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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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June 27, 2005

The Honorable Edward Whitfield  
Chairman  
Subcommittee on Oversight and Investigations  
Committee on Energy and Commerce  
United States House of Representatives  
Washington, DC 20515-6115

Dear Mr. Chairman:

In your letter to me dated June 13, 2005, you requested that I respond to questions submitted by Members of your subcommittee following the hearing entitled "A Review of Ongoing Management Concerns at Los Alamos National Laboratory" held on May 5, 2005.

My answers to the Members' questions are enclosed.

If I can be of further assistance in this matter, please call me.

Sincerely,

A.J. Eggenberger  
Acting Chairman

Enclosure

**Questions from the Honorable Bart Stupak**

**Dr. A. J. Eggenberger, Acting Chairman  
Defense Nuclear Facilities Safety Board**

**May 5, 2005**

**Subcommittee on Oversight and Investigations**

**Hearing entitled: "A Review of Ongoing Management Concerns at Los Alamos National Laboratory"**

MR. STUPAK: On page 14 of your testimony, you stated that, "the Board believes that the physical and programmatic safety improvements being pursued at Los Alamos National Laboratory (LANL) are needed, and that close oversight of both NNSA and the Board is required to ensure that needed improvements are realized." What specific items should the Board and NNSA focus on in this effort?

DR. EGGENBERGER: The Board believes that close oversight by both NNSA and the Board is required on the safety initiatives identified by LANL as a result of the resumption reviews, including:

- LANL's Operational Efficiency project needs to be completed. It includes corrective actions addressing safety (i.e., work planning and control), operations, safety basis, training, engineering, quality assurance, and software quality assurance. The Board believes that implementation of work planning and control has the greatest potential for improving worker safety.
- Other lab-wide safety initiatives involving fire protection and nuclear material stabilization and packaging, in accordance with Board Recommendations 2000-1 and 2005-1 and a Board letter on fire protection dated May 31, 2005.
- In addition, the Board, as well as NNSA, should continue to focus on facility-specific issues as necessary. Examples include the adequacy of the Plutonium Facility confinement system, safety controls for the plutonium-238 aqueous scrap recovery line planned to start up later this year, and activities associated with the Early Move project that is removing nuclear materials from Technical Area-18 (TA-18). In addition, NNSA needs to review and approve the safety bases and technical safety requirements for TA-55, the Chemistry and Metallurgy Research (CMR) Building, and TA-50.

MR. STUPAK: In March 2001, the Safety Board issued a technical report asking why the Energy Department was not implementing basic nuclear quality assurance programs at its sites. There had been numerous prior letters from the Board on the lack of quality assurance assessments. In February 2005, LANL finally promulgated a site-wide quality assurance plan,

but it is not yet implemented, and the resources to do so are not committed. What will the Board do to assure implementation at Los Alamos?

DR. EGGENBERGER: One of the eight subprojects of the Operational Efficiency project addresses quality assurance (QA). During the week of June 6, 2005, the Board was briefed on implementation of the Operational Efficiency project. The actions identified appear reasonable, and the project appears to be generally meeting its milestones. One action, the "back-look" plan to address previous welding activities, is behind schedule but has been submitted by LANL to the Los Alamos Site Office (LASO) for approval.

Typically, individual divisions and facilities at LANL have tended to develop their own QA programs. Site-wide implementation of QA will require NNSA to review and approve the LANL quality assurance plan (QAP). The Board will monitor implementation of QA at defense nuclear facilities, provide guidance to LANL and LASO, and make specific recommendations to the Department of Energy (DOE) as needed:

MR. STUPAK: Don Brown, a LANL quality assurance contract employee, issued a white paper on the absence of a quality assurance program and the absence of a tank and pressure vessel inspection program in 2003 at LANL. He sent it to former Lab Director G. Peter Nanos in October 2004. LANL claims they have a tank inspection program; the investigation report from the recent tank exposure incident states that the laboratory needs to implement one. Do you know if LANL has such an inspection program and what the status is?

DR. EGGENBERGER: LANL has an active pressure safety committee, has pressure safety requirements and guidance (dated August 2003), and routinely conducts pressure safety training and system inspections. LANL also has a related tank inspection program, primarily focused on single-barrier tanks that have the potential to release their contents (e.g., diesel oil) to the environment; these are generally outside the Board's jurisdiction of defense nuclear operations.

Based on the number of systems discussed (about 1,800), Mr. Brown's concerns appear to be focused on pressure safety of steam boilers and systems, which are common in non-nuclear operations outside the Board's jurisdiction. There are a few such systems within nuclear facilities, such as the 53-year-old CMR Building, and they are maintained and inspected under the direction of the nuclear facility managers.

