



U.S. DEPARTMENT OF
ENERGY

Department of Energy Activities Relating to the Defense Nuclear Facilities Safety Board

Fiscal Year 2021

**Report to Congress
February 2022**

**United States Department of Energy
Washington, DC 20585**

Message from the Secretary

This is the U.S. Department of Energy's (Department or DOE), including the National Nuclear Security Administration, Fiscal Year 2021 annual report to Congress addressing the activities related to the Defense Nuclear Facilities Safety Board (DNFSB or Board) and status of Implementation Plans in response to accepted Board recommendations, as required by Section 316(b) of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 United States Code (USC) §2286e(b) and Section 315(g)(1) of the AEA, codified at 42 USC § 2286d(g)(1).

The Board provides oversight and advice to the Secretary of Energy regarding the safety of the Department's defense nuclear facilities. The DNFSB's expertise in reviewing the content and implementation of standards and directives relating to the design, construction, operation, and decommissioning of the Department's defense nuclear facilities helps strengthen the Department's defense nuclear safety posture. We welcome the Board's advice, insights, and recommendations. Together, DOE and the Board fulfill a shared goal to provide reasonable assurance of adequate protection of the DOE workforce and the public from operations conducted at the Department's defense nuclear facilities.

Pursuant to statutory requirements, this report is being provided to the following members of Congress:

- **The Honorable Patrick Leahy**
Chairman, Senate Committee on Appropriations
- **The Honorable Richard Shelby**
Vice Chairman, Senate Committee on Appropriations
- **The Honorable Jack Reed**
Chairman, Senate Committee on Armed Services
- **The Honorable James Inhofe**
Ranking Member, Senate Committee on Armed Services
- **The Honorable Joe Manchin**
Chairman, Senate Committee on Energy and Natural Resources
- **The Honorable John Barrasso**
Ranking Member, Senate Committee on Energy and Natural Resources
- **The Honorable Rosa DeLauro**
Chairwoman, House Committee on Appropriations
- **The Honorable Kay Granger**
Ranking Member, House Committee on Appropriations
- **The Honorable Adam Smith**
Chairman, House Committee on Armed Services

- **The Honorable Mike Rogers**
Ranking Member, House Committee on Armed Services
- **The Honorable Frank Pallone**
Chairman, House Committee on Energy and Commerce
- **The Honorable Cathy McMorris Rodgers**
Ranking Member, House Committee on Energy and Commerce

If you have any questions or need additional information, please contact Ms. Katie Donley, Deputy Director for External Coordination, Office of the Chief Financial Officer, at (202) 586-0176; or Ms. Rebecca Ward, Deputy Assistant Secretary for Senate Affairs, Office of Congressional and Intergovernmental Affairs, or Ms. Elizabeth Noll, Deputy Assistant Secretary for House Affairs, Office of Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

A handwritten signature in black ink, appearing to read 'J. Granholm', with a stylized, cursive script.

Jennifer Granholm

Executive Summary

This is the U.S. Department of Energy's (Department or DOE), including the National Nuclear Security Administration, annual report to Congress¹ regarding the Department's Fiscal Year (FY) 2021 activities related to the Defense Nuclear Facilities Safety Board (DNFSB or Board) and status of Implementation Plans in response to accepted Board recommendations.²

It is the policy of DOE to provide reasonable assurance of adequate protection and safety of workers, the public, and the environment during the design, construction, operation, and decommission of its defense nuclear facilities (DNFs). This policy is implemented through the Department's nuclear safety program comprised of a robust nuclear safety regulatory framework and multi-layered oversight by DOE line management and headquarters organizations. Oversight of DOE DNFs is supplemented by the DNFSB, an independent executive branch agency established by Congress in 1988, that provides analysis, advice, and recommendations to the Secretary of Energy regarding safety at DOE DNFs.

In FY 2021, DOE:

- Provided over 4,300 documents to the DNFSB in response to 313 requests for information,
- Participated in 10 meetings and/or briefings with the Board, and
- Responded to nine DNFSB reporting requirements.

Other notable interactions included:

- On-going preparation of a joint Memorandum of Understanding to address operational interface improvement opportunities between the two agencies,
- Participation in a DNFSB joint public meeting and public hearing regarding Savannah River Site DNFs, and
- Attendance at a DNFSB public meeting regarding the implementation of nuclear safety requirements at all DOE DNFs.

Additional information regarding these and other interactions are detailed within the report.

As of the end of FY 2021, the status of open DOE Implementation Plans developed in response to accepted Board recommendations is as follows.

- Recommendation 2019-1, *Uncontrolled Hazard Scenarios and 10 CFR 830 Implementation at the Pantex Plant*: Sixty-two of 69 Implementation Plan actions have been completed. The remaining actions are scheduled to be completed by FY 2024.
- Recommendation 2020-1, *Nuclear Safety Requirements*: The recommendation was accepted by the Secretary of Energy on September 8, 2021. The Implementation Plan is under development.

