

John T. Conway, Chairman  
A.J. Eggenberger, Vice Chairman  
Joseph J. DiNunno  
John E. Mansfield  
Jessie Hill Roberson

# DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004-2901  
(202) 694-7000

01-0000620



January 26, 2001

Mr. Richard E. Glass  
Manager  
Albuquerque Operation Office  
Department of Energy  
Pennsylvania & H Street  
Kirtland Air Force Base  
Albuquerque, NM 87116

Dear Mr. Glass:

In a letter dated March 2, 2000, the Defense Nuclear Facilities Safety Board (Board) discussed assessing and upgrading authorization basis documents across the complex as part of a continuing effort toward the implementation of Integrated Safety Management. As a follow-up, the Board's staff reviewed the development of authorization bases at selected facilities at Los Alamos National Laboratory (LANL), as well as corrective actions taken to address issues identified in a 1999 LANL self-assessment.

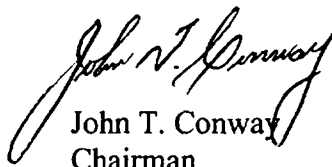
The laboratory has taken corrective actions that include formation of an Office of Authorization Basis (OAB) to provide guidance across the site in the creation and implementation of authorization bases. Although line management is ultimately responsible for authorization basis documents that support the work in a facility, as well as for implementation of the required controls, this new staff function can improve the process of performing safety analyses and ensure that their scope and content meet the Department of Energy's (DOE) requirements. It appears that LANL's actions can improve the quality of future authorization bases and can be useful in enabling the laboratory to meet the requirements of the new rule, 10 CFR Part 830, *Nuclear Safety Management*.

However, formal site-wide policy and requirements documents do not yet identify the roles, responsibilities and authorities of the OAB. In addition, as discussed in the enclosed issue report prepared by the Board's staff, changes to LANL's Laboratory Implementation Requirements are still underway to improve site-wide requirements for authorization bases and to provide guidance for safety analyses early in the design phase of construction projects. The Board considers that expediting these changes in site-wide policy and requirements documents will institutionalize the role of the new OAB and facilitate the improvement of authorization bases at LANL.

DOE responsibilities for ensuring the adequacy of authorization bases have been delegated to the Los Alamos Area Office (LAAO). Given the need to upgrade authorization basis documents at LANL, thus improving safety at the laboratory, adequate and stable resources are needed for authorization basis reviews by LAAO. The Board notes that LAAO is taking actions to enhance its technical capability in this area and encourages DOE to continue its support of this effort.

The enclosed report, which identifies some specific issues regarding Technical Area (TA)-55, is provided for your use as appropriate. In particular, the Board notes that the potential for fire spreading beyond a single glovebox needs to be further evaluated and that additional controls may be required. The Board anticipates that the issues discussed in the enclosed report will be addressed as part of the upgrading of the TA-55 Final Safety Analysis Report and Fire Hazard Analysis.

Sincerely,



John T. Conway  
Chairman

c: Mr David E. Beck  
Mr. Mark B. Whitaker, Jr.  
Dr. John C. Browne

Enclosure

## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

## Staff Issue Report

December 20, 2000

**MEMORANDUM FOR:** J. K. Fortenberry, Technical Director

**COPIES:** Board Members

**FROM:** C. Coones

**SUBJECT:** Authorization Bases at Los Alamos National Laboratory

This report documents the results of reviews conducted at Los Alamos National Laboratory (LANL) by the staff of the Defense Nuclear Facilities Safety Board (Board). These reviews focused on selected authorization bases and of corrective actions in response to a LANL self-assessment.

**Technical Area (TA)-48, Radiochemistry Facility.** Earlier this year, TA-48 was first identified as being a defense nuclear facility and at the time did not have an Authorization Agreement. LANL subsequently submitted to the Department of Energy's Los Alamos Area Office (DOE-LAAO) a Justification for Continued Operation, which was approved on August 18, 2000. LANL has drafted an interim Authorization Agreement that is expected to be approved shortly. DOE-LAAO is requiring a Basis for Interim Operation and Technical Safety Requirements documents from LANL by August 18, 2001, for the facility to continue operations beyond that date.

TA-48 currently has no fire hazard analysis (FHA), but a fire protection engineering assessment was performed for the facility in 1998. The facility has contracted with an outside engineering firm to produce an FHA by the end of this year. The staff performed a walkdown of the building to assess its fire protection. DOE-LAAO had been concerned about excessive levels of transient combustibles in the building. The staff observed that the storage of transient combustibles is now at acceptable levels in most areas. There are, however, still concerns regarding life safety egress on the first floor, where directions to exits are poor.