The recent worker exposure incident occurred during work on the Radioactive Liquid Waste Treatment Facility caustic waste receipt tank, which had leaked. This tank is in an underground concrete vault that captured the leakage. It is not part of a pressurized system and was not included in the pressure safety inspection program. This particular leak was due to corrosion of the stainless steel tank. Although the stainless steel construction of the tank was appropriate for the expected contents, there were no formal limits for operating parameters that could affect corrosion, such as acidity of wastes directed to the tank. The investigation team reported that it could not establish that an effort was made to control, monitor, or address

corrosion of the tank during its 24-year history. Therefore, the team recommended that the LANL division responsible for this facility develop and implement a formal inspection and testing program that could aid in anticipating corrosion failures of tanks.

MR. STUPAK: It is our understanding that the welding program at LANL failed to meet national requirements because the welders were not qualified, welding procedures were not appropriately reviewed and approved, and welding equipment and materials were not procured and controlled properly. The reliability of welds is very important in an industrial and nuclear setting. In fact, it was a weld that failed in the TA-55 worker exposure incident. Can you explain to us why, for years, Los Alamos did not have a welding program that could pass quality assurance tests?

DR. EGGENBERGER: Several years ago, there were numerous reviews at LANL, including some by the Board, that identified institutional QA issues at the laboratory. A few common observations among these reviews were that, in general, individual projects and facilities tended to develop their own QA programs in isolation, that these programs were inconsistent, that they varied in pedigree, that they were often expert-based instead of standards-based, and that they were often not well implemented. As a result, the quality of welds made at LANL was mixed. The Board notes, for example, that CMR was completed in 1952, before the development of current QA standards for welding. Recent LANL inspections found very few deficient welds in newer facilities. Since 2003, LANL has implemented corrective actions to remedy welding QA problems.

MR. STUPAK: Please describe the Board's knowledge of and involvement in attempting to correct the defects in the welding program at Los Alamos.

DR. EGGENBERGER: NNSA, LANL, and LANL's subcontractors have responded to the welding program deficiencies. The Board has observed the following regarding the LANL welding program:

- In August 2003, LANL performed an institutional quality audit of its site services contractor and identified issues with its welding program.
- In November 2003, LANL identified that historic weld processes may not have complied with national consensus requirements. LANL also identified a number of suspect welds in safety systems in the CMR Building, which is a nuclear facility. LANL reported these issues to the DOE Office of Enforcement via the Price Anderson system.
- In January 2004, LANL prepared and submitted a corrective action plan that included specific steps such as issuing a notice to address current welding activities, developing and implementing a comprehensive welding program,

developing a “back-look” assessment plan to address previous welding activities, and verifying the closure of corrective actions.

- In April 2004, LANL issued a notice instituting interim requirements for site-wide welding operations. LANL also declared a potentially inadequate safety analysis for nuclear facilities due to suspect welds in nuclear safety systems. LANL developed a plan to address these issues.
- In August 2004, LANL revised its *Engineering Standards Manual* to include a new chapter which addresses procedures and qualification for new welds. In November 2004, an outside engineering firm provided technical comments on further changes that LANL was considering to its internal welding standards.
- In December 2004, LANL provided NNSA with an updated implementation plan for implementing the *Engineering Standards Manual* welding program and closing issues. LANL projected full implementation for new welds by the end of 2005.
- In March 2005, LANL and NNSA agreed upon a project execution plan for the quality assurance subproject of the Operational Efficiency project, which is intended to address many of the institutional post-start findings identified during the resumption reviews. The quality assurance subproject includes follow-through and closure of the welding issues.
- Between April 2004 and April 2005, LANL systems engineers visually inspected accessible welds in existing vital safety systems in nuclear facilities. A few discrepant welds were found and have been dispositioned. Some welds have been reworked. Other welds initially identified as discrepant were determined to be acceptable when examined by certified weld inspectors. Detailed inspections are underway now in CMR. LANL has submitted a *Weld Back-Look Project Management Plan* to NNSA that includes a more detailed assessment by certified weld inspectors of visually accessible welds. Inaccessible welds in vital safety systems will be inspected when they become accessible for other reasons.

The Board considers the actions taken by LANL to date to be appropriate responses to the deficiencies in the welding program.

MR. STUPAK: How can the Board’s findings and also those by the Department of Energy’s (DOE) Price Anderson office be enforced, if there is no authority to require that funds be allocated to implement your recommendations?

