Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585

National Nuclear Security Administration

January 28, 2019

The Honorable Bruce Hamilton
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue NW, Suite 700
Washington, DC 20004

Dear Chairman Hamilton:

On behalf of the Secretary, thank you for the opportunity to review Defense Nuclear Facilities Safety Board (Board) Draft Recommendation 2018-1, *Uncontrolled Hazard Scenarios and 10 CFR 830 Implementation at the Pantex Plant*. We appreciate the Board's perspective and look forward to continued positive interactions with you and your staff on this important matter. The Department of Energy's National Nuclear Security Administration (DOE/NNSA) agrees that continuing actions are needed to further improve the content, configuration management, and implementation of the safety basis for nuclear explosive operations at the Pantex Plant (Pantex).

While there are opportunities for improvement, DOE/NNSA believes that the current safety controls implemented at Pantex provide adequate protection of public health and safety. DOE/NNSA acknowledges that legacy issues exist within the current Pantex documented safety analyses. The enclosed summary outlines a number of actions initiated by DOE/NNSA during the past year to scope and prioritize the identified and necessary improvements. We believe these actions address the primary concerns raised in the Board's Draft Recommendation.

Given the importance of these efforts, I have also requested DOE's Office of Enterprise Assessments periodically assess the progress DOE/NNSA is making in this area. The first two assessments have been scheduled for the third and fourth quarters of fiscal year 2019. In addition, DOE/NNSA would appreciate the opportunity to provide the Board with a detailed briefing on the improvement actions taken in 2018 and planned for 2019. Ifyou have any questions, please contact me or Mr. Geoffrey Beausoleil, Manager of the NNSA Production Office, at 865-576-0752.

Sincerely,

Lisa E. Gordon-Hagerty

Enclosure – Comments on Draft DNFSB Recommendation 2018-1,
Uncontrolled Hazard Scenarios and 10 CFR 830 Implementation at the Pantex Plant

General Comments

Throughout last year, and more intensely during the second half of the year, the Department of Energy's National Nuclear Security Administration (DOE/NNSA and CNS (Pantex)) have taken numerous actions aimed at improving the quality, configuration management, and implementation of the Pantex Plant (Pantex) safety basis. Key actions during this period include the following:

- In September 2018, DOE/NNSA approved a Safety Basis Supplement (SBS) by CNS that fulfilled two primary objectives. First, the SBS provides a framework for analyzing and addressing legacy issues in the Pantex safety basis associated with scenarios previously determined not to require application of safety controls because they were evaluated to be "sufficiently unlikely." Requirements have been established to assure "sufficiently unlikely" scenarios are identified and resolved. Second, the SBS included significant improvements in safety protocols through the identification of compensatory measures for preventing events that could result from 'Falling Man' scenarios. As of December 20, 2018, CNS has implemented the new 'Falling Man' compensatory measures in all active nuclear explosive cells. Implementation of the new 'Falling Man' compensatory measures in active nuclear explosive bays is expected to be completed by February 28, 2019.

- In October 2018, DOE/NNSA initiated a project to identify options for 'redesigning' the Pantex safety basis, with the goal of reducing the complexity of the safety basis documents, simplifying development and maintenance of the documents, and correspondingly improving implementation of the identified safety controls. Members of this project team include representatives from DOE/NNSA, the production plants, the national laboratories, and the Nevada National Security Site. This initiative will take substantial effort to achieve, but is essential for ensuring the long-term success of the Pantex national security mission.

- In November 2018, DOE/NNSA approved a comprehensive Corrective Action Plan by CNS that includes numerous actions for improving the Pantex safety basis development process and addressing legacy weaknesses in the current documents. Execution of this plan will drive significant improvement in the overall quality of the Pantex safety basis within the next two years. To date, CNS has completed all actions on schedule.

