National Nuclear Security Administration

Department of Energy
National Nuclear Security Administration
Washington, DC 20585

APR 01 2011

The Honorable Peter S. Winokur
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue, NW, Suite 700
Washington, DC 20004

Dear Mr. Chairman:

The Department of Energy has completed Deliverable 5.4.2 of the Department's Implementation Plan (IP) for Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility Seismic Safety*. The enclosure summarizes the scope, cost, and schedule for upgrades necessary to achieve a seismically-qualified, safety class active confinement ventilation subsystem.

If you have any questions, please contact me at (202) 586-4379.

Sincerely,

James J. McConnell
Assistant Deputy Administrator
for Nuclear Safety, Nuclear Operations,
and Governance Reform
Office of Defense Programs

Enclosure

cc: M. Campagnone, HS-1.1
K. Smith, LASO

SEPARATION

PAGE

UNITED STATES GOVERNMENT | DEPARTMENT OF ENERGY

memorandum

National Nuclear Security Administration
Los Alamos Site Office
Los Alamos, New Mexico 87544

DATE: MAR 17 2011
REPLY TO
ATTN OF: Kevin W. Smith
SUBJECT: Plutonium Facility Seismic Safety – Recommendation 2009-2, Deliverable 5.4.2

TO: James J. McConnell, Assistant Deputy Administrator for Nuclear Safety, Nuclear Operations and Governance Reform, National Nuclear Security Administration, NA-17, HQ/FORS

References:
1. U.S. Department of Energy, "*Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2009-2*", dated July 2010
2. Contract Number DE-AC52-06NA25396, Los Alamos National Security, LLC and the Department of Energy, National Nuclear Security Administration

Deliverable 5.4.2 of Reference (1) is completed. The attachment summarizes the analysis of a baseline option and various alternatives for achieving seismically qualified safety-class active confinement ventilation capability for the Plutonium Facility.

The path forward is to pursue upgrading the active confinement ventilation capability as part of the Technical Area 55 Reinvestment Project, Phase III, line item. Los Alamos Site Office (LASO) has separately tasked Los Alamos National Security, LLC, (LANS) to evaluation refinements to the baseline option and present results after the LANS submittal of the safety basis update (Milestone 5.2.2) and before NNSA action on the safety analysis and LANS submittal of the overall projection execution plan (Milestones 5.2.3 and 5.4.5, respectively). LASO anticipates this will occur at an on-site workshop early in May 2011.

If you have any questions regarding this memorandum, you may contact Charles Keilers at (505) 606-1944.

Kevin W. Smith
Manager

Attachment

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Records Center, LASO
Official Contract File, LASO

SO:21CK-328589

Attachment: Summary of Plutonium Facility Options to Achieve Seismically Qualified Safety-Class Active Confinement Ventilation

Milestone 5.4.2 of Reference (1) is for the analysis of various options to achieve a seismically-qualified safety-class active confinement capability for the Plutonium Facility (PF-4). References (2) through (6) constitute the deliverable and document the options, scope, estimated cost, and notional schedule to upgrade the existing system to Performance Category 3 (PC-3).

Cost: The pre-conceptual cost estimates are within the $40M to $80M range and exceed the $10M General Plant Project threshold. Upgrades will be pursued as a line item subproject under the Technical Area 55 (TA-55) Revitalization Project, Phase III (TRP-III). Most of the cost arises from just obtaining safety-class capability, independent of seismic qualification.

Schedule: The notional schedule aligns with development of the TRP-III line item and includes about one year each for conceptual, preliminary, and final design phases; three years for construction; and one year for construction closeout, readiness, and project closure (i.e., seven years total). Details will be documented in the Project Execution Plan due in July 2011 (i.e., Milestone 5.4.5).

Scope: The baseline option involves modifying the glove-box exhaust subsystem, the lab-room recirculation subsystem, the bleed-off subsystem, the electrical distribution system, and the ventilation control system. This scope ensures PF-4 remains at negative pressure relative to the outside, thereby protecting the public; it also minimizes the probability of loss of cascading differential pressure from the glove-boxes to PF-4 working spaces and the outside.

The scope includes replacing control dampers with variable frequency drive fan motors and electric actuators and installing two new independent control systems, powered by the new TRP-II uninterruptible power supply. It also includes one new and one upgraded diesel generator, new switchgear, new auto-transfer switches, new distribution boards, new motor-flywheel-alternators, and a new building. Seismic upgrades involve new bracing, new flange fasteners, and new anchorage for panels and a generator. Nearly all work would be done in the PF-4 basement or outside PF-4, limiting interference with the mission and potential interaction with material-at-risk.

Risks: The project has high visibility due to Recommendation 09-2 and may become very complex. It involves modification to a safety-class system and working in an operating, high-security plutonium facility in parallel with a high volume of other planned physical upgrades. Risks include: budget uncertainty; incompletely defined scope and requirements; incompletely documented as-built conditions; and assumptions on existing anchorage, use of the interim response spectra, and availability of sufficient number of qualified cleared workers.

Options: Alternatives considered include: (1) no action; (2) upgrade the entire ventilation system; (3) upgrade just one of three subsystems (glovebox exhaust, bleed-off, or basement); (4) install new exhaust fans and sand filters. The no action option (1) is unlikely to ensure the calculated dose to the maximally exposed off-site individual is well below the 25 rem Evaluation Guideline. The complete upgrade option (2) was estimated to cost $325M in 2005 and exceeds the needs. The bleed-off subsystem option (3) would be sufficient to ensure building negativity but may pressurize the gloveboxes, further contaminate PF-4 internally, and complicate building recovery. The sand filter option (4) has higher temperature capability than the currently used high efficiency particulate

air (HEPA) filters but would be a scope addition to one of the other options, increasing cost, and also exceeds currently understood needs.

References:

1. DOE Implementation Plan for DNFSB Recommendation 2009-2, July 2010
2. LANS letter ADNHHO:11-032, dated January 31, 2011
3. LANS letter ADNHHO:10-326, dated October 8, 2010
4. LANS letter ADNHHO:10-313, dated September 30, 2010
5. LANS letter ADNHHO:10-316, dated September 30, 2010
6. LASO memorandum SO:21CK-328448, dated March 15, 2011