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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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December 21, 1994

The Honorable Victor H. Reis
Assistant Secretary for Defense Programs
Department of Energy
Washington, D.C. 20585

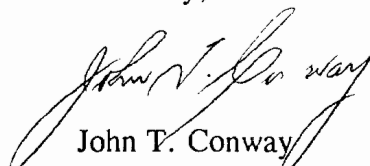
Dear Dr. Reis:

From October 5 through 7, 1994, members of the Defense Nuclear Facilities Safety Board (DNFSB) staff visited the Lawrence Livermore National Laboratory (LLNL). The DNFSB is pleased to note that the LLNL radiological control program has been generally successful and that LLNL is making progress toward compliance with Department of Energy (DOE) Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*.

However, based on DNFSB staff observations documented in the enclosed trip report, it appears that additional work needs to be done. A number of deficiencies were identified; most troubling is the fact that the Plutonium Facility still lacks equipment operating procedures for its safety systems. In addition, DOE has succeeded in getting only three Training Implementation Matrices (TIMs) approved for the six nuclear facilities planned for long-term operation at LLNL. The TIM has been fully implemented at only one of these facilities, the Tritium Facility.

Our staff will continue to monitor implementation of DOE requirements for these programs with emphasis on the follow-up actions taken by DOE with respect to the deficiencies noted in the report. Mr. Steve Krahn of the DNFSB staff will be available to provide any assistance in addressing the issues in this letter.

Sincerely,


John T. Conway
Chairman

c: The Honorable Tara O'Toole, EH-1
Mr. Mark Whitaker, EH-6
Mr. James Turner, Acting Manager, DOE-OAK

Enclosure

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

November 9, 1994

MEMORANDUM FOR: G.W. Cunningham, Technical Director**COPIES:** Board Members**FROM:** C. R. Martin, LLNL Program Manager**SUBJECT:** Status of Implementation of Department of Energy (DOE) Requirements for Radiological Protection, Formality of Operations and Training at Lawrence Livermore National Laboratory (LLNL)

1. **Purpose:** This trip report documents a review by the Defense Nuclear Facilities Safety Board (DNFSB) technical staff (Charles Martin and Wayne Andrews) of LLNL from October 6-7, 1994. This report also incorporates comments by Steve Krahn from his September 28, visit to LLNL and incorporates and updates findings from two previous DNFSB staff reviews at LLNL.
2. **Summary:**
 - a. The LLNL radiological control program has been generally successful. The Laboratory has been implementing DOE Notice 5480.6, *Radiological Control Manual* (RCM), since December of 1993, and states that they currently comply with most of the requirements; full compliance is expected by October 1, 1996. At present, the weakest area of compliance is in meeting requirements for training and recordkeeping. In addition, the lack of a robust radiological performance indicator program hampers the ability of management to monitor the effectiveness of the radiological control program.
 - b. LLNL is making progress toward compliance with DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*. Most of the nuclear facilities are currently in compliance with nearly all of the requirements; however, the Plutonium Facility is still out of compliance with about a third of them. One of the most serious deficiencies is the lack of equipment operating procedures for safety systems.
 - c. Despite the fact that DOE Order 5480.20, *Personnel Selection, Qualification, Training, and Staffing Requirements at DOE Reactor and Non-Reactor Nuclear Facilities*, was accepted into the DOE-UC contract in November 1992, DOE has succeeded in getting only three Training Implementation Matrices (TIMs) approved for the six nuclear facilities planned for long-term

operation at LLNL. The TIM has been fully implemented at only one of these facilities, the Tritium Facility (Building 331).

3. Discussion/Observations:

a. Radiological Protection:

- (1) **General:** The LLNL radiological control program has a highly-experienced and highly-qualified staff. Evidence for a generally successful program includes the fact that external doses have been steadily declining over the years. In addition, in the last five years, only three individuals have had committed effective dose equivalents of greater than 100 mrem.
- (2) **Implementation Plan:** LLNL was not contractually obligated to implement the RCM until December 2, 1993, when DOE Order 5480.11A, Change 3 was added to the DOE-University of California contract. Currently, the Laboratory claims compliance with 85% of the requirements in the RCM. The weakest area is in meeting requirements for training and recordkeeping. The implementation plan calls for full compliance by October 1, 1996.
- (3) **ALARA Program:** Individual operations are reviewed by facility operations and health physics personnel to identify potential ALARA improvements and in some cases significant exposure reductions have been realized. There is room for improvement, however. The RCM suggests 22 radiological performance indicators that could be used as metrics in a performance goals program; however, LLNL has only one radiological performance goal, to reduce the collective occupational radiation dose to 95% of the previous five year running average. The lack of a robust radiological performance indicator program hampers the ability of management to monitor the effectiveness of the ALARA program. Further, review of radiological data is the responsibility of first line supervision who, at LLNL, are not provided any formal, documented guidance.
- (4) **Documentation Controls:** Discipline Action Plans (DAP) define radiological control requirements for each facility. There is currently no formal change control system for these documents. In the future, LLNL plans to develop electronic, on-line versions to provide document control.

b. Conduct of Operations:

- (1) General: The staff was briefed that the Laboratory Executive Officer has the responsibility for independent oversight while the Associate Director for Plant Operations has line responsibility. In February of 1995, a new organizational structure will be in place with two Deputy Directors: one for Operations and one for Programs. The Deputy Director for Operations will assume overall responsibility for implementing a satisfactory style and level of conduct of operations.
- (2) Implementation Plan: DOE Order 5480.19 was added to the DOE-UC contract on December 2, 1993. At the present time, according to the Facility Manager, the Plutonium Facility is in compliance with only 69% of the requirements. The elements not yet in compliance include the following: conduct of operations training needs to be developed for managers and supervisors and policies and procedures need to be developed for independent verification, recordkeeping, equipment operating procedures, equipment and piping labeling, indirect monitoring of operating parameters, the required reading program and operator-aid postings.
- (3) Off-Shift Staffing in the Plutonium Facility: The Plutonium Facility is not manned during off-shifts and weekends. While the facility is toured about every two hours by a maintenance mechanic, this individual is not necessarily qualified to operate or perform maintenance on the building safety systems. This practice is not consistent with that of other plutonium facilities in the weapons complex. According to the facility engineer, the response times used by LLNL to justify their off-shift staffing policy have not been validated.

- c. Training and Qualification: DOE Order 5480.20 was accepted into the DOE-UC contract on November 20, 1992. Of the 11 nuclear facilities at LLNL, TIMs have been submitted for six. As of mid August 1994, DOE has approved three including the TIM for the Plutonium Facility. Two of the 11 nuclear facilities have been downgraded to non-nuclear and no longer require TIMs; three more may get downgraded in the near future. For the Plutonium Facility, the DNFSB staff was briefed that the TIM will be fully implemented by April 1, 1995; however, briefing charts presented to the staff do not show firm commitments for initial and continuing training development.

5. **Future Actions:** The staff will follow the progress of implementation of the DOE RCM and DOE Orders 5480.19 and 5480.20 at LLNL and DOE/OAK.