Peter S. Winokur, Chairman
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

November 7, 2011

The Honorable Donald L. Cook
Deputy Administrator for Defense Programs
National Nuclear Security Administration
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-0104

Dear Mr. Cook:

The Defense Nuclear Facilities Safety Board (Board) continues to monitor the processes for identifying and correcting nuclear explosive safety (NES) issues at the Pantex Plant. The Board believes the tracking and closure process for NES findings and senior technical advisor (STA) comments at the Pantex Plant does not adequately meet the intent of Department of Energy (DOE) Manual 452.2-2, *Nuclear Explosive Safety Evaluation Processes*. These weaknesses lead to NES issues not being fully addressed in a clear and efficient manner.

In a letter to the National Nuclear Security Administration (NNSA) dated December 16, 2008, the Board expressed concern that it had become a routine occurrence for the Nuclear Explosive Safety Study Groups (NESSGs), the Pantex Site Office (PXSO), and the Assistant Deputy Administrator for Stockpile Management (NA-12) to disagree on the identification of NES deficiencies and categorization of the corresponding findings. In response to this concern, the NNSA NES Division developed and refined a set of criteria to assist the NESSGs with determining if issues were NES deficiencies and, if they were, with categorizing the corresponding findings. A recent staff review found that, although the NESSGs have been using these criteria to evaluate issues and categorize findings, neither PXSO nor NA-12 recognizes the criteria. Given the importance and the consequences of NES, the Board believes that the NESSGs, PXSO, and NA-12 should use consistent criteria to characterize the significance of NES issues.

Additionally, the Board believes that the process for tracking and closure of NES findings could be expedited and improved if findings were prioritized based on their safety significance and age and if findings from different NES studies that address the same fundamental NES deficiency were linked together. Furthermore, when NA-12 designates an STA comment for follow-up action, it should be formally tracked and closed in accordance with the provisions of DOE Manual 452.2-2.

These weaknesses, if not corrected, degrade the effectiveness of the NES process. Therefore, pursuant to 42 U.S.C. § 2286b(d), the Board requests a report and briefing within 3 months of receipt of this letter describing plans to address the issues above and outlining corrective actions to be taken to address the weaknesses detailed in the enclosed report.

Sincerely,

Peter S. Winokur, Ph.D.
Chairman

Enclosure

c: Mr. Steven C. Erhart
Ms. Mari-Jo Campagnone

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Issue Report

July 28, 2011

MEMORANDUM FOR: T. J. Dwyer, Technical Director

COPIES: Board Members

FROM: M. Dunlevy

SUBJECT: Review of the Tracking and Closure Process for Nuclear Explosive Safety Findings and Senior Technical Advisor Comments

This report documents issues identified by the staff of the Defense Nuclear Facilities Safety Board (Board) during a review of the tracking and closure process for nuclear explosive safety (NES) findings and senior technical advisor (STA) comments at the Pantex Plant. This on-site review was conducted May 17–18, 2011, by staff members M. Dunlevy, B. Laake, and C. Martin, and outside expert J. King. The staff held discussions with representatives from the National Nuclear Security Administration (NNSA), Nuclear Explosive Safety Division (NESD); the Pantex Site Office (PXSO); and Babcock & Wilcox (B&W) Pantex regarding the criteria used to categorize a NES issue as either a finding or deliberation topic, the tracking and closure process for NES findings, and the roles and responsibilities of STAs along with how their comments are managed. This report focuses on the deficiencies and opportunities for improvement identified as a result of the staff's review.

