Defense Nuclear Facilities Safety Board

Briefing to the New Mexico Legislature's
Radioactive & Hazardous Materials Committee

December 8, 2025

Establishment of the DNFSB

- US nuclear weapons are produced in the Department of Energy's (DOE) defense nuclear facilities for the Department of Defense. Defense nuclear facilities also stabilize (i.e., clean up) radioactive wastes from previous nuclear weapons manufacturing.

- <u>Late 1980s:</u>
  - High profile nuclear accidents (e.g., Chernobyl).
  - Congress questioned DOE's ability to manage the complex safely and wanted a body of experts to report unbiased and timely information on the state of the DOE defense nuclear complex.
  - Spearheaded by Senator John Glenn.

- Congress established the Defense Nuclear Facilities Safety Board (DNFSB) and charged it with identifying potential issues of adequate protection at defense nuclear facilities, advising the Secretary of Energy of those issues, and informing the public.

Plutonium oxide produced from ARIES at the Plutonium Facility at Los Alamos National Laboratory.

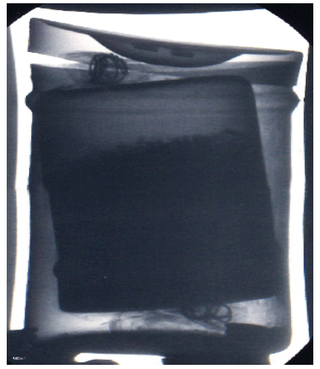
Retrieval of liquid high-level radioactive waste at the Hanford Tank Farms

Who is DNFSB?

- By statute, Board members are required to be “respected experts in the field of nuclear safety with a demonstrated competence and knowledge relevant to the independent investigative and oversight functions of the Board.”

- DNFSB has a highly-trained technical staff—Nearly all have master’s degrees, and many have doctorates in fields like nuclear, chemical, mechanical, earthquake, and fire protection engineering.
  - Many have a decade or more of experience in the nuclear weapons complex and cannot be easily replaced.
  - DNFSB staffing is statutorily capped at 130 FTE.

- DNFSB has a 35-year history of providing independent analysis, advice, and recommendations to the Secretary of Energy to ensure the health and safety of the public and workers at defense nuclear facilities.



Breached nuclear waste container due to plutonium reaction

Temporary disposal of nuclear waste at Idaho National Laboratory

Spent fuel pool at Hanford K Reactor

DNFSB Overview

"The mission of the Board shall be to provide independent analysis, advice, and recommendations to the Secretary of Energy to inform the Secretary, in the role of the Secretary as operator and regulator of the defense nuclear facilities of the Department of Energy, in providing adequate protection of public health and safety at such defense nuclear facilities, including with respect to the health and safety of employees and contractors at such facilities." - Atomic Energy Act of 1954, as amended

