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# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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February 1, 2007

The Honorable Thomas P. D'Agostino  
Acting Administrator  
National Nuclear Security Administration  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0701

Dear Mr. D'Agostino:

As you assume your position as Acting Administrator for the National Nuclear Security Administration (NNSA), the Defense Nuclear Facilities Safety Board (Board) would like to take the opportunity to provide a number of observations and suggested actions for improving safety at Los Alamos National Laboratory (LANL).

The Board visited LANL on November 29, 2006, and was able to observe firsthand the challenges facing the laboratory's new operating contractor, Los Alamos National Security, LLC, as it strives to improve safety. These challenges are significant in scope, and their resolution will require continued focus over the next few years. NNSA's proposals to significantly increase programmatic operations are likely to pose additional challenges.

The Board believes that completion of the suggested actions detailed in the enclosure to this letter would substantially improve LANL's ability to meet these challenges and enhance the laboratory's safety posture. This listing of actions is not intended to be comprehensive and complete, and the Board is aware that some of these actions are included in various aspects of ongoing improvement programs, which have been further emphasized by NNSA through contractual incentives. The Board believes your continued attention is necessary to ensure the effective execution of these efforts to improve safety at LANL.

Sincerely,

A. J. Eggenberger  
Chairman

c: Mr. Mark B. Whitaker, Jr.

Enclosure

## Enclosure

### Keys to Improving of Safety at Los Alamos National Laboratory

**Strengthen Federal Safety Oversight.** The Los Alamos Site Office (LASO) began a 2-year pilot of a new federal oversight model that increases the federal presence in high-hazard nuclear and non-nuclear facilities and relies on a contractor assurance system for monitoring of less hazardous operations. The pilot depends on the contractor's system being effective and accessible to federal oversight almost immediately; in practice, however, the system will not reach maturity for about 2 years. The National Nuclear Security Administration (NNSA) should examine the need for compensatory measures that would ensure adequate safety oversight until the contractor assurance system has proven to be effective and reliable. Further, consideration should be given to providing NNSA safety oversight, particularly facility representative coverage, of the remaining nuclear operations at a level commensurate with the risk involved.

There are critical unfilled technical management and staff positions within LASO (such as the Technical Deputy Manager, Senior Technical Advisor, facility representatives, and safety analysts), and existing LASO management and staff have not received adequate levels of training and qualification for their new assignments under the oversight pilot. NNSA needs to fill vacancies in much-needed technical positions expeditiously, develop the necessary qualifications, and ensure that resources are adequate to train the workforce properly.

**Improve Safety Bases and Ensure the Efficacy of Safety Systems.** High-quality safety bases are needed to provide assurance that nuclear facilities can operate in a manner that protects workers, the public, and the environment. Most of the safety bases at the laboratory are out of date and do not meet current requirements. Los Alamos National Security, LLC (LANS) has launched an ambitious plan to update safety bases over approximately the next 2 years. NNSA needs to ensure that the appropriate people, procedures, and resources are available for LASO to perform thorough reviews and verify the implementation of approved safety bases in a timely manner.

Likewise, many safety systems, including the administrative programs for oversight and configuration management, have documented inadequacies. Improvements are under way, but NNSA should focus on rapidly increasing confidence in these safety systems, particularly safety-class systems. The scope and timing of the reinvestment project for the Plutonium Facility may also warrant reconsideration to ensure that the project addresses deficiencies in safety systems identified during the safety basis upgrade and during other reviews conducted within the last few years.

Under the Defense Nuclear Facilities Safety Board's Recommendation 2004-2, *Active Confinement Systems*, the confinement ventilation system for the Plutonium Facility and the system design for the Chemistry and Metallurgy Research Replacement facility are being evaluated by NNSA. These high-priority evaluations have been significantly delayed. NNSA needs to ensure that these efforts are completed and that any findings are resolved in a timely manner.

The laboratory's fire protection program relies on the Los Alamos County Fire Department to respond to fires on site. The lack of a long-term contract with Los Alamos County has impeded improvement of fire response capabilities since 1997. This concern is heightened since the pre-contractual cost agreement was recently allowed to lapse. NNSA needs to complete the contract negotiations as soon as possible.

**Develop Effective Institutional Safety Programs.** Since 2000, many deficiencies have been identified with Los Alamos National Laboratory (LANL) institutional safety programs. NNSA needs to verify whether the corrective actions completed to date have adequately resolved these deficiencies so as to prevent recurrence of the problems involved. In addition, LANL has initiated a significant overhaul of the institutional programs governing formality of operations and integrated work management. To support the sustainable and effective implementation of these programs, NNSA needs to emphasize their importance to the laboratory workforce and ensure that essential supporting programs such as training and qualification are in place.

**Eliminate Known Hazards.** Several postulated accident scenarios at LANL involving the transuranic waste drums stored at Area G result in very high consequences because of the significant radioactive material inventory, proximity to the public, and lack of robust engineered controls. NNSA needs to expeditiously develop a viable pathway for shipping these drums to the Waste Isolation Pilot Plant or, if an acceptable approach cannot be identified in a timely manner, implement additional engineered measures to improve the safety posture of Area G.

The highest-consequence accident scenarios postulated at the Plutonium Facility involve plutonium-238. While progress has recently been made, NNSA should accelerate the disposition of the remaining inventory of legacy plutonium-238 residues. In addition, NNSA should promulgate timely decisions on the scope of future plutonium-238 operations in order to support appropriate preparations for these high-hazard operations.

**Increase Federal Management of New Projects.** To support expanded operations at Technical Area 55, NNSA is planning an extensive investment portfolio comprising projects costing about \$2 billion and involving significant technical complexity and safety implications. NNSA needs to maintain adequate federal oversight to provide the necessary coordination and direction for these new projects. For example, sufficient federal staffing is needed to review safety basis and design documentation for the Chemistry and Metallurgy Research Replacement facility, which will provide an essential replacement capability for programmatic operations currently performed in the Chemistry and Metallurgy Research facility that is scheduled for closure in 2010.

Modifications are under way in the Plutonium Facility to install manufacturing equipment necessary to provide a capability to produce greater numbers of pits and establish the capability to manufacture legacy pit types or pits for a Reliable Replacement Warhead. This activity is not being managed as a formal project with design milestones. NNSA should evaluate whether the lack of formal federal project management is adversely impacting the incorporation of safety in design.