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**DEFENSE NUCLEAR FACILITIES  
SAFETY BOARD**

Washington, DC 20004-2901



April 30, 2014

The Honorable Frank G. Klotz  
Administrator  
National Nuclear Security Administration  
U.S. Department of Energy  
1000 Independence Avenue, SW  
Washington, DC 20585-0701

Dear Administrator Klotz:

The Defense Nuclear Facilities Safety Board (Board) closely followed the National Nuclear Security Administration's (NNSA) efforts that recently culminated in the award of a joint Management and Operating (M&O) contract for the Pantex Plant (Pantex) and Y-12 National Security Complex (Y-12). The transition period for the new M&O contract is a time of significant change that requires rigorous field-based oversight by NNSA and the M&O contractor organizations. The enclosures to this letter outline specific areas that would benefit from increased management attention during the transition period and as the new M&O contractor begins operations. Ongoing safety programs and improvement initiatives related to these areas should continue without interruption.

In keeping with our desire to support your own leadership transition and to foster a productive working relationship, the Board will soon send separate correspondence to highlight our highest priority areas of concern at the other NNSA defense nuclear facilities.

Sincerely,

Peter S. Winokur, Ph.D.  
Chairman

Enclosures

c: Mr. Steven C. Erhart  
Mr. John R. Eschenberg  
Mrs. Mari-Jo Campagnone

## **Enclosure 1**

### **Y-12 National Security Complex Focus Areas**

**Aging Infrastructure.** In a March 13, 2007, letter to the National Nuclear Security Administration (NNSA), the Defense Nuclear Facilities Safety Board (Board) identified concerns regarding the risk of continued operations in the 9212 Complex at the Y-12 National Security Complex (Y-12). This letter established a reporting requirement for NNSA to provide an annual report and briefing to the Board on both the progress toward completion of the Uranium Processing Facility (UPF) project and the results of an annual assessment of the 9212 Complex. In 2013, NNSA expanded this reporting requirement to include Buildings 9215 and 9204-2E. This reporting requirement remains open.

Babcock and Wilcox Technical Services Y-12, LLC (B&W Y-12), instituted a number of mechanisms to assess and reduce the risk of continued operations in aging facilities, primarily focused on reducing material-at-risk and performing practical facility modifications. In support of these efforts, B&W Y-12 instituted the Continued Safe Operability Oversight Team, which is providing effective oversight of the site's aging management program. However, recent NNSA management decisions have delayed replacement of the capabilities located in the 9212 Complex, Building 9215, and Building 9204-2E for years beyond original projections. These delays will require continued efforts to mature and implement a robust aging management program for the indefinite future. Clearly, as the facilities approach end-of-life, important decisions will need to be made about the feasibility of continued safe operations.

**Conduct of Operations.** In an August 25, 2011, letter to NNSA, the Board identified issues with technical procedures and the implementation of Conduct of Operations principles during nuclear operations. NNSA and B&W Y-12 took effective actions within the Production organization to address these issues. However, continuous management emphasis is required to prevent recurrence of past problems.

**Work Planning and Control.** In a December 29, 2011, letter to NNSA, the Board identified issues with work package development and maintenance execution. NNSA and B&W Y-12 took corrective actions in the Facilities, Infrastructure, and Services organization. Some improvement has been noted, but shortcomings in some elements of work planning and control performance persist. Further efforts to improve work planning and control are necessary.

**Contractor Assurance System.** During the Board's December 10, 2013, public hearing, B&W Y-12 management provided testimony regarding weaknesses identified during an August 2012 Contractor Assurance System Effectiveness Review. The review team found implementation weaknesses in each of the Contractor Assurance System program elements but, most importantly, found that the program did not consistently support a critical self-assessment process. The Board encourages NNSA to evaluate the effectiveness of the new Management and Operating (M&O) contractor's Contractor Assurance System, especially with regard to supporting critical self-assessment.

**Training.** In a June 5, 2012, letter to the NNSA Production Office, the Board identified a number of areas for improvement related to the implementation of Y-12's training program.

Subsequently, B&W Y-12 began a pilot program to implement a more rigorous continuing training program in the Production organization. Additional efforts are necessary to provide the continuing training foundation needed to support continued performance gains in both Conduct of Operations and Work Planning and Control.

**Emergency Preparedness and Response.** During the Board's December 10, 2013, public hearing, NNSA and B&W Y-12 management discussed plans to improve the analysis of severe events, identify needed capabilities for responding to events that simultaneously impact multiple facilities, exercise site-wide capabilities to respond to severe events, and address known vulnerabilities in emergency response facilities. NNSA and M&O contractor management follow-through on these plans is required to assure an appropriate response capability is in place.