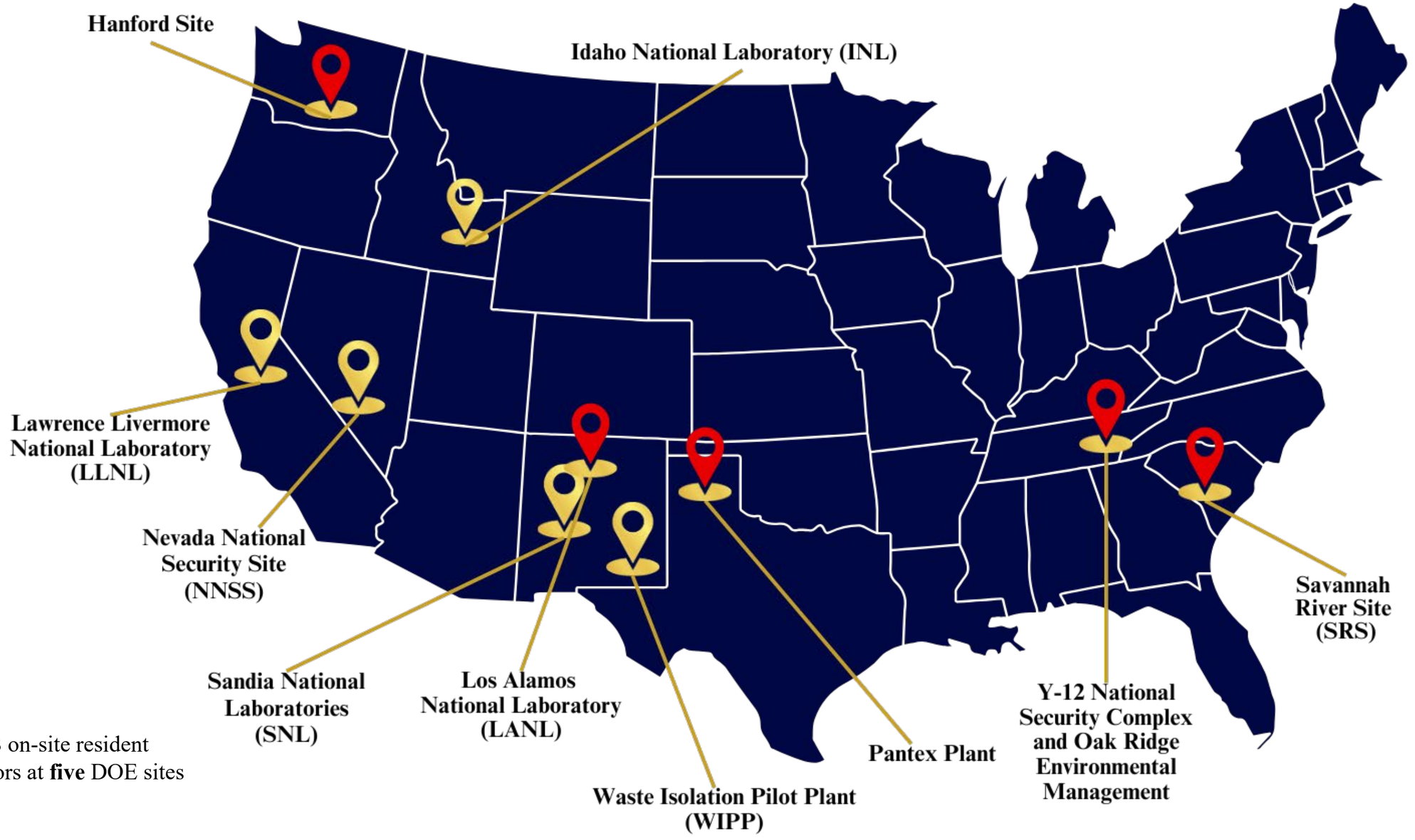
Current Board Members

Dr. Patricia L. Lee
Member

4 Vacancies

- On October 18, 2025, Vice Chair Summers' term expired.
- For the first time in its 36-year history, the Board has one member and no Chair or Vice-Chair.
- However, certain authorities have been delegated to the longest serving remaining Board member.
- The DNFSB will continue operating and focusing on protecting public and worker health and safety at the DOE's defense nuclear facilities.

DOE Sites with Defense Nuclear Facilities



= DNFSB on-site resident inspectors at **five** DOE sites

Scope of DNFSB Safety Oversight

- Complex, high-hazard operations involving the assembly or disassembly of nuclear weapons, or the operation of nuclear facilities related to DOE's national defense mission.
- Remediation of nuclear wastes and legacy facilities from more than 80 years of DOE defense nuclear operations.
- Design and construction of new DOE defense nuclear facilities.
- Aging and deteriorating mission critical infrastructure at DOE defense nuclear facilities/sites.
- Adequacy of DOE safety standards related to design, construction, operation, and decommissioning of defense nuclear facilities.

Typical glovebox

WIPP transuranic waste

Board Statutory Authorities

Hanford cesium and strontium capsules

Transuranic waste shipment approaching WIPP

- Issue formal recommendations to the Secretary of Energy about adequate protection of public health and safety.
- Levy reporting requirements on the Secretary of Energy.
- Conduct open or closed hearings and meetings, including the power to subpoena witnesses, if needed.
- Conduct investigations and special studies.

DOE is required by law to grant the Board "*prompt and unfettered access to such facilities, personnel, and information as the Board considers necessary to carry out its responsibilities*."

DNFSB's Tools to Voice Nuclear Safety

Recommendations: Require DOE to either:

(a) fix issues that challenge the adequate protection of the health and safety of the public and workers at defense nuclear facilities or
(b) inform Congress why it rejected the DNFSB's Recommendation.

