

Joyce L. Connery, Chair
Thomas A. Summers, Vice Chair
Jessie H. Roberson

**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



March 29, 2023

The Honorable Jennifer M. Granholm
Secretary of Energy
US Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Granholm:

The Defense Nuclear Facilities Safety Board (Board) is traveling to the Savannah River Site (SRS) the week of May 8, 2023, to discuss ongoing safety concerns with adequate protection of the public and workforce, as well as effectiveness of federal oversight in addressing those concerns. These concerns include (1) progress made on the safety concerns raised in Recommendation 2019-2, *Safety of the Savannah River Tritium Facilities*, to reduce dose consequences to the public and workers, (2) proposed worker protection controls at the planned Savannah River Plutonium Processing Facility, and (3) the progress made toward addressing the potential for a tritium release and re-entry into the processing and administrative facilities at the Savannah River Tritium Enterprise (SRTE).

Recommendation 2019-2, Safety of the Savannah River Tritium Facilities

On June 11, 2019, the Board issued Recommendation 2019-2 concerning adequate protection of the public and workers at the SRS. That Recommendation expressed the Board's concern that the Tritium Facilities at the SRS have several analyzed credible accidents that could result in very high dose consequences to a significant number of facility and co-located workers. During a subsequent public meeting in October 2019, the Department of Energy (DOE) validated that calculated worker dose consequences for some postulated accident scenarios exceed 6,000 rem total effective dose. Recommendation 2019-2 identified the need to execute both near-term and long-term actions to reduce the risks posed by these accident scenarios and the need for the DOE to evaluate its emergency response capabilities.

Following the initial issuance of the Recommendation and subsequent interactions, DOE twice rejected the Recommendation on the basis that DOE's planned actions would address the Board's safety concerns. DOE stated it would implement a new safety basis; add defense-in-depth controls; improve safety management programs; and construct a new facility (i.e., the Tritium Finishing Facility) to replace the H-Area Old Manufacturing Facility. At that time, the Board concluded that these actions could improve safety but would not reduce the risks to acceptably low values by themselves. In addition, some of the plans were not expected to be

completed for years, and the schedule for startup of the proposed Tritium Finishing Facility was over a decade away at the time DOE rejected the Recommendation. DOE's budget request for fiscal year 2024 no longer includes funding for the Tritium Finishing Facility, calling into question DOE's strategy to address the Recommendation's concerns. The Board has also monitored the other actions detailed in the rejections and held a virtual public hearing on July 13, 2021 in part to hear about any updates on the safety strategy. We remain concerned about DOE's commitment to reduce the potential dose consequences to workers as set forth in those documents.

Worker Protection at the Savannah River Plutonium Processing Facility

On January 24, 2022, the Board issued a letter noting safety concerns with the conceptual design for the Savannah River Plutonium Processing Facility, including that the project assumes that facility workers can protect themselves from a plutonium release during certain accident scenarios. Using this assumption, project personnel avoided designating gloveboxes, glovebox ventilation, and glovebox inerting systems as safety controls. The Board emphasized that similar facilities in the DOE defense nuclear complex all designate at least one of these systems as a safety control. This is because such controls are a more reliable method for ensuring facility worker protection than relying on the facility worker's ability to detect a hazard and quickly evacuate to avoid significant exposure. DOE's Office of Enterprise Assessments has published similar conclusions.

Tritium Release and Re-entry into H-Area New Manufacturing Facility

On August 11, 2022, the Board issued a letter noting concerns regarding a release of approximately 1,000 curies of tritium from the stack of the H-Area New Manufacturing Facility. That release occurred on January 30, 2022, and resulted in a small portion of the tritium being drawn back into the facility, potentially exposing facility workers to tritium in a scenario not analyzed in the safety basis. While H-Area New Manufacturing and other process buildings have tritium monitors that could alert workers, they are not all credited as safety controls. Further, other buildings in the vicinity of the process buildings do not have any means to detect tritium. On November 30, 2022, NNSA provided a presentation to the Board stating it does not plan to perform additional analyses or implement additional safety controls to protect the facility workers from a tritium release. The Board believes an introduction of tritium into a facility from outside represents a unique hazard to the facility worker and warrants further analysis and possible safety controls to ensure adequate protection.

The Board continues to be concerned about the adequacy of preventive and mitigative controls to protect the public as well as facility and co-located workers during accidents at existing and planned defense nuclear facilities at the SRS. In some cases, DOE has stated that its current and planned actions would be sufficient to address the Board's safety concerns and that additional response actions would be unnecessarily duplicative. However, progress in fully executing several of these actions has not been as timely as anticipated, and some of these planned actions have been abandoned without the consideration of substitute measures to reduce risk. DOE has also stated that a well-trained workforce could be relied upon to execute work safely without additional safety controls. SRS, however, is experiencing a very high turnover in

personnel as the site's missions expand and workers with decades of experience are being replaced with relatively new workers having little to no prior experience with nuclear operations. This reduction in the experience level of the workforce is important when the workers are expected to prevent accidents without accompanying credited safety controls or to perform mitigative or emergency response actions to reduce the radiological impacts to themselves and other workers inside the facility or residing in nearby facilities. The Board is concerned that even very experienced workers would not be able to sufficiently protect themselves in the absence of credited safety controls. Thus, the Board seeks to understand DOE's current position regarding the above safety concerns, the current progress of DOE's planned actions to mitigate those concerns, and whether any additional compensatory measures have been identified to ensure adequate protection.

Further, the ultimate responsibility and accountability for ensuring adequate protection of workers and the public rests with DOE federal management. On August 17, 2022, the Board issued a letter noting four areas of improvement that DOE should pursue to ensure its safety oversight approach is effective. The Board's review had included interactions with several field offices across the complex and identified that DOE struggles to ensure that assessments are effective, federal staffing is sufficient, safety oversight is proactive, and DOE's safety issues are corrected in a timely and effective manner. Seven months later, the Board is awaiting DOE's response to the reporting requirement levied in the August letter. By this letter, the Board seeks, on a more urgent basis, to understand DOE Savannah River Operations Office's (DOE-SR) and National Nuclear Security Administration Savannah River Field Office's (NNSA-SRFO) progress in addressing these issues.

Pursuant to 42 United States Code § 2286b(d), the Board requests a briefing while on site during the week of May 8th on the following:

- The adequacy of the current and proposed control sets related to the above safety concerns for protecting the SRS workforce, including the technical basis for why DOE believes the identified controls provide adequate protection.
- The progress made to date on implementing the proposed safety control sets at SRTE, the expected reductions in accident frequency and consequences, and the schedule for fully implementing them.
- Any compensatory measures at SRTE (in place or planned) until the actions above are implemented.
- The impact of the suspension of the Tritium Finishing Facility project on DOE's plan and schedule for addressing the safety concerns at SRTE.

- Any actions taken by DOE-SR or NNSA-SRFO to address the safety issues identified with DOE's safety oversight.

Sincerely,

A handwritten signature in black ink that reads "Joyce Connery". The signature is written in a cursive, flowing style.

Joyce L. Connery
Chair

- c: The Honorable Jill Hruby
Mr. William I. White
Mr. Jason A. Armstrong
Mr. Michael D. Budney
Mr. Joe Olencz