NES Finding Criteria. According to the Department of Energy (DOE) Manual 452.2-2, *Nuclear Explosive Safety Evaluation Processes* (Manual), a Nuclear Explosive Safety Study Group (NESSG) identifies NES issues and determines if they are NES deficiencies; deficiencies are then categorized as pre- or post-start findings. Subsequently, PXSO independently reviews each NES issue identified by the NESSG and makes its own determination whether the issue is a deficiency and if it should be categorized as a pre- or post-start finding. Finally, the Assistant Deputy Administrator for Stockpile Management (NA-12) receives input from the NESSG and PXSO and makes the final determination about each NES issue. At the time of the Board's staff review, there were no formally documented criteria used by the NESSG, PXSO, and NA-12 in making their determinations. The only formal guidance was from the Manual, which states:

> Approved pre-start findings address issues that must be corrected prior to initiation or continuation of affected NEOs [nuclear explosive operations]. Approved post-start findings address issues that can be corrected after initiation or during continuation of NEOs. NES evaluation reports may also include Deliberation Topics summarizing substantive NESSG discussions that did not result in a finding.

This limited guidance has led to disagreement among NESSGs, PXSO, and NA-12 regarding the identification of NES deficiencies and categorization of the corresponding findings. The Board informed NNSA of this issue in a letter dated December 16, 2008. In the enclosure to that letter, *Nuclear Explosive Safety Master Study of On-Site Transportation and Staging, Pantex Plant*, the Board's staff highlighted "the need for clear criteria in the NES directive for declaring pre-start versus post-start findings...." In the March 5, 2009, response to this letter, NNSA stated, "NNSA will explore the need for better definition of criteria for pre-start versus post-start findings and will look closely at the interpretation of the NES Standards." NESD subsequently developed and refined a set of criteria to assist the NESSGs in determining if issues it identified were NES deficiencies and, if they were, in categorizing the corresponding findings during the last two years. Since the time of this review, NESD formally documented these criteria for categorizing issues in Internal Operating Procedure NESD-03, *Criteria for Categorizing Issues from Nuclear Explosive Safety Evaluations.*

According to PXSO representatives, neither PXSO nor NA-12 uses the guidance developed by NESD in addressing whether deficiencies identified by a NESSG are accepted, rejected, or recategorized. Rather, they rely on their judgment regarding the technical merit of the issue. The Board's staff believes that agreement on and use of a common set of criteria among PXSO, the NESSG, and NA-12 to characterize the significance of a postulated NES deficiency would make it possible to discuss findings more effectively.

Processing Findings. Several post-start findings were generated more than 100 months ago; the oldest of these dates back to August 2000. These findings remain open with the listed status, "NESS [nuclear explosive safety study] Chair did not concur with closure request; returned for rework." This situation may be a direct result of confusion between the intent of the findings and the solutions proposed by B&W Pantex caused by lack of communication between B&W Pantex and NESD throughout the closure process. Given that the current Pantex process requires the NESS Chair to concur on the closure of findings, the Board's staff believes findings could be closed more expeditiously if the NESS Chair for a given study were more involved in reviewing the proposed corrective actions to ensure they will adequately address the findings when the corrective action plan is developed. Furthermore, the closure process might be expedited if the NESSG made a formal presentation to the contractor clarifying the deficiencies that needed to be corrected once findings had been approved by the authorizing official.

Corrective Action Plans—Many findings associated with the same technical topic are opened by different studies and are listed, tracked, and closed separately. For example, there are several findings concerning the Master Equipment List that were opened by the NESSs performed on B83, W78, and W87 operations. All of these findings could potentially be addressed by the same corrective action plan (CAP), but instead, each is tracked independently to resolution. This could lead to inconsistent solutions to essentially the same NES deficiency across the various weapon programs. Although there has been some effort to improve this situation in recent studies by combining findings involving a common NES deficiency under a single label for tracking purposes, no formal mechanism exists for linking new findings with existing findings that capture the same NES deficiency. Linking findings in this way could help improve and expedite the closure process and ensure that a consistent solution is generated across weapon programs, when appropriate.

According to DOE Manual 452.2-2, "The responsible NNSA site office manager [PXSO]...must provide the Assistant Deputy Administrator for Science, Engineering and Production Programs [currently NA-12] a corrective action plan (CAP) for post-start findings for which the Assistant Deputy Administrator for Science, Engineering and Production Programs was the approval authority." The Board's staff review identified that this requirement is not being met because PXSO is not consistently transmitting the CAPs directly to the approval authority, NA-12.