Reporting Requirements: DOE must provide its analyses or actions it plans to take (or has taken) to remediate safety issues at defense nuclear facilities.

Advice Letters and Reports: Advise DOE on questionable practices, potential root causes, or problems impacting multiple defense nuclear facilities.

Staff-To-Staff Discussions: Promote staff-to-staff fixes to identified nuclear safety issues as early as possible. DOE and its contractors often appreciate DNFSB staff feedback and the opportunity to address issues at the lowest level.

Los Alamos Resident Inspectors

David Gutowski
Chemical/Nuclear Engineer

Eric Freeman
Nuclear Engineer

Jason Kemp
Fire Protection Engineer

Resident Inspectors are the Board's eyes and ears at DOE's defense nuclear facilities. Everyday, they can observe high-hazard nuclear work, monitor nuclear facility conditions, hear concerns from the workforce, and represent DNFSB with site DOE and contractor leadership. They play an invaluable role in DNFSB's nuclear safety oversight.

Los Alamos National Laboratory (LANL)

Functions: Manufacturing and surveillance of plutonium pits for nuclear weapons, production of heat-source plutonium power sources used for national security and NASA, cleaning up legacy radioactive waste, and researching tritium systems in the nuclear weapons stockpile.

Current Safety Issues:

- Ensuring safety systems in the Plutonium Facility are upgraded and replaced in a timely manner to safely support the increased mission.
- Evaluating changes to the safety strategy and safety systems to ensure the public and workers are adequately protected from radioactive materials that could be released from earthquakes and fires.
- Monitoring for safety challenges as mission-work increases.
- Resolving deficiencies in the safety analysis and controls used to transport radioactive materials on laboratory property.
- Improving safety controls to protect the public and workers from significant quantities of legacy radioactive waste at Area G.

Ventilation system fan planned for replacement.

Excavation of Corrugated Metal Pipes at Area G.

DNFSB Activities Related to LANL

Recent Board Letters and Activities

- October 10, 2025: LANL Plutonium Facility (PF-4) safety basis
- July 25, 2025: LANL Area G safety basis and path forward
- June 12, 2025: LANL PF-4 Decontamination and decommissioning (D&D) work planning and control.
- March 17, 2025: Board review of three DOE nuclear criticality safety programs (including LANL).
- July 29-31, 2025: Board visit to LANL

DNFSB leadership visits the Plutonium Facility (PF-4).

Active/Upcoming DNFSB Safety Reviews and Areas of Focus

- Plutonium Facility resources and work control
- Legacy fire hazard evaluations in the plutonium facility
- Glovebox design, installation, and testing
- Maintenance tracking and work backlog
- Shift to 24/7 operations
- Effectiveness of new employee training
- Corrective actions
- Radiation protection
- Federal oversight (ongoing and related to 24/7 ops)

Board Visit to LANL

- From July 28 – 31, 2025 DNFSB Board members visited New Mexico to engage with Triad, N3B, DOE EM field office, and NNSA field office leadership.
- The Board members also conducted a public meeting with interested stakeholders in Santa Fe.
- While on site at LANL, the Board members visited several facilities at LANL:
  - Plutonium Facility (PF-4)
  - Area G
  - Weapons Engineering and Tritium Facility (WETF)
  - Strategic Computing Complex (SCC)

Flanged Tritium Waste Containers (FTWC)

The facts:

- Venting commenced on September 15, 2025, after receiving necessary approvals from NMED.
- All four FTWCs were completely vented and moved to the Weapons Engineering Tritium Facility (WETF) by Sunday, October 12, 2025.
- There was no pressure build-up identified in any of the FTWCs.
- Triad experts analyzed monitoring data and weather patterns during the periods of venting to conclude that the overall release to the environment was less than 123 curies of tritium, and the maximum hypothetical dose to a member of the public would be 0.0123 mrem.
- This was a one-time evolution and does not represent an ongoing disposition pathway for future tritiated waste.