**Uranium Processing Facility.** In an August 26, 2013, letter to NNSA, the Board identified the need for NNSA to take additional action to improve the integration of safety into the UPF design. In response, NNSA laid out a path forward for each issue identified in the Board's letter leading to adequate resolution. Additionally, the Board identified an issue related to structural modeling assumptions in a September 6, 2012, letter to NNSA. The project established an improved process for identifying and validating structural modeling assumptions and design techniques.

NNSA has subsequently initiated efforts to develop alternatives to the full-scope UPF project. Many improvements made to integrate safety into the full-scope UPF design will apply when designing whatever alternative is pursued, and should be carried forward.

## **Enclosure 2 Pantex Plant Focus Areas**

**Safety Culture.** During the Defense Nuclear Facilities Safety Board's (Board) March 14, 2013, public hearing, National Nuclear Security Agency (NNSA) and Babcock & Wilcox Technical Services Pantex, LLC (B&W Pantex) management discussed plans to improve the safety culture at the Pantex Plant (Pantex). NNSA has completed self-assessments of its organizational safety culture that found a weak safety culture throughout the NNSA weapon production complex. The assessments also identified several concerns regarding the NNSA Production Office (NPO), in particular at the management level. B&W Pantex had previously found significant safety culture issues specific to the Nuclear Explosive and Surety Department that affected the ability to raise safety issues. A strong, positive safety culture is necessary to ensure the safety of ongoing operations of defense nuclear facilities at Pantex.

**Conduct of Operations.** In September 2012, NPO issued a letter to B&W Pantex, expressing concern with a downward trend in formality of operations. In support of this concern, NPO identified four events involving "tasks that should be exceedingly basic and deeply ingrained in the work habits of personnel performing Nuclear Explosive Operations." The Board has also noted several recent events that indicate continued weakness in the conduct of operations at Pantex. Senior management within NPO and the new Management and Operating (M&O) contractor should pay significant attention to this issue during contract transition.

**Fire Protection Systems.** In a February 25, 2013, letter to NNSA, the Board expressed concern regarding the aging fire protection systems at Pantex, including the high pressure fire loop (HPFL), the lead-ins, and the fire detection and alarm system. While NNSA and B&W Pantex have briefed the Board and the reporting requirement has been fulfilled, the condition of the fire protection systems remains a significant concern. In the past month there have been failures in both the HPFL and a lead-in, as well as an event involving a trouble signal from a fire alarm control panel. Continued progress on the ongoing fire protection systems upgrade projects must be made. If at all possible, the slow pace of the upgrade projects should be accelerated.

**Documented Safety Analysis.** In a July 6, 2010, letter to NNSA, the Board identified deficiencies in the implementation of Department of Energy (DOE) Standard DOE-NA-STD-3016-2006, *Hazard Analysis Reports for Nuclear Explosive Operations*, at Pantex. For example, Hazard Analysis Reports and Safety Analysis Reports inappropriately considered initiating event probabilities as a basis for screening hazards from further analysis, and single failure faults were not considered in control set analyses. Although B&W Pantex developed a Documented Safety Analysis Improvement Plan, insufficient action has been taken to fully resolve the Board's concerns. The issues raised in the letter should be addressed to ensure the new M&O contractor identifies and maintains an adequate control set for ongoing nuclear explosive operations.

**Falling Man and Safety-Class Tooling Analysis.** The Board's July 6, 2010, letter also identified concerns regarding non-conservative assumptions used in the Pantex falling man analysis and the controls used to mitigate this event. Recently, the Approved Equipment Program Nuclear Explosive Safety Master Study (AEPMS), Special Tooling Module, identified additional non-conservative assumptions in the analysis, reaffirming and expanding on the issues



raised in the Board's 2010 letter. B&W Pantex has contracted for a study by Virginia Polytechnic Institute and State University that is expected to provide a basis for a more bounding falling man model. The Board will evaluate how NNSA and the new M&O contractor apply the study results to ensure the safety of nuclear explosive operations at Pantex. Additionally, the Board will evaluate how NNSA and the new M&O contractor apply the results of the top-down review of the Special Tooling Program directed by the Assistant Deputy Administrator for Stockpile Management in his August 14, 2013, AEPMS approval memorandum.

**Emergency Preparedness and Response.** During the Board's March 14, 2013, public hearing, NNSA and B&W Pantex discussed plans to improve their emergency management programs and oversight of these programs, through more rigorous evaluations of past and future exercises, and the completion of more challenging site-wide exercises, including those that continue into the recovery phase. Since the public hearing, Pantex completed one exercise, though this exercise did not demonstrate the full capabilities of the Emergency Management Department. NNSA and B&W Pantex have not yet completed all of the planned actions discussed above. More management attention is required.