DEFENSE NUCLEAR FACILITIES SAFETY BOARD

625 Indiana Avenue, NW, Suite 700, Washington, D.C. 20004
(202) 208-6400

January 13, 1998

The Honorable Victor H. Reis
Assistant Secretary for Defense Programs
Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear Dr. Reis:

The Defense Nuclear Facilities Safety Board (Board) and its staff have been following the activities for resumption of work at the Chemistry and Metallurgy Research (CMR) building at the Los Alamos National Laboratory (LANL) following the self-imposed stand-down in September 1997. During a recent review at CMR, the Board's staff identified weaknesses in CMR's control of the authorization basis. Preserving the authorization basis is a vital function that must be performed if program work is to continue safely within the facility. The Board is pleased to note that the Los Alamos Area Office had already expressed many of the same deficiencies to LANL, and is taking an active role in providing capable, technical oversight of the CMR resumption efforts.

The Board commends the recent LANL decision to integrate the facility management of CMR with the Nuclear Materials Technology Division to take advantage of the lessons learned at TA-55. This action should ensure more timely and sustainable corrections of deficiencies and better control of the authorization basis.

The enclosed staff trip report is provided for your information and use. If there are any questions, please call me.

Sincerely,

John T. Conway
Chairman

c: Mr. Gene Ives
Mr. Bruce Twining
Mr. Mark B. Whitaker, Jr.
Dr. John C. Browne

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

December 19, 1997

MEMORANDUM FOR: G. W. Cunningham, Technical Director

COPIES: Board Members

FROM: M. Moury

SUBJECT: Work Authorization and Work Control Review at the Los Alamos National Laboratory (LANL) Chemistry and Metallurgy Research (CMR) Facility

This memorandum documents a review by the staff of the Defense Nuclear Facilities Safety Board (Board) of work authorization and work control at the CMR facility for facility maintenance, surveillance of Operational Safety Requirements (OSRs), and programmatic work. This review was conducted on December 9–11, 1997, by staff members M. Moury and D. Owen, with assistance from outside expert D. Boyd.

The staff found that CMR is suffering from disregard for the authorization basis (AB) that defines controls and requirements for safety-related equipment, and neglect of the physical systems, structures, and components due to a lack of maintenance and configuration control. This has significantly complicated effective work control and work authorization. There are also deficiencies with many other infrastructure systems and processes required to actively control the AB, such as the Unreviewed Safety Question (USQ), OSR surveillance, issues management, and hazard assessment and control. During the current work stand-down, LANL is making improvements in all these areas. These efforts include using compensatory actions, in many cases at the direction of the Department of Energy (DOE) Los Alamos Area Office (LAAO), to strengthen control and implementation of the AB. Additionally, there is an intensive effort to develop a Basis for Interim Operations and new Technical Safety Requirements (TSRs) for use by mid-1998.

Control of the Authorization Basis. There have been several recent occurrences and issues involving the current OSRs. They include the failure to ensure operable battery backup power for the fire-detection system; inadequate surveillance of combustible loading in the building; improper measurement of required hood air velocity; and loss of ventilation control, resulting in wing pressurization. While the CMR facility management can attribute these occurrences and issues in part to an unclear AB, inadequate attention to and ownership of the AB are also evident.

Lack of control and awareness of the AB was also evident in the staff's review of the maintenance program and the OSR surveillance program. CMR is an old facility without proper configuration control or an adequate maintenance program. A compensatory measure now requires facility management to review every maintenance work package before work is

authorized. This compensatory measure addresses weaknesses with the process for work package development and work authorization, but does not address weaknesses with the accomplishment of maintenance that may affect the AB. Examples of the latter weaknesses include the lack of detailed work procedures for maintenance on safety systems, the lack of post-maintenance testing, and the lack of formal monitoring of ongoing maintenance by facility management.

Extensive involvement by LAAO is helping to raise the facility's sensitivity to AB control. However, resolution of specific AB issues has been slow. For example, CMR has been attempting to start a plan-of-the-day (POD) meeting for more than a year without success. POD meetings are critical in facilities with many tenant and support organizations to ensure that all activities with the potential to affect the AB are controlled and communicated. This failure to resolve issues may be due in part to the lack of adequate management assessment, issues management, or feedback and improvement systems that would allow prioritization and tracking of these issues to ensure their timely correction and prevent their recurrence.

Improvements to address many of these issues are planned or in progress. In addition, several initiatives at CMR, now in various stages of development, can be expected to improve control of the AB. These initiatives include the addition of several Activity Work Supervisor positions to coordinate work in the facility, hiring of system engineers, and creation of the CMR Executive Committee to improve communications and decision making among the various CMR organizations.

Activity-Level Hazard Analysis. As part of the resumption efforts, CMR has developed a procedure for hazard analysis of proposed activities and major changes. This procedure requires use of a structured hazard analysis technique to ensure that intrinsic hazards, as well as hazards during abnormal conditions, are addressed. It has been used in preparing certain activities for resumption. For example, in preparing for resumption of the Supercritical Fluid Extraction activity, line management chose to perform a Hazard and Operability analysis with participation by safety professionals, engineering specialists, and workers. This effort resulted in an extensive, tailored set of engineering and administrative safety controls specific to this activity.

It is noted, however, that the activity approval process in the *CMR User's Guide* uses the results of a USQ screen to determine the level of required hazard analysis (full hazard analysis versus only an assessment of intrinsic hazards). While the USQ screening criterion is important in assessing potential impacts on the facility AB that will require DOE approval, it should not be the sole means for determining the level of activity-specific hazard analysis needed for a proposed activity or major change. Following discussions with the Board's staff, CMR management personnel indicated that this coupling to the USQ screening needs to be revised to ensure that appropriate hazard analysis is performed for proposed activities and major changes.

Future Staff Actions. The Board's staff plans a follow-up review in the first quarter of calendar year 1998.