Joyce L. Connery, Chair
Thomas A. Summers, Vice Chair
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DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Washington, DC 20004-2901

July 29, 2021

The Honorable Jill Hruby
Administrator
National Nuclear Security Administration
US Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Administrator Hruby:

Congratulations on your confirmation as Administrator of the National Nuclear Security Administration (NNSA)! We look forward to a positive and productive working relationship with you and your team.

Congress established the Defense Nuclear Facilities Safety Board (Board) in 1988 to provide independent analysis, advice, and recommendations to the Secretary of Energy and aid the Secretary in ensuring adequate protection of public health and safety at the Department of Energy's (DOE) defense nuclear facilities.

The attachment highlights several items we would like to bring to your immediate attention. First, interactions between our organizations have at times been challenging over the past several years. To help improve interactions, the Board and DOE, including NNSA, are developing a memorandum of understanding. Second, regarding the sites under your purview, the Board held a virtual public hearing and public meeting on July 13 to discuss the Savannah River Site. A video recording of the proceedings is available on our website, and transcripts should also be available in early August.

We request an opportunity to meet with you during the next month to discuss safety challenges and opportunities, some of which are described in the enclosure to this letter. Our point of contact for scheduling is our Manager of Board Operations, Tara Tadlock, who can be reached at 202-694-7176.

Sincerely,

Joyce L. Connery

Joyce L. Connery
Chair

Enclosure

c: Mr. Joe Olencz

ENCLOSURE

Nuclear Safety Requirements. On February 21, 2020, the Defense Nuclear Facilities Safety Board (Board) issued Recommendation 2020-1, *Nuclear Safety Requirements*. The recommendation is intended to strengthen the Department of Energy's (DOE) nuclear safety regulatory framework so that it provides sufficient requirements to ensure that defense nuclear facilities maintain adequate protection of public health and safety. Specifically, the Board made recommendations in the areas of aging infrastructure, hazard categorization, DOE approvals, and safety basis processes and requirements. On June 11, 2020, DOE rejected most of the Board's recommendations. On June 1, 2021, the Board reaffirmed Recommendation 2020-1 and is awaiting the Secretary of Energy's response.

Savannah River Site (SRS) Tritium Facilities. On June 11, 2019, the Board transmitted Recommendation 2019-2, *Safety of the Savannah River Tritium Facilities*, to the Secretary of Energy. The Board recommended that DOE (1) identify and implement near-term compensatory measures and long-term controls to prevent or mitigate the potential high radiological dose consequences, and (2) evaluate the adequacy of emergency preparedness programs and upgrade them as necessary. DOE rejected the recommendation, both in its initial response in September 2019 and following the Board's reaffirmation in December 2019. DOE's newest facility safety basis, currently projected to be implemented in 2025, presents calculated dose consequences to co-located workers from multiple accident scenarios that are still almost 100 times higher than DOE's guideline. The Board remains concerned about the safety of the Tritium Facilities and continues to monitor operations and actions to improve safety. The Board reiterated its concerns and evaluated DOE's progress toward improving the safety of these facilities at its virtual public meeting and public hearing held July 13, 2021.

Safety of the Pantex Plant. The Board transmitted a letter to the Secretary of Energy on June 9, 2021, detailing weaknesses in the conduct of operations and training and qualification programs at Pantex, as well as concerns with organizational culture at the plant. The Board performed this evaluation after receiving multiple concerns from Pantex employees pertaining to these foundational elements of operational safety at Pantex. The Board stressed the overarching importance of addressing issues with organizational culture and noted that the conduct of operations and the training and qualification programs are valuable tools for implementing the espoused values and expected behaviors that shape the culture of the organization. In addition to detailing a number of specific concerns, the Board's letter stressed the need for the National Nuclear Security Administration (NNSA) to take a holistic approach to addressing the deficiencies and to ensure that the upcoming management and operating contract transition does not compound the issues or allow corrective actions to be lost. The Board requested a report on actions taken to address these issues and is awaiting NNSA's response that is due August 9, 2021.

Plutonium Infrastructure at Los Alamos National Laboratory (LANL). The Board remains focused on ensuring that deficient safety systems are upgraded and safety basis weaknesses are addressed at the Plutonium Facility on a schedule commensurate with future national security missions, as discussed in our letter dated November 15, 2019. Our staff has begun reviewing the

Los Alamos Plutonium Pit Production Project to assess important safety improvements associated with several of the other efforts in the laboratory's plutonium infrastructure portfolio.

Safety of Solid Nuclear Waste. NNSA operations generate waste that must be safely stored and disposed. During the past few years, wastes generated at NNSA facilities have led to events with significant safety ramifications. In 2014, a waste drum at the Waste Isolation Pilot Plant underwent energetic chemical reactions, leading to the release of radiological material that contaminated the disposal facility. This drum was generated at LANL. While LANL took measures to better prevent such occurrences, the Board recently found issues with hazard analyses, accident analyses, and safety controls associated with waste operations as documented in its Technical Report 46, *Potential Energetic Chemical Reaction Events Involving Transuranic Waste at LANL*, dated September 24, 2020. The Board is reviewing NNSA's response to Technical Report 46. A February 2021 incident involving the sparking of pyrophoric titanium metal fines during waste handling in the Los Alamos Plutonium Facility also demonstrated that there is still room for improvement with NNSA's waste operations at LANL. DOE is revising its standard for safety basis documents for transuranic waste facilities. The revised standard will include language intended to address hazards more effectively such as those revealed by these events. NNSA needs to implement the revised standard rigorously and expeditiously to better ensure the safety of its operations involving waste.

Nuclear Criticality Safety. Since 2019, the Board has communicated with DOE on several occasions regarding nuclear criticality safety at Y-12, including issues related to uranium accumulations, the issues management system, and federal oversight of the criticality program. In April 2021, the Board discussed with Y-12 federal and contractor personnel challenges and efforts to improve the Y-12 program. In June 2021, the Board discussed with DOE personnel the complex-wide status of criticality safety programs and headquarters oversight. DOE acknowledged that criticality safety issues remain, and improvements are needed. Consistent with the Board's letter dated February 11, 2021, the Board looks forward to working with DOE to identify safety metrics for nuclear criticality safety that inform DOE and the Board's oversight and drive safety improvements across the complex.

Seismic Hazard Assessments. On June 10, 2021, the Board issued Technical Report 47, *Seismic Hazard Assessments*. The report highlights issues with DOE's implementation of the required process for periodically assessing seismic hazards. These issues include: sites not implementing the unreviewed safety question process to assess the impacts of an increased seismic hazard on safety controls, site field offices not approving seismic hazard assessments and subsequent analyses, sites being slow to analyze the impact of an increased seismic hazard on safety controls, and DOE issuing directives on conducting seismic hazard assessments that lack sufficient guidance and standardization. The Board requested a report and briefing on actions taken to address these issues and is awaiting the Secretary of Energy's response.