DEFENSE NUCLEAR FACILITIES SAFETY BOARD

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May 2, 2005

Mr. Thomas P. D'Agostino
Acting Deputy Administrator for Defense Programs
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear Mr. D'Agostino:

Recent events during nuclear explosive operations at the Pantex Plant, described in the enclosure, indicate continuing deficiencies in the conduct of operations at Pantex. Department of Energy (DOE) Order 5480.19, *Conduct of Operations Requirements for DOE Facilities*, requires that "operations at DOE facilities be conducted in a manner to assure an acceptable level of safety." The significant reliance on operator actions to implement both administrative and engineered (i.e., tooling) safety controls at Pantex necessitates strict compliance with conduct of operations requirements.

On several occasions, the Defense Nuclear Facilities Safety Board (Board) has identified the essential role that conduct of operations plays in ensuring the safety of nuclear explosive activities. The Board noted in DNFSB/Tech-6, *Safety Management and Conduct of Operations at the Department of Energy's Defense Nuclear Facilities*, that "the most intensive application of the concept would be found at the more hazardous facilities subject to the more repetitive types of activities." Many Pantex nuclear explosive operations meet these criteria. In an October 2001 letter to DOE, the Board documented concerns with conduct of operations at Pantex; specifically, procedural compliance. Subsequent evaluations have indicated improvement in conduct of operations; however, the recent events at the Pantex Plant have renewed the Board's concern. These events include misinterpreting operational conditions, a critical procedural step being misread, improper removal of tooling from a unit, tooling being installed backward, and technicians operating tooling in an inappropriate manner, as detailed in the enclosure. In addition to the immediate hazards encountered during these events, operational errors created new hazards and resulted in the need for recovery actions that were not initially analyzed. These examples of questionable judgment and not adhering to work procedures indicate that an enhanced level of rigor is needed.

The threshold for accepting operational errors at Pantex should necessarily be exceedingly low. The Board believes, based on the complexity of the operations and the consequences of improper execution associated with nuclear explosive operations, the conduct of

operations at Pantex must meet the highest standards achievable. Pursuant to 42 U.S.C. § 2286b(d), the Board requests a briefing within 30 days of receipt of this letter on the National Nuclear Security Administration's path forward to improve conduct of operations at the Pantex Plant.

Sincerely,

A. J. Eggenberger
Acting Chairman

c: Mr. Daniel E. Glenn
Mr. Mark B. Whitaker, Jr.

Enclosure

Enclosure

Recent Operational Events at Pantex Plant

The following paragraphs provide additional details on recent events at the Pantex Plant:

W76 Cell Operations, March 30, 2005—During disassembly operations, production technicians incorrectly determined that the midcase had begun to separate from the unit. The production technicians performed subsequent procedural steps during which the unit separated at an undesired location and a critical electrical component was inadvertently severed. After the unit had been lowered and put in a safe and stable configuration, the process engineer observed that the "telltale" needle on the force gauge for the tooling was reading higher than allowed per procedure. It was later determined that the force applied to the main charge high explosive potentially exceeded the "maximum allowed force" described in the approved authorization basis. The configuration of the unit resulted in a positive unreviewed safety question determination and was outside the scope of previous nuclear explosive safety studies. BWXT-Pantex developed and received site office approval for a Justification for Continued Operations and a Nuclear Explosive Engineering Procedure that detailed the proposed path forward. In addition, a Nuclear Explosive Safety Change Evaluation was performed to assess the proposed path forward.

W76 Cell Operations, April 26, 2005—During disassembly operations intended to recover from the anomaly described above, a safety feature of the tooling prevented production technicians from applying the maximum force allowed per procedure to the high explosive main charge. The production technician supervisor directed the production technicians to apply a quick force on a jackscrew in an attempt to bypass the safety feature and apply the maximum force allowed per procedure. The force was applied in an abrupt motion, and the force gauge showed that the maximum procedurally allowable force was exceeded by 350 pounds. BWXT-Pantex did not suspend operations and place the nuclear explosive device in a safe and stable configuration until nearly three hours later. Potential contributing factors to the event include the supervisor directing the production technicians to perform the operation in a non-standard and unpracticed way, the lack of a questioning attitude on the part of the production technicians when directed to perform an activity in an unusual manner, and the failure to inform the tooling engineer, who was observing the operation, that the tooling would be cycled in the abrupt manner described.

W56 Cell Operations, April 11, 2005—During dismantlement operations, a procedural step was misread, and production technicians subsequently removed the wrong piece of tooling from a unit. Upon recognizing the error, the unit was lowered and covered until a backout procedure could be developed. Potential contributing factors to this event include a poor shift turnover between technicians, inattention to detail and lack of awareness of the unit's configuration, lack of a questioning attitude by the technicians when an unexpected condition arose, and starting a section of the procedure near the end of a shift.

W78 Bay Operations, April 12, 2005—Production technicians incorrectly installed a lifting and rotating fixture into an assembly cart. A unit was installed into the lifting and rotating fixture, and production technicians were unable to transfer the unit from the assembly cart to the transportation cart. BWXT-Pantex subsequently suspended disassembly operations. To recover, a hoist was used to lift the unit from the lifting and rotating fixture in order to reorient the fixture into the assembly cart.