DR. EGGENBERGER: Once the Secretary of Energy accepts a Board recommendation, the Secretary assumes ownership of the recommendation and has numerous tools available to him

under the Atomic Energy Act to carry out the recommendation. The Board does not have direct authority to require DOE to allocate funds to address Board findings or to implement Board recommendations. In cases where the DOE has accepted a Board recommendation but the implementation of that recommendation is impracticable because of budgetary considerations, the Secretary of Energy is required to submit to the President, to the Committees on Armed Services and on Appropriations of the Senate, and to the Speaker of the House of Representatives a report containing the recommendation and the Secretary's determination. After being so informed, the President and Congress can then make the necessary funds available to implement the Board recommendations.

Additionally, Congress provided that in any case in which the Board determines that a recommendation submitted to the Secretary of Energy relates to an imminent or severe threat to public health and safety, the Board is to transmit its recommendation to the President. After receipt of the recommendation by the President, the Board is also required to submit its recommendation to the Committees on Armed Services and on Appropriations of the Senate and to the Speaker of the House of Representatives. The President is also required to notify such committees and the Speaker of his decision concerning the Board recommendation and the reasons for that decision. The President and Congress can then make the necessary funds available to implement the Board recommendation.

MR. STUPAK: In retrospect, was it a good decision to shut down all the operations at the Los Alamos National Laboratory? Why or why not? What has been accomplished by the shutdown?

DR. EGGENBERGER: If the Board thought that there were an imminent threat to health and safety requiring shutdown of the laboratory, we would have recommended such an action to the Secretary of Energy. The suspension of activities was prompted by non-nuclear issues outside of the Board's jurisdiction, although the nuclear operations at LANL also have had problems.

In retrospect, suspension of LANL operations has had a number of positive outcomes for nuclear operations. First, NNSA and LANL now understand far better the safety issues that need correcting. Second, better assessment processes are now in place, although improvement of assessments by both NNSA and LANL warrants further attention. Third, extensive institutional corrective action plans have been developed. Full implementation of the corrective action plans will require significant resources for several years. In addition, mechanisms must be in place to assure the sustainability of the gains that are made. Finally, the safety awareness of many managers and employees has been enhanced.

In general, LANL has recently demonstrated a willingness to identify issues forthrightly, develop corrective action plans, and improve its operations.

MR. STUPAK: DOE's Office of Environment, Safety and Health issued proposed industrial and construction worker safety regulations in January 2005 in response to the FY2003 Defense Authorization Act. They are intended to parallel the Price Anderson nuclear safety regulations,

but tucked into the rules are 10 separate exemptions, none of which were authorized by Congress and are not part of the OSHA regime. These exemptions could swallow the rules. Does the Board agree with this approach? Could these exemptions lead to a reduction in the current levels of worker safety?

DR. EGGENBERGER: Congress, in section 3173 of the Bob Stump National Defense Authorization Act for Fiscal Year 2003 required the Secretary of Energy to promulgate worker health and safety rules for Department of Energy nuclear facilities. Section 3173 specifically requires the Secretary to include flexibility

“(A) to tailor implementation of such regulations to reflect activities and hazards associated with a particular work environment;

(B) to take into account special circumstances at a facility that is, or is expected to be demolished, or title to which is expected to be transferred to another entity for reuse; and

(C) to achieve national security missions of the Department of Energy in an efficient and timely manner.”

In the rule proposed by DOE, exemption provisions provide a number of categories of “special circumstances” in which the rule’s requirements can be waived. The Board has commented on or questioned the broad nature of some of these exemption provisions. DOE has not yet justified all of the proposed exemptions or identified to the Board why additional flexibilities beyond those provided for by Congress are required. The worker health and safety requirements in the rule as proposed by DOE are, however, currently included in DOE orders which are applicable to the contractors at the DOE nuclear facilities. DOE has the ability to preserve current levels of worker safety by ensuring that contractually required health and safety requirements are, in fact, carried out.

MR. STUPAK: LANL has proposed shifting nuclear criticality experiments to the Device Assembly Facility (DAF) at the Nevada Test Site. Was the DAF designed for criticality work? What needs to be done to prepare the DAF to handle such work?

DR. EGGENBERGER: The DAF was not designed for criticality experiments. The DAF was designed to assemble nuclear explosive test assemblies formerly used in underground nuclear weapons testing at the Nevada Test Site. The DAF consists of bays, cells, and vaults, similar to those at the Pantex Plant, for assembling, disassembling, and storing components for nuclear explosive test assemblies. The DAF was developed to take advantage of safety and security enhancements identified over many years of assembling nuclear weapons at the Pantex Plant and the Nevada Test Site.

