DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 10, 2007

The Honorable William C. Ostendorff
Acting Administrator
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear Mr. Ostendorff:

The Defense Nuclear Facilities Safety Board (Board) received a letter from the Assistant Deputy Administrator for Military Application and Stockpile Operations on March 13, 2007, reporting completion of the three remaining commitments listed in Revision 1 to the Department of Energy's (DOE's) Implementation Plan for the Board's Recommendation 98-2, *Safety Management at the Pantex Plant*. The Board recognizes DOE's efforts to improve the quality and consistency of the process by which the design agencies develop and provide safety-related information to the Pantex Plant (Commitment 4.2.2), and to implement a Seamless Safety for the 21st Century process for a weapon system with an insensitive main charge high explosive (Commitment 4.4.6). The third open commitment (Commitment 4.5.1), which states that DOE will provide an assessment of actions taken in response to Recommendation 98-2, was covered in a Final Assessment Report attached to DOE's letter. This report does not meet the Board's expectations for the completion of Commitment 4.5.1, as described below.

In a December 15, 2006, letter to the National Nuclear Security Administration (NNSA), the Board requested that the Final Assessment Report include NNSA's plans and criteria for review and approval of the design agencies' expert elicitation, expert judgement, and peer review processes as specified in DOE-NA-STD-3016-2006, *Hazard Analysis Reports for Nuclear Explosive Operations*. The Final Assessment Report expresses NNSA's intent to evaluate the implementation of the revised standard within 6 months of a determination that its implementation has occurred. The report does not provide the key information requested in the Board's letter, namely, a description of the review plan that includes criteria NNSA will use to judge the adequacy of critical design agency processes for use in the development and documentation of weapon response information for Pantex.

The Board has learned that Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory, and Sandia National Laboratories do not plan to implement an expert elicitation process as described in the revised DOE-STD-3016. The Board disagrees with this path forward and questions whether DOE-STD-3016 is in fact being implemented. In

developing and evaluating weapon response information, the design agencies will render technical judgements that warrant the use of a more formalized and rigorous expert elicitation process. The revised DOE-STD-3016 states that the use of expert elicitation should be considered in the following situations, derived from nuclear industry standards:

- Empirical data are not reasonably obtainable or the analyses are not practical to perform.
- Multiple diverse sources of applicable data must be assessed.
- Uncertainties are large or significant.
- Technical judgements are required to assess whether calculations are appropriately conservative.
- Source data include the use of unpublished, unreviewed, or draft information.

As an example of the need for expert elicitation, the first and fourth items listed above were applicable to a recent Information Engineering Release (IER) from LLNL to the Pantex Plant on indirect lightning hazards. In an attempt to clarify a preliminary analysis by Sandia National Laboratories that calls into question the adequacy of the existing lightning protection scheme at Pantex, the IER states: "...it is premature to interpret this analysis as being actionable for Pantex." Consequently, no immediate action was required by Pantex to address indirect lightning hazards. LLNL personnel stated that this determination was based on its experience and expert judgement and did not attempt to resolve differences in technical judgement with Sandia National Laboratories. In the judgement of the Board, this is precisely the type of scenario where an expert elicitation process would provide the most benefit.

Additionally, during its recent visit to LLNL, the Board found that NNSA has not succeeded in communicating expectations to its field elements regarding the requirement for NNSA review and approval of design agency processes described in the revised standard. LLNL plans to implement the revised standard through upgrades to its Quality Implementing Guidelines, which are action elements of the LLNL Nuclear Weapons Program Quality Assurance Plan. These guidelines are not formally reviewed or approved by NNSA or its site office, and their use as an implementation medium would therefore not comply with the requirements specified in the revised standard for NNSA approval of expert elicitation, expert judgement, and peer review processes used in developing weapon response information.

In a briefing to the Board on April 17, 2007, NNSA representatives agreed that there are circumstances in which the use of an expert elicitation process by the design agencies would be appropriate to ensure the adequacy of weapon response information. The NNSA representatives

further stated that NNSA planned to convene a workshop in the coming months in an effort to clarify implementation of the revised DOE-STD-3016 and communicate NNSA's expectations to the design agencies. The Board believes it would be advantageous for NNSA to articulate its expectations in advance of the proposed workshop.

The Board still requires the information requested in its letter of December 15, 2006. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report providing the following information within 30 days of receipt of this letter:

1. Clarification of NNSA's expectations for the implementation of expert elicitation, expert judgement, and peer review processes by the design agencies in accordance with the revised DOE-STD-3016.

2. NNSA's plans and criteria for review and approval of the design agencies' processes for expert elicitation, expert judgement, and peer review by NNSA's field elements and NNSA headquarters.

3. NNSA's schedule for implementation of the revised DOE-STD-3016.

Sincerely,

A. J. Eggenberger
Chairman

c: The Honorable Thomas P. D'Agostino
Mr. Mark B. Whitaker, Jr.