Flanged Tritium Waste Containers (FTWC)

DNFSB perspective:

- The amount of radioactive tritium in the headspace of these containers was small and there was no pressurization in any of the FTWCs. This is confirmed from the monitoring data obtained from venting activities.
- The overall dose to a member of public is negligibly low – the maximally exposed offsite individual was only 0.0123 mrem and that was developed from conservative assumptions.
- DOE proposed an adequate set of safety controls and implemented the controls appropriately.
- These FTWCs represented an unnecessary safety risk due to poor waste management and lack of prompt attention to resolving an unexpected situation. LANL should strive to ensure this situation does not occur again.
- Venting these FTWCs is a safety success and represents a permanent resolution to the risk these containers posed.

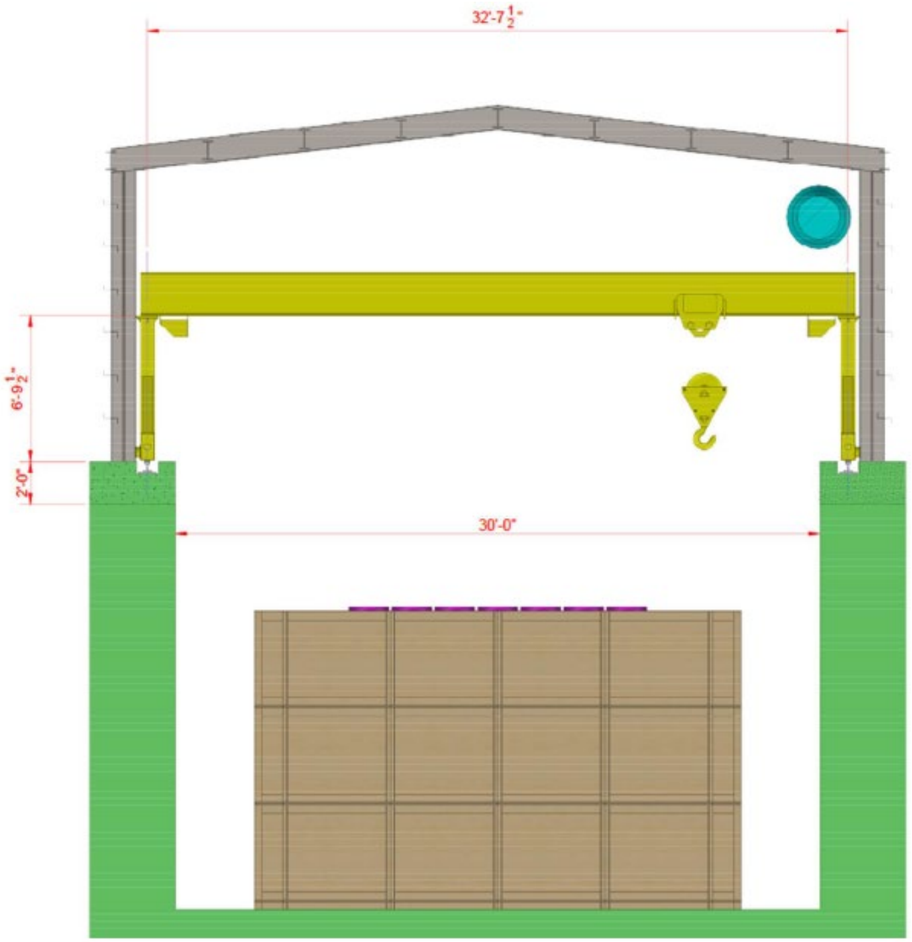
Area G

Recent Board Initiatives

- The Board recently reviewed the safety basis for the Area G facility, where DOE stores, repackages, remediates, characterizes, certifies, and ships transuranic and low-level radioactive waste.
- The Board found that the facility's safety control strategy is heavily reliant on administrative worker actions, as opposed to installing additional robust engineered features or safety equipment. The Board transmitted its findings to DOE in a letter dated July 25, 2025.