**TA-55 Plutonium Facility.** LANL is developing an update to its Final Safety Analysis Report (FSAR) for TA-55. The laboratory is evaluating changes needed to support manufacturing of 10 certified war reserve pits per year by fiscal year 2007. LANL believes that pit manufacturing does not significantly increase the risks identified by the existing FSAR because it already permits handling and processing of equal or greater quantities of plutonium (i.e., the plutonium limit is based primarily on criticality considerations, not throughput).

The design basis fire and its implications are not fully determined in the current FSAR and FHA for TA-55. The hazard evaluation for fires in TA-55 assumes the involvement of a single glovebox. As noted in the DOE-LAAO's Safety Evaluation Report (SER), more than one glovebox may be involved in a fire. The SER notes that transient combustible loading could result in a fire spreading between gloveboxes and therefore requires a combustible loading control program, as well as air filters that would not be destroyed in a larger fire.

Although TA-55 currently has a strict combustible control program as a result of conditions identified in the SER, combustibles are controlled on an area-wide basis. This means that although a room may meet the combustible control requirements in the Technical Safety Requirements, a large amount of combustibles may still be found between or underneath gloveboxes. This potential weakness in the combustible control program may be cause for DOE-LAAO to assess the effectiveness of the combustible control program.

The SER also identifies the potential for a fire to spread to adjacent and/or nearby gloveboxes independently of the combustibles in the area. The potential for a fire to spread without the involvement of transient combustibles exists because of the presence of thick polymethyl methacrylate (PMMA) shielding on the outside of some gloveboxes. A fire originating in a single glovebox could involve the next glovebox in the series. A fire could also potentially involve PMMA shielding on gloveboxes across the center aisle from the originating glovebox. The increased size and severity of such a fire could challenge the source term assumptions in the safety basis. Possible corrective actions for the spread of fire by igniting PMMA include coating, covering, or subdividing horizontal spans of the material with noncombustible spacers to decrease the potential for a fire to spread to adjacent gloveboxes.

Few of the recommendations in the 1995 FHA for repair or upgrade of the TA-55 facility have been completed. The recommendations include installation of a new fire alarm system, manual pull stations in the laboratories, and additional sprinklers; repair of fire barriers; and removal of combustibles from concealed areas not protected by sprinklers. Walkdown of the TA-55 facility revealed potential analytical shortcomings as well. The FHA indicates that the walls between rooms 206, 207, 208, and 209 are 2-hour-rated enclosures intended to help contain fires in their area of origin. However, the staff noted that nearly every laboratory is provided with two swinging doors to the next laboratory. Swinging doors are not fire rated and degrade the fire barrier that is assumed to be intact in the FHA and the SAR. Correction of many of these deficiencies, such as replacing doors, sealing penetrations, and removing combustibles, would be relatively inexpensive and could be accomplished rapidly.

DOE-LAAO agreed to ensure that the above issues are addressed in the updated FHA and FSAR, which are expected to be drafted by December 30, 2000.

**Corrective Actions in Response to Self-Assessment.** In 1999, LANL, with guidance from DOE-LAAO, performed a self-assessment of the development and approval of authorization bases for facilities and committed to upgrading the LANL infrastructure for authorization bases. By direction from DOE-LAAO, the assessment also addressed the

LANL–DOE interface and DOE’s performance in approving authorization bases. To improve its infrastructure for preparing and approving authorization bases, LANL created the Office of Authorization Basis (OAB) within the Facilities and Waste Operations Division. The mission of the OAB includes achieving (1) DOE authorization that will allow operations to accomplish their stated scientific and technical missions; (2) full understanding of hazards, with appropriate documentation, resulting in reasonable controls that will ensure minimal risk to workers, the public, and the environment; and (3) operating envelopes free from unnecessary restraints that add no value in the pursuit of safety goals. The Board’s staff believes the OAB can also be expected to facilitate LANL’s compliance with the new rule, 10 CFR Part 830, *Nuclear Safety Management*.

The OAB is not intended to assume line organization responsibility for managing, funding, preparing, or implementing authorization bases. The office is staffed by competent individuals who are likely to be able to accomplish its mission only if given adequate cooperation by other LANL organizations. However, site-wide policy and requirements documents, such as Laboratory Implementation Requirements (LIRs), have not yet been modified to identify the roles, responsibilities, and authorities of the OAB to all LANL employees. However, the Board’s staff understands that the OAB is revising the LIRs that address authorization bases, preparation of development guides and review criteria, and development of guidance for the use of technical methods for analyzing hazards. Once these LIRs have been finalized and issued, the OAB will be able to fulfill its intended function at LANL.

The self-assessment performed by LANL also identified the need for DOE to provide reviews by well-qualified safety analysts. The safety authorization review function at DOE-LAAO currently has a staff of seven, including the Safety Authorization Basis Manager. Most of these personnel are recent additions and need training. DOE-LAAO has recently been timely in reviewing documents but is at risk of being overwhelmed by the growing number of authorization basis documents needing review.