DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 12, 2010

The Honorable Inés R. Triay
Assistant Secretary for Environmental Management
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0113

Dear Dr. Triay:

The Defense Nuclear Facilities Safety Board (Board) appreciates the briefing your office arranged on the activities of the Independent Review Team, chartered by Bechtel National, Incorporated (BNI) to review the design criteria and implementation methods for evaluating postulated hydrogen deflagrations and detonations in piping and ancillary vessels in the Pretreatment facility (PTF) of the Hanford Waste Treatment and Immobilization Plant (WTP). The briefing revealed a number of weaknesses that will diminish the value of this critical review. Therefore, we are providing these comments to the Department of Energy (DOE) Office of Environmental Management.

As presented, the review team's charter (Revision 1, dated April 27, 2010) states "the review is to provide added assurance that the criteria and methods provide a technically defensible, conservative approach to ensure the safety and reliability of the PTF design." This review has the potential to greatly assist DOE and BNI in establishing a sound basis for hazard controls in WTP. Based on the briefing, however, the Board believes that DOE should seek to strengthen the review's emphasis on safety and to ensure that it delves into BNI's final criteria and methods in sufficient detail.

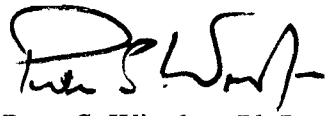
The charter directs the review team to answer specific questions regarding (1) assurance that a hydrogen event would not interfere with safety functions of systems, structures, and components; (2) assurance that a hydrogen event would not significantly affect the duration of WTP's mission; and (3) the effects of other flammable species that might exist at WTP. Based on the briefing, it appears to the Board that the review team is interpreting this direction to mean that it has already been demonstrated (e.g., DOE has issued a Safety Evaluation Report) that there is no public or worker safety issue, and that the review team's objective is to establish whether a hydrogen event could impair WTP's operability. The Board's concerns extend beyond operability. The scope of the review should emphasize an evaluation of whether the technical bases for the design approach and acceptance criteria are technically sound and robust,

and that they achieve DOE's safety objectives. This includes evaluation of the unique analytical methodologies specified to develop the response of piping and components to a hydrogen deflagration or detonation, the testing accomplished to support the design, testing plans to qualify piping and components, and the quantitative risk analysis. Further, the review team should come to its own conclusions on whether explosions that permanently deform or burst process piping and components represent a safety issue, and not interpret DOE's Safety Evaluation Report as a de facto input condition.

The charter establishes a schedule that shows the team reviewing its final draft report on June 22–25, 2010. The briefing made it clear that the review team is focused on meeting its schedule. The Board believes this will be difficult to accomplish with high quality on a compressed schedule. The review team has a vast amount of information to read and evaluate, which itself presents a challenge. More problematic, however, is the fact that BNI significantly revised the criteria and methods that the review team is set to review more than a week after the review was initiated. It is unclear if this will be the last revision of the criteria. The team should review the final criteria and methods and not rely on verbal discussions or partially completed work. The review team should provide final conclusions only after thorough consideration of BNI's final criteria and methods.

The Board believes preserving the independence of the review team is paramount. The committee's final product would be enhanced, however, if the review met the charter's original intent, which focused on both safety and reliability, and if the schedule provided adequate time to account for the magnitude and complexity of the documentation supporting the safety design strategy.

Sincerely,



Peter S. Winokur, Ph.D.
Chairman

c: Ms. Shirley J. Olinger
Mr. Andrew Wallo III