk	Probability	Consequence	Comments
Requirements Change	High	High	Risk generally transfers to NNSA
Cost/Funding Risk	High	High	Risk generally transfers to NNSA
AC Process Development	Mid	Mid	Mitigated by some activities being in gloveboxes and other sites' experiences
Staffing	High	Mid	Mitigated by other Laboratory and sites' personnel
PF-4 Mitigation	Mid	Low	Mitigated by the time frame involved – longer term risk
Inability to operate RLUOB at HazCat 3	High	Mid	Mitigated by being mostly related to capacity rather than capability
Above-Ground Transportation Implementation	Mid	Mid	Mitigated by current transportation systems
Programmatic Interruptions	Mid	Low	Mitigated by scheduling and operational segregation
Offsite Shipping	High	Mid	Mitigated by existing protocols for inter-site shipments