Future DOE Work

- Reduce above-ground waste container inventory
- Retrieve and remediate waste from underground Pit 9
- Continue groundwater non-nuclear remediation efforts



Pit 9 Enclosure Concept

Ensuring DOE can Safely Transport Nuclear Materials Within its Site Boundaries

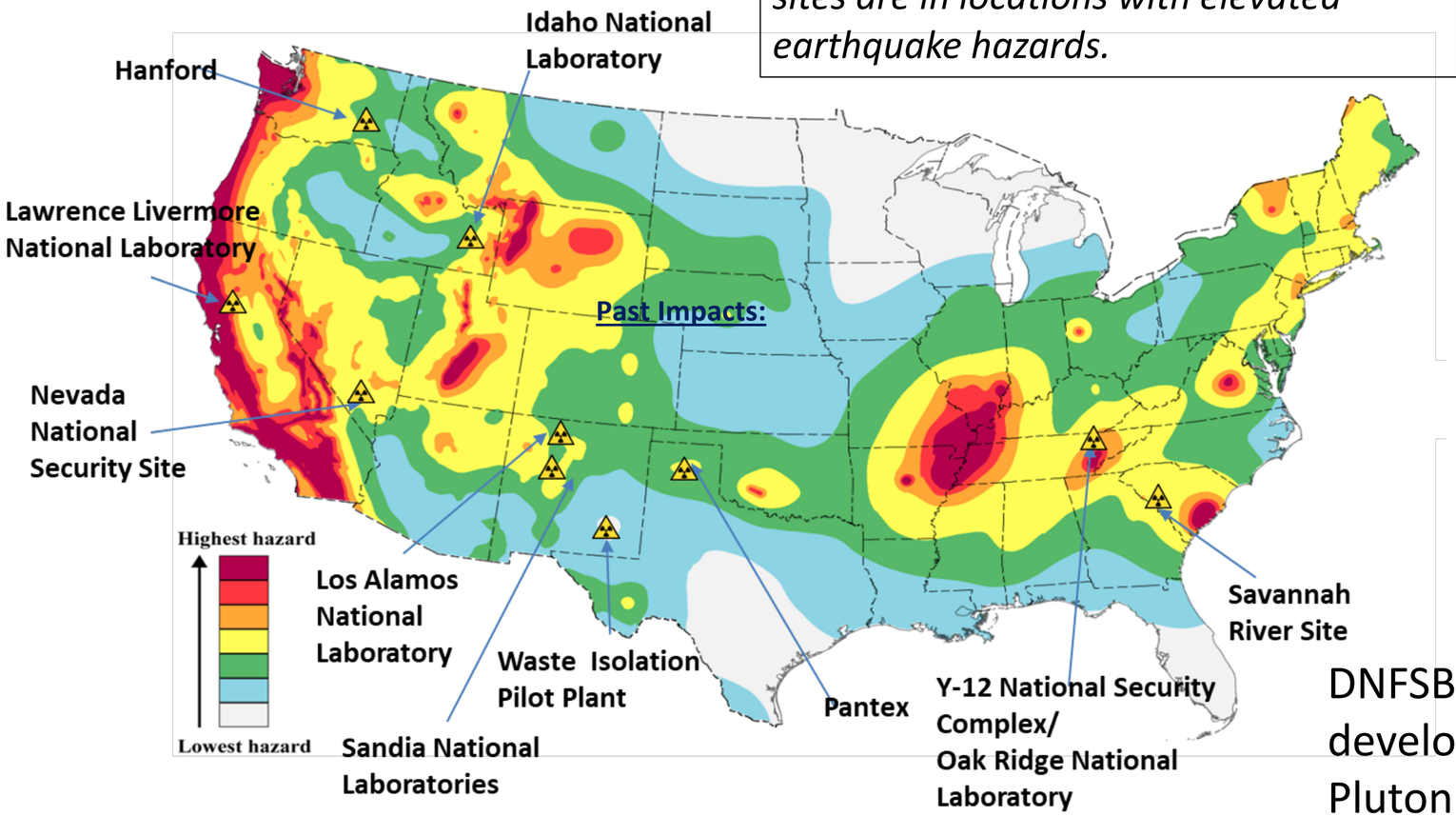
Transportation of radioactive materials between DOE's defense nuclear facilities occurs frequently to support its national security and environmental cleanup missions. DOE requires contractors to develop a "transportation safety document," which identifies what types of transportation accidents could happen and how they could be prevented or mitigated. The DNFSB issued Recommendation 2023-1, Onsite Transportation Safety. In the Recommendation, the DNFSB identified specific concerns at LANL and that DOE needed to improve guidance on developing transportation safety documents.

