

Thomas A. Summers, Acting Chairman
Patricia L. Lee

**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



February 14, 2025

The Honorable Christopher Wright
Secretary of Energy
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585-1000

Dear Secretary Wright:

Congratulations on your confirmation as Secretary of Energy!

On behalf of the Defense Nuclear Facilities Safety Board (DNFSB), I extend our warmest congratulations and welcome you to this pivotal role.

We look forward to working closely with you and your leadership team as we continue our shared commitment to supporting the Department of Energy (DOE) in its critical mission to maintain our nation's nuclear deterrent and advance stabilization of radioactive waste.

For the past 35 years, the DNFSB has played an integral role in strengthening the safety framework that underpins our nation's nuclear deterrent and defense capabilities. Through independent safety oversight and expert advice, we help ensure the safe operations at DOE's defense nuclear facilities, safeguarding public health, the safety of workers, and contractors.

Our efforts, informed by our statutory mandate under the Atomic Energy Act and formal agreements with DOE—such as the Memorandum of Understanding (MOU) dated February 27, 2022, and the Supplementary Agreement dated May 27, 2022—demonstrate our shared commitment to public safety and advancing national security objectives through nuclear safety and mission readiness.

To assist you and your team in understanding the current safety landscape, we have enclosed highlights of key nuclear safety challenges the DNFSB is currently addressing across DOE's defense nuclear facilities. We look forward to meeting you at the earliest opportunity to discuss these safety challenges and explore ways to strengthen our engagement on safe implementation of this important national security mission.

Our point of contact for meeting coordination is Mr. Kyle Johnson, at kyle.johnson@dnfsb.gov or 202-701-8964, Director of Congressional and External Affairs.

We are eager to continue to work with you and the DOE.

Sincerely,

A handwritten signature in black ink that reads "Thomas A. Summers". The signature is written in a cursive style with a large, stylized initial 'T'.

Thomas A. Summers
Acting Chairman

Enclosure

c: Mr. Joe Olencz, Director, Office of the Departmental Representative to the Board

ENCLOSURE

Board Recommendations

Recommendation 2020-1—Nuclear Safety Requirements.

The Department of Energy (DOE) governs the safe operations of its nuclear facilities through 10 CFR 830, *Nuclear Safety Management*, and associated DOE directives and standards. Recommendation 2020-1 was issued in February 2020 to highlight safety concerns with DOE's existing nuclear safety requirements and DOE's plans to change those requirements. These requirements help ensure safe execution of DOE's important national security and radioactive waste cleanup missions. Given the state of aging infrastructure within the defense nuclear complex and DOE's plans to construct new defense nuclear facilities, the Board recommended that DOE revise its nuclear safety requirements set to include key safety concepts, some of which were only defined in ambiguous guidance documents.

Status

One of DOE's main deliverables for the recommendation is a new order, DOE Order 421.1, *Nuclear Safety Basis*, which establishes clear requirements for important nuclear safety concepts such as the unreviewed safety question process, technical safety requirements, and specific administrative controls. This new order will improve how DOE and its contractors develop, approve, and maintain nuclear safety basis documents that ensure adequate protection of the public and workers. The Board is pleased with the excellent coordination between our agencies on this effort and looks forward to DOE issuing the order and prioritizing its implementation.

Recommendation 2023-1—Onsite Transportation Safety.

DOE sites frequently perform on-site transport of radioactive materials between defense nuclear facilities. Issued in January 2024, this recommendation identified significant safety issues with the Los Alamos National Laboratory's (LANL) transportation safety document, stemming in part from weaknesses in the safe harbors that govern transportation safety document development. The safety issues were particularly concerning given the high radioactive material-at-risk, the proximity of the onsite transportation routes to the public, and the nature of several credible accident scenarios. The Board's recommendation is intended to strengthen DOE's guidance related to onsite transportation of nuclear materials and to address deficiencies in LANL's transportation safety document to ensure adequate protection of health and safety.

Status

DOE accepted the recommendation and transmitted its implementation plan in October 2024. The Board is encouraged that DOE plans to revise the relevant directives, ensure LANL's transportation safety document is revised, and conduct extent of condition reviews of transportation safety documents at other sites with defense nuclear facilities.

Recommendation 2019-2—Safety of the Savannah River Site (SRS) Tritium Facilities.

Several times in recent years, the Board has expressed concerns regarding the safety of the SRS Tritium Facilities, which supply tritium to maintain the nuclear deterrent. The Tritium Facilities lack adequate safety controls to prevent or mitigate certain accident scenarios that could result in high radiological dose consequences to workers. A large-scale accident at the Tritium Facilities could also severely impact its important national security mission. Due to the safety risk associated with the Tritium Facilities, the Board recommended that DOE implement near-term compensatory measures, identify robust long-term controls, and enhance the emergency preparedness program.

Status

Although DOE rejected this recommendation, DOE has taken steps since 2019 to improve safety at the Tritium Facilities including implementing new physical controls that help reduce safety risk. However, the Board remains concerned about remaining safety vulnerabilities and continues to monitor operations and DOE's actions to strengthen safety. Notably, DOE planned to achieve important safety gains by completing a new facility known as the Tritium Finishing Facility, but that project remains on hold.