After a post-start finding has been closed by the approval authority, no further action is taken other than documentation by the NESSG chair and occasional walkdowns performed by NESD personnel to verify the corrective actions. Section 4.b of DOE Order 452.2D, *Nuclear Explosive Safety*, identifies the Office of Safety (currently the Office of Nuclear Safety and Governance Reform) as the organization that provides independent oversight on the implementation of the NES Order and states, "This [independent] oversight may be carried out through observation of NES evaluations, independent assessments, or other appropriate mechanisms." The Board's staff believes that the Office of Nuclear Safety and Governance Reform, as a component of its independent assessment function, should periodically review the adequacy of closure actions.

Prioritization of Findings—The Board's staff is encouraged that B&W Pantex uses an adequate process for maintaining CAPs, communicating the status of actions needed to resolve findings through bimonthly meetings, tracking corrective actions, and keeping management informed of CAP due dates. However, this system could be improved if the contractor received guidance from either NA-12 or PXSO on how to prioritize and integrate findings in a manner commensurate with the safety significance of the issues involved. The staff believes that a prioritization scheme such as that used for Stockpile Surveillance Significant Finding Investigations, which weights findings according to their severity and age, would be beneficial.

Processing Senior Technical Advisors' Comments. DOE Manual 452.2-2 states:

> STA Comments. These comments in a NESSG report convey the impressions of a NESSG STA and are intended as constructive input to NNSA managers. They may not be strictly limited to the specified NESS scope or NESSG charter, and do not require follow-up actions unless the approval authority or other responsible NNSA manager specifies otherwise.
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> The Assistant Deputy Administrator for Science, Engineering and Production Programs [currently NA-12] will assign a lead member of the STA group to compile the STA comments on an annual basis and a tracking and closure system will be maintained for STA comments for which the NESS approval authority has directed action. The Assistant Deputy Administrator for Science, Engineering and Production Programs will provide for an annual review of the STA comments and closures. STAs are encouraged to keep abreast of on-going NESS evaluations and read and comment as they feel appropriate at the annual review.

The treatment of STA comments in the Manual, published in 2009, is similar to that of findings. However, the Manual provides no guidance on what information should be included in an STA comment. In the staff's opinion, the Manual would be improved by the addition of a set of criteria outlining the basic information that an STA comment needs to convey to communicate an issue clearly so the comment can be evaluated and addressed more effectively; similar to Section 7, Content of NES Evaluation Findings, in Internal Operating Procedure NES-03, *Criteria for Categorizing Issues from Nuclear Explosive Safety*.

As stated above, the Manual requires that a "tracking and closure system" be maintained for STA comments that have been assigned for follow-up action. However, the staff saw no evidence that this is occurring. Instead, NESD representatives stated that "STA comments are 'addressed' and not 'closed';" STA comments that have been designated for further action can be "addressed" simply by taking the comments into "consideration." This is contrary to the intent of "closing" an STA comment, which entails verification that appropriate action has been taken and documentation demonstrating how that action resolved the initial issue. The initial requirement to track STA comments stemmed from the creation of the Manual in 2009; therefore, comments made prior to 2009 are not tracked. However, it may be prudent to review all STA comments, including those made prior to the creation of the Manual, for current relevance and, if appropriate, include them in the tracking and closure process.

The Manual requires that STAs present an annual briefing to NNSA management regarding their comments. Currently, this briefing addresses only a subset of the comments made in studies that have occurred since the previous briefing. The briefing does not systematically provide updates on the progress, closure, and disposition of comments that are assigned for follow-up action. Given that this briefing is the only means of communicating to NNSA management progress made in addressing STA comments, the staff believes making the briefing more thorough, formal, and consistent would help ensure that STA comments are adequately addressed.