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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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February 3, 1995

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

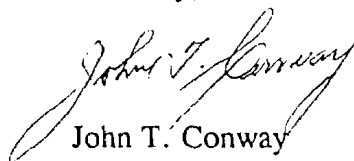
Dear Dr. Reis:

On December 8, 1993, the Defense Nuclear Facilities Safety Board (Board) issued a reporting requirement that called for an independent review of the Defense Programs' nuclear explosive safety study (NESS) process. The Board received the report of the independent review team on May 6, 1994. The Board continues to follow the Department of Energy's efforts to correct the deficiencies identified by the independent review, that are being integrated with activities associated with implementation of the Board's Recommendation 93-1, *Standards Utilization in Defense Nuclear Facilities*.

Throughout 1994, the Board's staff has observed a majority of the NESS meetings for operations at both the Pantex Plant and at the Nevada Test Site. The enclosed report, which includes the staff's observations from five NESS meetings, is provided for your information and use. As can be seen, significant progress has been made in enhancing the NESS process in the last year; however, much still needs to be done.

If you have any questions, or would like to discuss this matter further, please call me or have your staff call Mr. Steve Krahn, (202) 208-6585.

Sincerely,


John T. Conway
Chairman

c: Mr. Mark Whitaker, EH-6
Mr. Bruce Twining, ALOO Manager
Mr. Robert M. Nelson, Jr., NVOO Manager

Enclosure

**Observations of 1994 Nuclear Explosive Safety Studies (NESS)
and Nuclear Explosive Risk Assessments (NERA)**

1. **Purpose:** This report provides the comments of Defense Nuclear Facilities Safety Board (DNFSB) staff reviews of five 1994 Nuclear Explosive Safety Study Group (NESSG) meetings, including the NTS FORTUNE NESS (March 29-31, 1994); the Pantex W87 Rebuild NESS (August 16-19, 1994); the NTS Nuclear Explosive Risk Assessment (NERA) for the Lawrence Livermore National Laboratory (LLNL) Arming & Firing and Timing & Control (A&F/T&C) System (August 22-24, 1994), the NTS Security Operations NESS Master Study update (September 6-9, 1994); and the W-48 Pumpout and Dissolution NESS (November 1-4, 1994).
2. **Background:** Requirements for conducting NESSs are contained in Department of Energy (DOE) Order 5610.11, *Nuclear Explosive Safety*. The DNFSB issued a letter to DOE on December 8, 1993 that identified several apparent weaknesses in the NESS process and that requested DOE to conduct an independent review and to provide a report on the review team's assessment of the NESS process. On February 22, 1994, while the independent review was still in process, DOE (DP-20) issued interim guidance on conducting NESSs. The independent review team report was provided to the Board on May 6, 1994, and the DOE corrective action plan for the NESS process was provided to the Board on June 15, 1994. This report provides a compilation of the DNFSB staff's evaluation of several recent NESSs against the above identified documents.
3. **Summary:** General comments applicable to all studies are included below.
 - a. Areas of Noted Improvement:
 - 1) Most of the NESSG meetings observed included additional personnel under instruction learning about NESS activities.
 - 2) All NESSGs had access to independent technical advisors to provide specific expertise on issues evaluated during the reviews.
 - 3) The input documents were of significantly higher quality than those reviewed by the staff for NESSs that occurred prior to issuance of the Board's December 8, 1993, letter. There were still, however, both process and technical problems with some aspects of the documents, as described below.

b. Areas Requiring Continued Improvement: The DNFSB staff observed the following areas of apparent deficiency, including several that were previously noted in the Board's December 8, 1993, letter on the NESS process:

- 1) Adequate guidance still does not appear to exist on the implementation of the plutonium dispersal safety standard, the use of quantitative risk assessment, and the integration of the NESS process with the overall evaluation of operational safety (including the appropriate scope of the NESS itself). The staff's observations indicate that there is still significant confusion over the intended objectives and use of NERAs, including their proper integration with the traditional NESS evaluation.
- 2) The actual execution of the NESS process (i.e., the preparation of the input document, the presentation of briefing materials, the evaluations of the individual NESSG members, the NESSG's deliberations, and the NESS report preparation), as observed, still reflects a lack of general agreement over what is necessary and sufficient to yield an appropriate analysis and documentation of all relevant risks.
- 3) Improvement in the quality and focus of input documents still appears to be needed, including upgrading/revalidation of historical reference documents. The trend is for input documents to contain much greater detail. However, it appears that not all of the presently included material is necessarily relevant, which may actually detract from the ability of the NESSG members to complete their independent safety evaluation in a timely fashion.
- 4) The NESSG still does not appear to have a mechanism for the complete follow-through that would be expected of a thorough, independent safety evaluation. The "positive measures" identified as ensuring nuclear explosive safety are not always reviewed for adequacy; closure of NESS findings is not always tracked, even for the Master Studies that are intended to serve as part of the approval basis for future studies.
- 5) The respective responsibilities and authorities of the NESSG Chairman and members still do not seem to be clearly defined or understood. Instances of "advocacy," rather than "independence," were still observed. Chairmen were sometimes observed to: act as defenders of briefers' technical positions, discourage dissent, and "rule" that requests for additional technical information would not be met. One LANL NESSG member was observed to suggest that he would challenge a long-standing LLNL practice in a future NESS if the LLNL NESSG member continued to challenge a long-standing LANL practice during the current review.