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## DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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October 25, 1996

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

Dear Dr. Reis:

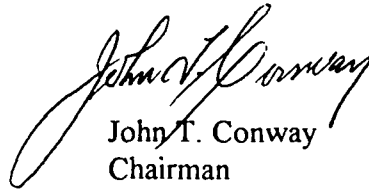
The Defense Nuclear Facilities Safety Board (Board) is encouraged by the Department of Energy's (DOE) response to the March 21, 1996, Board staff trip. The trip report brought deficiencies in the nuclear criticality safety program at Lawrence Livermore National Laboratory (LLNL) to the forefront. DOE's response, forwarded to the Board on July 23, 1996, provided a substantial corrective action program, which included a detailed assessment of criticality safety by the DOE Oakland Operations Office (OAK).

Criticality safety is a vital component of the authorization basis for facilities that handle fissionable materials. In fact, a well-defined criticality safety program provides prevention, preservation, mitigation, and management functions as described in *Fundamentals for Understanding Standards-Based Safety Management of Department of Energy Defense Nuclear Facilities* (DNFSB/TECH-5). The knowledge and understanding of criticality safety limits and personal responsibilities with respect to criticality safety are intrinsic to an effective criticality safety program. As noted in both the DOE-OAK assessment and the enclosure to your letter, one "causal factor" for the problems discussed in the Board staff trip report was "a lack of responsible attention given to the institutional criticality safety needs of the LLNL."

The Board recognizes the significant effort DOE has put forth to address these deficiencies. DOE-OAK's follow-up assessment of July 30-31, 1996, indicated that substantial progress has been made as a result of the implemented corrective actions. An August 12-14, 1996, review by the Board staff revealed progress in some areas of deficiency, with the notable exception of conduct of operations (see enclosed summary).

The Board acknowledges the corrective actions initiated; however, rigor in the management of institutional criticality safety at LLNL must be maintained to preclude a recurrence of the root cause deficiencies cited in your letter. The Board would be interested in being advised of your ongoing actions in this area.

Sincerely,



John T. Conway  
Chairman

c: Mr. Mark B. Whitaker, Jr.  
Dr. James Turner  
Mr. Victor Stello, Jr.

Enclosure

## Enclosure

### Summary of Defense Nuclear Facilities Safety Board Staff Trip, August 12-14, 1996

The Defense Nuclear Facilities Safety Board (Board) staff reviewed several areas—one of which was criticality safety. Among others, some discussions were held regarding the status of corrective actions taken in response to the Department of Energy Oakland Operations (DOE-OAK) assessment of criticality safety (April 2-May 3, 1996). The meetings were attended by appropriate Lawrence Livermore National Laboratory (LLNL) and DOE-OAK personnel.

Criticality safety has received significant management attention as a result of the Board staff trip report (March 21, 1996) and the subsequent DOE-OAK assessment (April 22-May 3, 1996). LLNL management has developed a new awareness of criticality safety and has taken positive actions to rectify the deficiencies previously cited. However, it remains to be seen if these actions will affect the awareness of the operators on the floor.

Previously, operators have displayed a lack of initiative to stop work and resolve discrepancies; specifically, discrepancies between posted mass limits and Operational Safety Procedure mass limits. This behavior was again demonstrated during the review. An operator presented  $X$  as the quantity of fissionable material in the room. The value was obtained from a hand calculation performed earlier by the room supervisor, not the operator. After further discussion and prompting, the operator stated he "knew by word of mouth (from the room supervisor)" that the room total was  $Y$ , a value several kilograms greater than  $X$ . Both the operator and the room supervisor failed to note this discrepancy and take appropriate actions.

The lack of sensitivity to the need for rigorous compliance with criticality safety limits is a concern from the standpoints of criticality safety and conduct of operations. It appears that an emphasis on proper implementation of criticality safety limits is required.