LANL was not analyzing accidents like a vehicle crash off a steep cliff and did not have adequate safety controls in its transportation safety document. This was particularly concerning given the amount of radioactive material that could be moved in a vehicle and the proximity of the public to the roads at the laboratory.

Safeguarding DOE's Defense Nuclear Facilities Against Earthquakes

Past Impact

Earthquakes pose a major threat to defense nuclear facilities, and many DOE sites are in locations with elevated earthquake hazards.



DNFSB worked with DOE to conduct testing and develop a state-of-the-art model to ensure the Plutonium Facility at LANL would prevent the release of radioactive material following a significant increase in predicted earthquake strength.

Sandia National Laboratories (SNL)

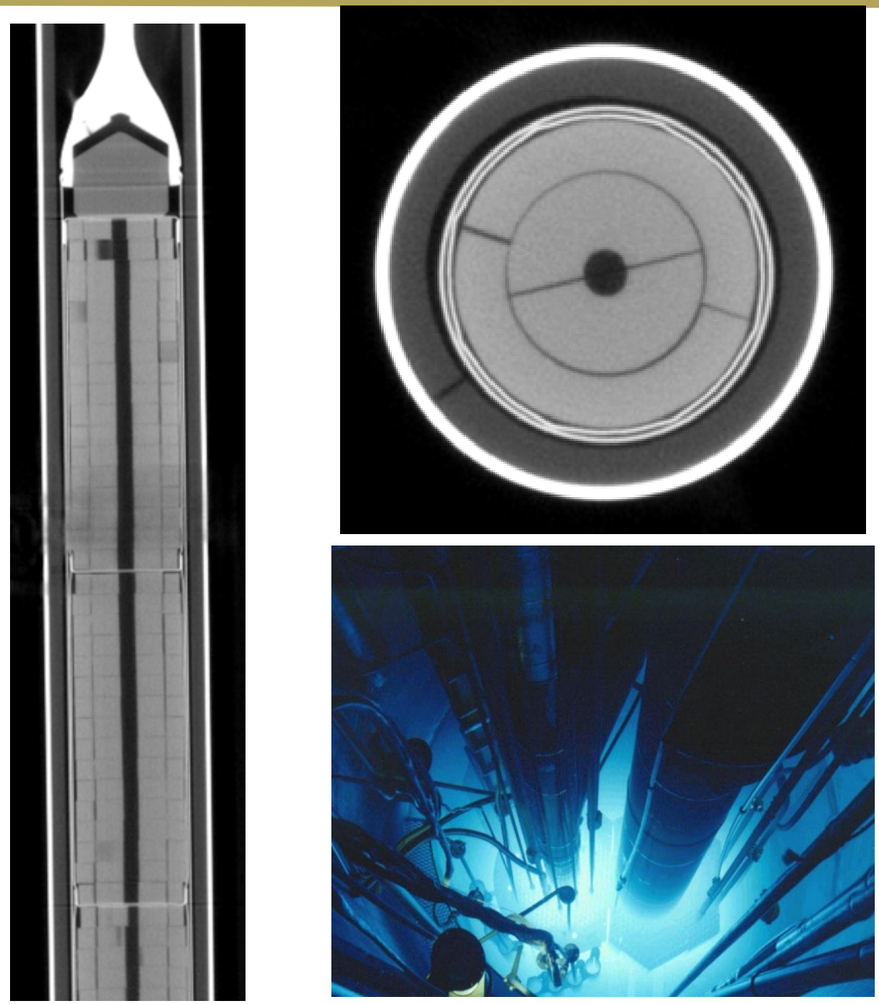
Functions: Conduct research and development to support national security, nuclear stockpile stewardship, and ensure the nuclear arsenal is safe, secure, reliable, and can fully support national deterrence policy.

Current Safety Issues:

- Ensuring the nuclear fuel used in the Annular Core Research Reactor Fuel Health Evaluation meets requirements to prevent the release of radioactive materials.

- Strengthening the formality of operations and maintenance, particularly lifting and handling activities, to minimize accidents that can release radioactive materials and injure workers.

- Improving ability of the Emergency Management program to respond to an accident that threatens public and worker safety.



Imaging scans of nuclear fuel (left and top) used in the Annular Core Research Reactor at Sandia National Laboratories (bottom).