Several elements of the DNFSB's Draft Recommendation arise from inconsistencies between long-standing Pantex practices and DOE guidance documents. Examples include DNFSB concerns related to the structure of the Pantex Unreviewed Safety Question (USQ) procedure, the longevity of some Justifications for Continued Operations, and the frequency within which

safety control implementation is re-verified. By definition, the referenced DOE Guides (e.g., DOE Guide 423.1-1B, *Implementation Guide for Use in Developing Technical Safety Requirements* and DOE Guide 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*) provide supplemental information that DOE/NNSA uses to encourage performance of operations and activities across the complex with a focus on best practices. Similarly, several of the concerns in the DNFSB's Draft Recommendation related to Special Tooling are understood to be suggestions to adopt industry best practices rather than reflecting deficiencies against DOE regulations or requirements. DOE/NNSA identified similar issues with the Special Tooling program as part of our oversight activities. DOE/NNSA will ensure the DNFSB suggestions are evaluated as it continues to develop additional improvement actions, but do not believe the issues result in challenging adequate protection of public health or safety.

Safety Controls Associated with Low-Probability/High-Consequent Events

The DNFSB raised concerns that some scenarios determined to be 'sufficiently unlikely' (i.e., expected to occur between once-in-a-million and once-in-a-billion years) in the applicable Pantex safety basis documents did not have clearly identified safety controls for preventing or mitigating the potentially high consequences (e.g., worker fatality or public radiological exposure). The DOE/NNSA provides the following perspective regarding these concerns:

- As noted in the DNFSB's Draft Recommendation, questions associated with 'new information' related to potential accident scenarios are evaluated via the Pantex Problem Identification and Evaluation process. This process ensures that appropriate operational restrictions or compensatory measures are implemented while resolving any potential safety issues associated with the adequacy of safety controls. During the past year, DOE/NNSA has verified this process has been effectively executed by CNS, and has driven improvements to the process as warranted.

- One of the concerns raised by the DNFSB, associated with the adequacy of safety controls for 'sufficiently unlikely' scenarios, was reliance on Key Elements of Safety Management Programs to prevent high-consequences during potential 'Falling Man' scenarios. In September 2018, the DOE/NNSA approved a Safety Basis Supplement that identified additional 'Falling Man' controls, which are structured, credited, and protected as Specific Administrative Controls (SACs) rather than programmatic Key Elements. As noted above, CNS implemented these 'Falling Man' SACs in all active nuclear explosive cells as of December 20, 2018, and will implement them in active nuclear explosive bays by February 28, 2019.

- Other than the control adequacy issues discussed above, the remaining control adequacy concerns generally relate to weaknesses in the safety basis documentation. The two most common examples are (a) controls that are already implemented in the field but are not specifically linked to and credited for scenarios in the safety basis that were dispositioned as 'sufficiently unlikely' and (b) scenarios that were inappropriately deemed as 'sufficiently unlikely' in the safety basis where in reality they are not credible (e.g., the scenario would require deliberate or malicious procedural violations).

The aforementioned Safety Basis Supplement provides a framework for evaluating and categorizing these documentation-related issues. CNS developed a Corrective Action Plan that DOE/NNSA approved in November 2018 that includes commitments to perform extent-of-condition reviews of all Pantex Safety Basis Documents by the end of 2019, with the objective of identifying and correcting all instances of these documentation-related issues. To date, CNS has executed on schedule the actions captured in this Corrective Action Plan.

Configuration Management of the Pantex Safety Basis

The DNFSB raised concerns related to the processes used to maintain configuration management of the Pantex safety basis. Specifically, the DNFSB expressed concern that: (a) updates to Pantex safety basis documents are not always completed on an annual basis; (b) the Pantex USQ procedure allows discrepant-as-found conditions to be corrected without suspending impacted operations or making necessary notifications; and (c) some Justifications for Continued Operations (JCOs) are extended beyond a year. DOE/NNSA provides the following perspectives regarding these concerns:

- The DNFSB's concern related to the timeliness of updating safety basis documents appears to be based on data collected during 2017. The vast majority of Pantex safety basis documents were updated on-time in 2018, the lone exception being the update associated with the Site-wide Safety Analysis Report. CNS is committed to updating this document by March 2019. The aforementioned Corrective Action Plan, approved by DOE/NNSA in November 2018, includes actions to revise the administrative procedures for developing and revising Pantex safety basis documents. These actions specifically identify improving configuration management of safety basis documents as an objective, which, when executed effectively, should preclude similar issues from occurring in the future.

