



Department of Energy  
National Nuclear Security Administration  
Washington, DC 20585



JAN 31 2011

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

Dear Mr. Chairman:

The Department of Energy has completed Deliverable 5.4.1 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 fire suppression system.

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



# memorandum

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

DATE: **JAN 20 2011**  
REPLY TO:  
ATTN OF: Kevin W. Smith  
SUBJECT: Plutonium Facility Seismic Safety – Recommendation 2009-2, Deliverable 5.4.1

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

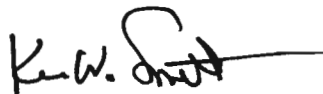
Reference:

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

Deliverable 5.4.1 of Reference (1) is completed. The attachment summarizes the conceptual design for achieving seismically qualified safety-class fire suppression for the Plutonium Facility (PF-4).

Los Alamos Site Office has considered the alternatives to this conceptual design. Seismically-qualified fire suppression is part of a suite of interrelated controls being pursued to improve the PF-4 nuclear safety posture and address the post-seismic fire scenario. Its effectiveness depends on other controls already implemented or being pursued. The alternatives considered were to take no action, thereby relying more on other controls to address the seismic hazard, or to pursue installing a new system. This conceptual design is preferred over these alternatives based on following considerations: higher effectiveness, higher robustness, higher technical viability, shorter installation time, lower cost, and low mission impact. The site intends to aggressively pursue design development and installation.

Contact C. Keilers at (505) 665-6352 if you have any questions.

  
Kevin W. Smith  
Manager

Attachment

cc w/attachment:

D. Nichols, CDNS, HQ/FORS  
A. Delapaz, NA-171.2, HQ/FORS  
R. Snyder, OOM, LASO  
C. Keilers, AMFO, LASO  
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E. Christie, FO, LASO  
R. McQuinn, AD-NHHO, LANS, MS-K778  
Records Center, LASO  
Official Contract File, LASO

FO:26CK-315163

Attachment: Summary of Plutonium Facility Conceptual Design to Achieve Seismically Qualified Safety-Class Fire Suppression

Milestone 5.4.1 of Reference (1) is for the conceptual design to achieve a seismically qualified safety-class fire suppression system for the Los Alamos National Laboratory Plutonium Facility (PF-4). References (2) through (4) constitute the deliverable and document the scope, estimated cost, and notional schedule to upgrade the existing system to Performance Category 3 (PC-3).

The system has been walked down and evaluated using Reference (5) criteria. Equipment seismic capacities were established using the Reference (6) approach. Seismic demands were determined using standard analysis techniques and an interim in-structure response spectra, which was conservatively scaled from 1997 results. Adequacy of the interim spectra will be confirmed upon completion of building structural analyses, currently underway.

*Scope:* The analysis concluded that the following upgrades are required:

- For the main floor, a lateral support is needed two-thirds down each branch line. An end support is needed within two feet of the end of each branch line if there is not a support already.
- For the basement, about a dozen axial supports will be required on standpipes. Additional lateral supports are needed on some vertical and lateral piping sections.
- For the pump houses, additional supports are needed on the boiler hot water supply lines.

The scope requires workers to access the constrained mezzanine area above the laboratory rooms but does not require programmatic interruption or impairing the fire suppression system. Alternatives were evaluated, including a separate clean agent system. The proposed modifications follow industry standards and are deemed more straight-forward.

*Risks:* The project has high visibility due to Recommendation 09-2. It involves modification to a safety-class system and working in an operating, high-security plutonium facility. Technical risks involve assumptions on existing anchorage, use of the interim response spectra, and availability of sufficient number of qualified cleared workers.

*Cost:* The estimated cost is below the \$10M General Plant Projects funding limit.

*Schedule:* The notional schedule includes refinement of project scope and requirements; a 10-month subcontracted design development with 30/60/90 percent design reviews: a 4-month work package development, 6-month construction period, and a 2-month project closeout. If design efforts started on March 1<sup>st</sup>, 2011, then notionally, the design would be completed in January 2012, construction would be completed in November 2012, and the project would be completed in February 2013.

**References:**

1. U.S. Department of Energy – Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2009-2, July 2010.
2. LANS letter ADNHHO:10-315, September 30, 2010
3. LANS letter ADNHHO:10-367, November 29, 2010
4. LASO memorandum FO:26CK-315176, January 20, 2011
5. DOE/EH-0545, Seismic Evaluation Procedure for Equipment in DOE Facilities
6. EPRI NP-6041, Methodology for Assessment of Nuclear Plant Seismic Margin (Rev 1)