Sandia National Laboratories

Past Impacts:

- DNFSB safety review of numerous hoisting and rigging events at the Annular Core Research Reactor Facility prompted a decision by laboratory management to replace a 40-year-old crane with a new state-of-the-art crane with active safety controls.

Current overhead crane in the Annular Core Research Reactor high bay.

DNFSB reviews led to improvements in SNL emergency management. Image: New Emergency Operations Center at SNL.

DNFSB Activities Related to SNL

Recent Board letters to DOE:

- December 16, 2022 – SNL Technical Area V conduct of operations

Recent Board Visits:

- September 15-18, 2025 – Board visit to SNL

Active Safety Reviews:

- Annular Core Research Reactor fuel health evaluation
- Conceptual design for the Combined Radiation Environments for Survivability Testing (CREST) Facility project

DOE is designing CREST, a new hazard category 2 nuclear facility, with a nuclear reactor and a coupled accelerator to support the nuclear weapons stockpile.

Waste Isolation Pilot Plant (WIPP)

Functions:

- WIPP is the nation's only repository for the disposal of transuranic waste—a form of radioactive waste. The waste is disposed nearly one-half mile below the surface in a salt bed formed 250 million years ago. The facility began operation in 1999.

Current Safety Issues:

- Demonstrating that the continuous air monitors used to detect the release of radioactive material and direct airflow to safety related high efficiency particulate air will function properly in harsh underground environments (i.e., the presence of salt and soot).

- Ensuring effective aging safety infrastructure management systems needed to conduct WIPP's important mission and keep workers safe.
  - Shafts and escapeway hoists – considered obsolete.
  - 30-year-old waste hoist motor replacement.

WIPP Site - Carlsbad, NM.

Ensuring the Underground Ventilation System (UVS) Will Function in the Event of a Release of Radioactive Material

UVS, formerly known as the Safety Significant Confinement Ventilation System

- The Board advised DOE in a letter dated May 15, 2024, that the continuous air monitors that activate the Safety Significant Confinement Ventilation System at WIPP had not been tested in conditions representative of the dusty-salt environment where they will need to function. After DNFSB engaged, DOE agreed to start the system in the direct-filtration mode (a safe condition) until they could resolve these concerns.

Final connection in late 2024 followed by startup of UVS in June 2025.

DNFSB Activities Related to WIPP

Underground Ventilation System

Recent Board letters to DOE

- June 18, 2025: WIPP shafts and hoists
- May 15, 2024: WIPP continuous air monitor design
- August 17, 2022: WIPP 700C fan restart

Active Safety Reviews

- UVS Readiness Review Activities
- Continuous Air Monitor Testing Plans
- Contractor Issues Management, Causal Analysis, and Corrective Actions

Addressing Safety Allegations from Workers and the Public

The DNFSB makes it easy for anyone to submit safety allegations in a confidential manner. The DNFSB reviews all safety concerns within its jurisdiction promptly and dispositions them in accordance with veracity and safety significance.

In 2024, the Board received a safety allegation regarding alleged deficiencies in nuclear weapon safety component manufacturing, certification, and quality assurance processes, with implications for the safety of nuclear explosive operations at the Pantex Plant.

The Board voted to initiate a formal safety investigation into these matters and transmitted its report to the Department of Energy on October 17, 2025. The Board identified several safety improvements that would help bolster assurance that nuclear weapon safety components are fabricated, procured, and installed in a manner commensurate with their safety function.

DNFSB Status During a Lapse in Appropriations

- DNFSB had sufficient carryover funds to be able to continue paying employees during the recent government shutdown. Staff continued to work and provide oversight consistent with our mandate.

- Resident inspectors have been deemed excepted staff by DNFSB leadership and will continue to come to work and provide oversight at defense nuclear facilities even if funding is exhausted during a future government shutdown.

- The resident inspectors at LANL continued to conduct field observations, attend meetings, write reports, and follow up on activities taking place at LANL during the recent government shutdown.

- The resident inspectors at LANL met twice a week with NNSA field office leadership to share information, receive updates on key activities, and discuss any issues identified in the field.

Questions?

www.dnfsb.gov

DNFSB recommendations, letters, reports, site weekly reports, impacts, and more.