Recommendation 2012-1—Savannah River Site Building 235-F Safety.

The Board issued this recommendation to address worker safety issues posed by an old, inactive facility containing a significant quantity of a very hazardous isotope of plutonium which could be released in a fire.

Status

DOE Office of Environmental Management significantly reduced the risks by removing combustibles, eliminating ignition sources, and removing some of the plutonium. Recent inspections have not detected any migration of plutonium while in surveillance and maintenance mode, but the enclosure seals will continue to degrade until the plutonium is grouted in place for long-term disposition as part of decommissioning.

Recommendation 2019-1—Uncontrolled Hazard Scenarios and 10 CFR 830 Implementation at the Pantex Plant.

The Board issued this recommendation to address numerous longstanding safety issues concerning operations with nuclear weapons at the Pantex Plant, including inadequately controlled hazards with severe consequences to both the workforce and public and infrastructure improvements (e.g., replacement of wood-framed false ceilings in certain cells to eliminate potential impact scenarios to nuclear explosives). Additionally, the recommendation emphasized the need for operational and tooling process enhancements. Such safety improvements not only enhance worker and public protection but also improve mission performance by minimizing

downtime due to facility and equipment degradation or the need for recovery from abnormal situations.

Status

The National Nuclear Security Administration has corrected most of the safety issues outlined in Board Recommendation 2019-1. These actions have led to Pantex applying necessary controls to protect the workforce and the public, implementing essential infrastructure enhancements, and improving nuclear explosive operations along with the special tooling program. On January 30, 2025, the Board transmitted a letter closing this recommendation. However, the Board identified additional safety concerns that will require continued commitment to further action and consideration as Pantex revises its remaining safety bases to incorporate these improvements, such as (1) consistent implementation of design features, (2) special tooling performance criteria, and (3) consideration of procedural deviations within the safety bases.

Other Notable Nuclear Safety Issues

Aging Safety Infrastructure Management.

DOE's defense nuclear complex, developed during an 80-year period, and many of the key defense nuclear facilities supporting the nation's nuclear deterrent are more than four decades old. As a result, DOE's critical national security and radioactive waste storage and processing missions are dependent on the continued safe operation of aged nuclear facilities. The Board has embarked on a campaign to assist DOE in strengthening its practices for aging safety infrastructure management. The Board held a public hearing on August 14, 2024, titled, *Benchmarking Best Practices in Management of Aging Safety Infrastructure*.

Status

Information from the hearing is being applied to the next prong of the campaign, which involves staff-to-staff workshops intended to address important topics including requirements for major facility life extension, requirements for passive safety systems, and applying industry consensus standards for aging management. The Board looks forward to DOE's continued support on this important safety matter.

Safety-in-Design for DOE Projects.

DOE is currently making a once in a generation investment in the design and construction of several new defense nuclear facilities across its sites. At the urging of Congress, the Board and DOE developed the safety-in-design process to help avoid untimely design changes. That process includes a combination of multiple checks within DOE, such as independent project reviews, in addition to timely safety oversight by the Board. Recently, DOE's process failed at the Savannah River Plutonium Processing Facility. The Board found that project personnel incorrectly assumed facility workers could use their senses to detect radiological accidents such as glovebox spills or fire and then exit the area to protect themselves from a significant radiological exposure versus using safety alarms to alert workers of unsafe conditions. Using this

concept of worker self-protection, project personnel avoided designating safety controls traditionally found at other DOE plutonium processing facilities.

Status

While independent safety oversight entities within DOE raised safety concerns earlier, DOE leadership only took decisive action to add safety controls into the design when the Board also raised the issue. The Board believes it is imperative that DOE learn from this experience and strengthen the safety-in-design process to avoid delays with future design and construction projects.

Safe Disposition of Liquid and Solid Nuclear Waste.

DOE's mission to maintain the nuclear deterrent and carry out legacy cleanup activities creates nuclear waste that must be safely treated and disposed. During the last decade, DOE has experienced two significant safety events—one in 2014 at the Waste Isolation Pilot Plant (WIPP) and another in 2018 at Idaho National Laboratory—in which waste drums released radiological materials due to energetic chemical reactions involving the waste. The Board has been advising DOE to improve its nuclear safety standard related to radioactive waste and has been monitoring the design and construction of a new safety system, the Safety Significant Confinement Ventilation System, at WIPP intended to eliminate radioactive releases in the event of a future accident.

The Board's safety oversight has also focused on conduct of operations and preparing newly constructed or restarted facilities to safely commence operations. At Hanford, the liquid waste mission is entering a crucial phase with the startup of direct feed to the

Low Activity Waste Facility (LAW) and the long-delayed restart of the 242-A evaporator. At Savannah River Site, the Defense Waste Processing Facility (DWPF) has recently experienced several operational upsets.

Status

DOE significantly improved the content of DOE Standard 5506, *Preparation of Safety Basis Documents for Transuranic Waste Facilities*. This standard provides guidance on analyzing hazards and selecting controls to ensure the safe handling and disposal of nuclear waste. DOE is acting on the Board's advice regarding the design of the new ventilation safety system at WIPP and the Board will monitor preparations for startup. The Board will likewise monitor activities at the LAW Facility, 242-A evaporator, and DWPF.