



Plutonium Pit Production Analysis of Alternatives (AoA) Results & Next Steps

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NATIONAL NUCLEAR SECURITY ADMINISTRATION OFFICE OF DEFENSE PROGRAMS



Pit Production Strategy and Progress

- To sustain plutonium infrastructure and establish capabilities to resume production of war reserve pits, NNSA is:
 - Investing over \$1B from FY19 – FY23 to sustain current operations and achieve 30 pits per year (ppy) production capability by 2026
 - Investing over \$2B in construction projects to replace CMR capabilities and reconfigure space to support production
 - Analyzing options, consistent with DOE O 413.3B, for long-term infrastructure needs to support the 80 ppy requirements and other mission needs

- Progress:
 - Safely resumed operations in PF-4 after a 3-year operational pause
 - Began construction activities for the first two CMRR subprojects:
 - RLUOB Equipment Installation Phase 2 (REI2)
 - PF-4 Equipment Installation Phase 1 (PEI1)
 - Both are on schedule and under budget
 - Fabricated two development pits in FY17; will build four development pits in FY18
 - Completed the Plutonium Pit Production Analysis of Alternatives in FY17



Pit Production AoA Scope and Assumptions

- The AoA assessed alternatives to meet the sustained production capacity of no fewer than 80 ppy by 2030

- AoA Assumptions, Facts and Constraints
 - LANL is the Plutonium Center of Excellence for the enduring R&D mission
 - Capabilities installed under CMRR and Plutonium Sustainment remain in PF-4 and RLUOB
 - Operations in PF-4 to meet the 30 ppy goal in 2026 will continue
 - The threshold requirement is 80 ppy at high confidence, due to pit aging estimates and planned production schedules to meet military requirements
 - Future pits will be produced using current processes and technology



Evaluation Criteria and Other Considerations

Evaluation Criteria:

- Cost, schedule, risk
- Ability to support objective requirements for NNSA and DOE missions
- Capacity for pit reuse operations simultaneous with pit remanufacturing
- Synergy of plutonium science, metal preparation, and production
- Ability to accommodate future changes in mission requirements
- Useful lifetime of facilities

Other Considerations:

- Qualified workforce & Expertise / Availability of workforce
- Design Agency (DA) and Production Agency (PA) Colocation / Resiliency
- Environmental
- Transportation
- Mission Impact



AoA Results: Two Preferred Alternatives

1. Refurbishing and repurposing facilities at the Savannah River Site
 - Cost range: \$1.4-5.4 B
 - Schedule range: FY24-31
 - Risk: Reconfiguring a partially completed facility for a new mission in a new location

2. Additional footprint to accommodate pit production requirements at Los Alamos National Laboratory
 - Cost range: \$1.9-7.5 B
 - Schedule range: FY27-33
 - Risk: Less favorable cost and schedule for achieving a sustained 80 ppy facility



Engineering Analysis

- Conduct detailed engineering analysis (EA) for both alternatives to inform the selection of a single alternative and support conceptual design
- The EA is analyzing pre-conceptual design options at the two sites and will provide an engineering feasibility report
- Activities to-date
 - NA-10 created SME group to provide Parsons with Pu and Pit Production expertise
 - Parsons Team and SMEs completed the following:
 - LANL Site Visit – November 8-9
 - HQ Visit to meet with AoA Team – November 29-30
 - SRS Site Visit – December 5-6
 - Equipment List Analysis – 12/8
 - Schedule for remaining EA scope – 12/11



Engineering Analysis Next Steps

- Planned Activities
 - Pre-conceptual layouts and cost/schedule estimates by early February to support:
 - FY19 President’s Budget Request Rollout
 - NDAA Requirements

- The results of the EA will inform conceptual design for the Deputy Secretary’s approval of Critical Decision (CD)-1 (Approve Alternative Selection and Cost Range) in accordance with DOE Order 413.3B
 - Project baselines are not established until CD-2 approval (Approve Performance Baseline), which requires 90% design completion