To continue criticality work, and other Technical Area-18 operations of Los Alamos National Laboratory, at the DAF:

- The movement of special nuclear material to the DAF must be completed.

- Construction must be completed to accommodate the critical assemblies, their instrumentation, their control rooms, and support and administrative areas.
- The Documented Safety Analysis for the criticality work, and other Technical Area-18 operations, must be completed, approved, and included in the DAF Documented Safety Analysis.
- The Technical Safety Requirements for the criticality work, and other Technical Area-18 operations, must be identified, approved, and implemented.
- The critical assemblies must be reassembled and made operational.
- The readiness for safe and secure nuclear operations must be demonstrated and verified.

The Board has previously advised NNSA on the need to prepare the DAF carefully for the proposed new missions. Before these operations commence, NNSA needs to verify the adequacy of the DAF's design and construction and ensure that safety management programs are implemented with a high degree of rigor. NNSA has, in response, committed to performing the necessary assessments and correcting any deficiencies that are found.



**Questions from the Honorable Marsha Blackburn**

**Dr. A. J. Eggenberger, Acting Chairman**

**Defense Nuclear Facilities Safety Board**

**May 5, 2005**

**Subcommittee on Oversight and Investigations**

**Hearing entitled: "A Review of Ongoing Management Concerns at Los Alamos National Laboratory"**

MS. BLACKBURN: Please describe in detail to this committee the revised schedule for stabilization of excess nuclear materials. You state that the Laboratory may not be able to meet this schedule. What penalties do they face if they do not?

DR. EGGENBERGER: In response to the Board, the Secretary of Energy provided a revised Implementation Plan (IP) and schedule for Board Recommendation 2000-1 to accelerate the stabilization of excess nuclear materials at LANL in a letter dated July 23, 2004. The principal features of the IP consist of the following:

- An improved risk ranking methodology to re-prioritize the order of materials stabilization or repackaging, thereby resulting in accelerated risk reduction. This includes a commitment to survey, prioritize, and schedule all non-TA-55 items for stabilization or repackaging by December 2005.
- A three-year acceleration in completing the stabilization of non-weapons grade materials, now due by December 2007. This generally involves stabilization and packaging of higher radiological dose rate plutonium-bearing materials to meet DOE's standard for long-term storage of plutonium (DOE-STD-3013).
- Completion of the stabilization of weapons grade materials by December 2009. This generally involves stabilization and packaging of plutonium-bearing materials to meet DOE-STD-3013.
- Completion of a process to evaluate materials for recovery or discard, based on discard approval limits and waste acceptance criteria, by December 2009.
- The addition of intermediate milestones for stabilizing and repackaging materials. Commitments have been made to complete 50 percent of the weapons grade materials, non-weapons grade materials, and recovery evaluation process by December 2006.
- A two-year delay in completing disposition of the large containment vessels, now due by December 2008. This involves removing the nuclear material from the vessels in an enclosure in the CMR Building, stabilizing and packaging or

disposing of the nuclear materials, and disposing of the empty steel vessels as transuranic or low-level waste.

Los Alamos National Laboratory managers informed the Board in a briefing on June 9, 2005, that they expect to meet all of the Recommendation 2000-1 Implementation Plan commitments except for a delay in the disposition of large containment vessels. The delay in the disposition of the large containment vessels is attributed to resource limitations and the time required to develop the safety basis for this activity. LANL has submitted a project baseline change proposal to NNSA to extend the completion due date one year until December 2009. DOE Implementation Plans for Board recommendations do not establish penalties for failure to meet milestones. DOE/NNSA can incentivize contractor performance in meeting Implementation Plan milestones through contract incentives, fees, or penalties. Although the Board has suggested such incentives for stabilization of excess nuclear materials at LANL, this has not yet been done.

MS. BLACKBURN: Please describe to the committee the implementation plan by the Secretary in light of Recommendation 2004-1. Does it establish milestones and penalties to the Laboratory for not meeting them?

DR. EGGENBERGER: Board Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*, and the public hearings leading up to it were prompted in large part by modifications proposed by DOE/NNSA to organizational structure and practices which would have resulted in shifting responsibility for safety oversight from DOE Headquarters to DOE field offices and site contractors. The Secretary's Implementation Plan focuses on strengthening Federal safety assurance, learning from internal and external operating experience such as the Space Shuttle Columbia accident, and revitalizing Integrated Safety Management implementation across the DOE nuclear complex. The Secretary's Implementation Plan sets milestones for DOE and NNSA to meet in order to strengthen and improve Federal oversight. However, the milestones and commitment dates in the Secretary's Implementation Plan are the responsibility of DOE and NNSA, not LANL.