- The DNFSB's Draft Recommendation states that "the Pantex USQ procedures allow three days to correct discrepant-as-found conditions ... without stopping operations, notifying the Department of Energy (DOE), or initiating the Pantex process for addressing a potential inadequacy of the safety analysis." While the Pantex USQ procedure does allow three days to correct a discrepant-as-found condition prior to declaring a Potential Inadequacy of the Safety Analysis (PISA), Pantex procedures require: (a) suspending operations whenever a safety question is raised (e.g., discovery of discrepant-as-found conditions); (b) making appropriate notifications to the DOE/NNSA Production Office (NPO); and (c) initiating the DOE-Approved Pantex USQ process. Therefore, we believe the proper safety control is in place.

- The DNFSB's Draft Recommendation includes a concern with the processes for handling JCOs and the extension of some for an extended period of time. The goal in the Pantex USQ procedure of addressing JCOs in less than a year is derived from guidance in DOE Guide 424.1-1B. The intent is to ensure JCOs and their compensatory measures are used to address temporary changes to the safety basis until permanent solutions can be identified and incorporated. While one year is a viable goal for limiting use of a JCO, it is not always practical to resolve issues in nuclear or nuclear

explosive operations in that time frame. Many of the issues identified in JCOs involve complex operations or hazard scenarios where a permanent solution cannot be developed without extensive analysis or physical changes to facilities, systems, or equipment. Several JCO extensions were to allow additional time to develop permanent solutions, instead of incorporating compensatory measures into the safety basis only to revise the documents again once the permanent solution was developed. Each extension was approved by the Safety Basis Approval Authority after NPO fully evaluated the JCO conditions and compensatory measures, and concluded operations could be continued safely with the JCO compensatory measures.

Special Tooling Program

The DNFSB expressed concerns that deficiencies exist within the Pantex Special Tooling Program. Examples of the identified deficiencies include: (a) inconsistencies between Pantex tooling procedures and site practices; (b) additional Non-Destructive Evaluation techniques being used to inspect welds on tooling; (c) reliance on worker knowledge and skill-of-the-craft during tooling inspection, maintenance, and testing activities; (d) tool-specific performance criteria not being listed in the Pantex safety basis; and (e) weaknesses in analysis and testing for mechanical impact scenarios involving tooling. DOE/NNSA provides the following perspectives regarding these concerns:

- Subsequent to the DNFSB's September 2017 review, tooling-specific deviations from Pantex procedures were reviewed and confirmed that continued use of the subject tools meets applicable requirements. Additional corrective actions have been taken to prevent recurrence of the inconsistencies.

- Subsequent to the DNFSB's September 2017 review, CNS engaged an outside expert to review the Pantex welding program, who concluded that Pantex processes meet expectations. That is, welds are performed and inspected by qualified welders in accordance with applicable industry standards.

- Pantex tools are maintained and tested by trained and qualified journeymen mechanics in accordance with programmatic and tool-specific requirements.

Conclusion

DOE/NNSA appreciates the perspective provided by the DNFSB. DOE/NNSA has thoroughly reviewed the DNFSB input provided in the Draft Recommendation 2018-1, *Uncontrolled Hazard Scenarios and 10 CFR 830 Implementation at the Pantex Plant*, and looks forward to continued positive interactions with the DNFSB on this and other matters. DOE/NNSA is eagerto discuss the Corrective Action Plan in place at Pantex with the Board so that the DNFSB can see the many actions underway to address areas known to need improvement.

In the interim, DOE/NNSA's efforts continue to focus on our shared goal of meeting the nation's weapons program needs in a manner that ensures adequate protection of public health and safety. Through the comments presented in response to Draft Recommendation 2018-1, DOE/NNSA takes this opportunity to provide key additional information and stress its understanding of the importance of the steps it takes to continuously improve the Pantex safety basis and its implementation.