



Los Alamos Plutonium Pit Production Project (LAP4) Overview and Lessons Learned

Everett Trollinger

LAP4 Federal Project Director, NA-95

Tom Bratvold

LAP4 Project Director, LANL



Topics



- Build SMART Initiative
- LAP4 Overview
- Retrospective Review – NNSA and LANL
- Lessons Learned
- Best Practices
- Closing Remark – Build SMART



Build SMART Initiative

S

STRATEGIC PLANNING:

- Identify Clear Near-Term and Long-Term Milestones.
- Use existing authorities and processes while analyzing others to improve execution.
- Achieve objective of a flexible and resilient enterprise while improving estimating & upfront planning.

M

MISSION FOCUSED:

- Prioritize work to meet program mission need.
- Increase partnerships to support implementation of best practices across government & private sector.

A

AGILE:

- Deliver the right capability with the right timeframes.

R

RISK INFORMED DECISION MAKING:

- Take calculated risks, learn, and move forward.
- Ownership and accountability and reward success.

T

TIMELY:

- Deliver each task/deliverable on time & meet schedule.
- Anticipate change and be ready to act.
- Schedule and performance is key.

HOW ITS IMPACTING

- Directly informs development of the NNSA Enterprise Blueprint.
- Build SMART is a new initiative for NNSA projects to turn the corner on infrastructure and construction issues that focuses on delivering capability.
- Currently developing goals & metrics to improve schedule & cost.
- Incorporates efforts already underway like the Integrated Infrastructure Planning Working Group.



LAP4 Overview

- Project Scope
 - Equipment Decontamination & Decommissioning (D&D) and Installation
 - West Entry Control Facility (WECF)
 - Training and Development Center (TDC)
- Critical Decisions
 - CD-1, April 2021 with 5 subprojects
 1. D&D, CD-2/3, Nov 2021
 2. 30 Base (30B), CD-2/3, Jan 2023
 3. 30 Reliable (30R), CD-2/3, CY2025 (F)
 4. WECF, CD-2/3, Q4FY2024
 5. TDC, CD-2/3, CY2026 (F)

Resequencing equipment and execution timing among LAP4 is necessary to meet mission need

Leaning Forward CD-3X

CD-3X	Approval
30B CD-3A	Jan 2022
30B CD-3B	Aug 2022
30R CD-3A	Mar 2023
WECF CD-3A	Dec 2023



Retrospective Review – NNSA

Global Influences

- COVID-19 pandemic
- Ukraine War / international conflicts
- Supply chain challenges
- Inflation beyond normal escalation
- Limited design resources and capacity for nuclear equipment
- Glovebox fabricator capacity and experience
- Regional housing market and competition for resources

DOE / NNSA Influences

- M&O contract transition
- Schedule-driven requirements led to quick decisions and baselined the projects
- Magnitude of equipment scope required to take place in the operating nuclear facility
- Fast track project planning
- Remote working during pandemic – changed dynamics among stakeholders
- Level of detail in project scope definition and assignment constrained flexibility in project execution
- Not evaluating opportunities for tailoring compliance and oversight



Retrospective Review – LANL

Program and Technical Requirements

- Granularity of scope and subproject assignments included in CD-1 Program Requirements Document
- Design evolution
- Equipment priorities have changed

Project Planning

- During M&O transition, loss of senior project and construction leadership familiar with NNSA and LANL environment
- Optimistic CD-1 schedule – parallel execution with “unlimited” resources
- Integration among projects less than adequate at the time of baseline
- Define baseline at too granular level (at the specific equipment level) instead of capability
- Delays in achieving Program milestones
- Delays in predecessor equipment projects impacting LAP4



Retrospective Review – LANL (cont.)

Execution Resources

- Change of workforce
 - Attrition – more than 60% lab population has less than 5 years of LANL experience
 - Program and Project resources
- Competing priorities with Programs
- Facility

Project Execution

- Required culture change to focus on efficient project execution and production
- LANL systems and processes; and Plutonium Facility requirements are not ready to support large volume and time-driven construction activities
- Operating nuclear facility



Lessons Learned – What do we do differently today?

- Amplification of project size and scope not fully appreciated, relative to historical project performance and capability – i.e., assumption made based on the lab's past successes on similar scope on a smaller scale, would hold true on much larger scale.
- Expectation of quick transition from a R&D to a production mindset
- Implement SMART initiative as part of initial project planning – empower the project and FPD with agility to meet the mission need
 - Define scope at a level that accommodates design evolution and continuous improvement
 - Change Control in Preliminary/Project Execution Plans need to provide flexibility and authority to local level; consider down delegation and tailoring of compliance and oversight opportunities
- Prepare for integration and execution while developing baselines
- Establish DOE/NNSA and LANL Senior Leadership partnering meetings early
- Think outside of box for fast delivery and authorization of a schedule-driven project – instead of following what we know and always have done



Best Practices

- Leaning forward within control of the project – CD-3Xs
 - Long lead item procurements – gloveboxes, equipment, and facility systems
 - Early site preparation – temporary warehouses, site preparation and utilities
- Partnerships with stakeholders
 - LANL and NNSA Project Management, Programs and Field Office
 - LANL functional areas across directorates
- Remote workers and duty stations
 - Take advantage of remote working protocol established during pandemic
 - Established Richland, WA and Oak Ridge, TN duty stations for supporting functions (e.g. procurement, supplier quality, project management, quality)



LAP4 30B Temporary Warehouse



Groundbreaking Nov 2022



Aerial Pictures, 9 acres



- Establish temporary warehousing and cold setup/testing/assembly space for LAP4 gloveboxes and equipment
- 4 tents with a total of 80,000 GSF including support and expansion space (warehouse personnel, pre-job briefing, crew lunch, etc.)
- Groundbreaking on Nov 14, 2022. Received temporary beneficial occupancy for the first 2 buildings in Nov 2023. Complete commissioning for the last 2 buildings in Dec 2023. Forecast scope finish – Spring 2024.



LAP4 30B Glovebox Fab and Arrival



Glovebox Fabrication



Gloveboxes arrived TA-51 Warehouse – a NQA-1 Level-B controlled storage



Preassembly, mock-up and training will begin at TA-51 in spring 2024



Glovebox Trunkline



GB ready for shipping





Closing Remarks – Build SMART

S

STRATEGIC PLANNING:

- Identify Clear Near-Term and Long-Term Milestones.
- Use existing authorities and processes while analyzing others to improve execution.
- Achieve objective of a flexible and resilient enterprise while improving estimating & upfront planning.

MISSION FOCUSED:

- Prioritize work to meet program mission need.
- Increase partnerships to support implementation of best practices across government & private sector.

AGILE:

- Deliver the right capability with the right timeframes.

RISK INFORMED DECISION MAKING:

- Take calculated risks, learn, and move forward.
- Ownership and accountability and reward success.

TIMELY:

- Deliver each task/deliverable on time & meet schedule.
- Anticipate change and be ready to act.
- Schedule and performance is key.

M

A

R

T

HOW ITS IMPACTING

- Directly informs development of the NNSA Enterprise Blueprint.
- Build SMART is a new initiative for NNSA projects to turn the corner on infrastructure and construction issues that focuses on delivering capability.
- Currently developing goals & metrics to improve schedule & cost.
- Incorporates efforts already underway like the Integrated Infrastructure Planning Working Group.