DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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August 7, 2003

The Honorable Spencer Abraham
Secretary of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Abraham:

For a number of years, the Defense Nuclear Facilities Safety Board (Board) has emphasized the need for a sustained and significant commitment to nuclear criticality safety. The Board has stressed the value of proactive rather than reactive initiatives as key elements in the enhancement of nuclear criticality safety throughout the Department of Energy's (DOE) defense nuclear complex. The Board formally communicated its concerns regarding criticality safety in Recommendation 97-2, *Continuation of Criticality Safety at Defense Nuclear Facilities in the Department of Energy*.

The Board is satisfied with DOE's progress on the Implementation Plan for Recommendation 97-2, and views closure of the recommendation to be appropriate. The Board is closing Recommendation 97-2 because the specific actions outlined in DOE's Implementation Plan have been completed. Through these actions DOE has significantly enhanced its Nuclear Criticality Safety Program. However, the Board remains concerned with the endurance of these enhancements.

In particular, the Board is concerned about DOE's ability to continue conducting criticality experiments, which are essential to maintaining analytical capabilities within the Nuclear Criticality Safety Program. Senior DOE Management must ensure that this experiment capability remains viable. If the proposed relocation of the Los Alamos Critical Experiments Facility is pursued, it must be orchestrated carefully to minimize any disruption in DOE's ability to conduct these experiments.

The Board is also concerned with the quality of the training and qualification programs for criticality safety engineers, as well as levels of staffing at each site. For example, Los Alamos National Laboratory and Sandia National Laboratory do not have approved contractor training and qualification plans. In addition, DOE has been slow to fill key positions for federal criticality safety engineers at the Los Alamos Site Office. These shortcomings must be addressed aggressively if the progress achieved in DOE's Nuclear Criticality Safety Program is to be preserved.

As discussed in the Board's technical report *Criticality Safety at Department of Energy Defense Nuclear Facilities* (DNFSB/TECH-29), DOE and its contractors must continue to ensure that criticality safety engineers are aware of the day-to-day operations in their facilities. This is a key component of Integrated Safety Management, as familiarity with daily operations and processes is crucial to the criticality safety engineers' involvement in the identification and analysis of hazards, the development of controls, and the feedback and improvement process.

The recently developed DOE standard *Self-Assessment Standard for DOE Contractor Criticality Safety Programs* (DOE-STD-1158-2002) provides guidance for formal and rigorous contractor self-assessments, but limited data exist regarding the standard's application. The Board is concerned that DOE is not aggressively reviewing these self-assessments to ensure that all contractors are meeting the intent of the standard. Further, the Board wishes to emphasize that DOE must maintain strong oversight of nuclear criticality safety at all sites. This oversight should include establishing a requirement for DOE-Headquarters personnel to conduct periodic trending and analysis of nonreportable, as well as reportable, criticality-related occurrences across the complex, using data collected by each site.

More generally, the Board continues to monitor closely DOE's management of the Nuclear Criticality Safety Program, including the apparent difficulties DOE has experienced in maintaining stable funding for the program. It is essential that responsibility and accountability for the management and funding of this cross-cutting program, which affects all of DOE's nuclear programs, remain at the most senior management levels, ensuring that the program will remain vigorous.

Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board hereby establishes an annual reporting requirement on the status of DOE's Nuclear Criticality Safety Program. The first annual report will be due within 1 month of the close of this calendar year. The enclosure to this letter provides an outline of the specific aspects of nuclear criticality safety that each annual report should address, at a minimum. In addition to these items, the first annual report should include the results of a comprehensive review of the effectiveness of the actions DOE has taken to improve nuclear criticality safety in response to Recommendation 97-2, DNFSB/TECH-29, and the Board's letter of July 20, 2001, with particular attention to whether these improvements have been institutionalized within the Nuclear Criticality Safety Program.

Sincerely,

John T. Conway
Chairman

c: Mr. David H. Crandall
Mr. Mark B. Whitaker, Jr.

Enclosure

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Specific Subjects to be Addressed in the
Department of Energy's Annual Reports on Nuclear Criticality Safety

The Department of Energy's (DOE) annual reports on nuclear criticality safety should address, at a minimum, the following items:

- Updates to DOE's 5-year Nuclear Criticality Safety Program Plan, including the status of individual projects in the program.

- The status of actual and projected funding for nuclear criticality safety activities.

- The status of DOE's capability to conduct criticality experiments and a summary of any new results obtained during the past year. In particular, until it is completed, DOE should provide explicit details regarding the proposed relocation of Los Alamos National Laboratory Technical Area-18 capabilities and materials.

- The status of the contractor nuclear criticality safety engineer programs at each site, including staffing levels, plans to address vacancies, interim compensatory measures, and progress on training and qualification.

- The status of the federal nuclear criticality safety engineer programs at each site, including staffing levels, plans to address vacancies, interim compensatory measures, and progress on training and qualification.

- A summary of the results and any lessons learned from contractor and federal assessments of criticality safety conducted throughout the year. This summary should highlight such factors as the quality of contractor self-assessments, the adequacy of criticality safety evaluations, and the consistency of sites' nuclear criticality safety programs.

- A summary of the results and any lessons learned from contractor, federal, or Nuclear Criticality Safety Support Group (NCSSG) reviews of proposed nuclear criticality safety controls for new facility designs.

- A summary of the results of trending and analysis of each site's reportable and nonreportable occurrences related to criticality, as conducted by personnel from DOE-Headquarters or the NCSSG.

- The status of open issues identified in the previous year's annual report.