¹ In accordance with Section 316(b) of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 United States Code (USC) § 2286e(b).

² In accordance with Section 315(g)(1) of the AEA, codified at 42 USC § 2286d(g)(1).



FISCAL YEAR 2021

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I. Legislative Language

This report is being provided to Congress in accordance with Section 316(b) of the Atomic Energy Act of 1954, as amended (AEA), codified at 42 United States Code (USC) § 2286e(b):

DOE REPORT. The Secretary of Energy shall submit to the Committees on Armed Services, Appropriations, and Energy and Commerce of the House of Representatives and the Committees on Armed Services, Appropriations, and Energy and Natural Resources of the Senate each year, at the same time that the President submits the budget to Congress pursuant to section 1105(a) of Title 31 [United States Code], a written report concerning the activities of the Department of Energy under this subchapter, including all recommendations made by the Board, during the year preceding the year in which the report is submitted.

This report also addresses Section 315(g)(1) of the AEA, codified at 42 USC § 2286d(g)(1), which states:

Subject to paragraph (2), not later than one year after the date on which the Secretary of Energy transmits an implementation plan with respect to a recommendation (or part thereof) under subsection (f), the Secretary of Energy shall carry out and complete the implementation plan. If complete implementation of the plan takes more than 1 year, the Secretary of Energy shall submit a report to the Committees on Armed Services, Appropriations, and Energy and Commerce of the House of Representatives and the Committees on Armed Services, Appropriations, and Energy and Natural Resources of the Senate setting forth the reasons for the delay and when implementation will be completed.

II. Introduction

This report contains information regarding fiscal year (FY) 2021 activities between the U.S. Department of Energy (DOE or Department), including the National Nuclear Security Administration (NNSA or NA), and the Defense Nuclear Facility Safety Board (DNFSB or Board), on safety initiatives and activities at DOE defense nuclear facilities (DNF), and the status of open DOE implementation plans (IP) developed in response to DNFSB recommendations accepted by the Secretary of Energy (Secretary).

Section 318 of the Atomic Energy Act of 1954, as amended, codified at 42 USC § 2286g, defines a DNF as:

- (1) A production facility or utilization facility (as defined in 42 USC §2014 [§ 11 of the AEA]) that is under the control or jurisdiction of the Secretary of Energy and that is operated for national security purposes, but the term does not include:
 - (a) Any facility or activity covered by Executive Order No. 12344, dated February 1, 1982 [50 USC § 2511 note], pertaining to the Naval nuclear propulsion program;

- (b) Any facility or activity involved with the transportation of nuclear explosives or nuclear material;
 - (c) Any facility that does not conduct atomic energy defense activities; or
 - (d) Any facility owned by the United States Enrichment Corporation [now Centrus].
- (2) A nuclear waste storage facility under the control or jurisdiction of the Secretary of Energy, but the term does not include a facility developed pursuant to the Nuclear Waste Policy Act of 1982 (42 USC 10101 et seq.) and licensed by the Nuclear Regulatory Commission.

DOE Sites with Defense Nuclear Facilities

Site		Location	DOE Program Office Responsible for DNFs*
Name	Acronym or Abbreviation		
Hanford Site	Hanford	Washington	EM, SC
Idaho National Laboratory Site	INL Site	Idaho	EM
Lawrence Livermore National Laboratory	LLNL	California	NA
Los Alamos National Laboratory	LANL	New Mexico	NA, EM
Nevada National Security Site	NNSS	Nevada	NA
Pantex Plant	Pantex	Texas	NA
Sandia National Laboratories – New Mexico	SNL-NM	New Mexico	NA
Savannah River Site	SRS	South Carolina	NA, EM
Waste Isolation Pilot Plant	WIPP	New Mexico	EM
Y-12 National Security Complex	Y-12	Tennessee	NA
Oak Ridge National Laboratory	ORNL	Tennessee	EM

* EM = Office of Environmental Management; NA = National Nuclear Security Administration; SC = Office of Science

It is the policy of DOE to provide reasonable assurance of adequate protection and safety of workers, the public, and the environment during the design, construction, operation, and decommission of its DNFs. The Department protects its workers, the public, and the environment from hazards associated with its DNFs through a rigorous and proactive nuclear safety program that is comprised of a robust nuclear safety regulatory framework of Federal Regulations, DOE directives (i.e., Notices, Policies, Orders, Manuals, and Guides) and technical standards (STDs), and multi-layered oversight by DOE line management, management and operating contractors, Federally managed field and headquarters Program Offices, the Office of Environment, Health, Safety, and Security, the Office of Enterprise Assessments, and Central Technical Authorities.

Oversight of DOE DNFs is supplemented by the DNFSB. DNFSB is an independent executive branch agency established by Congress in 1988 that provides advice and recommendations to the Secretary regarding the status and implementation of DOE nuclear safety programs

designed to provide protection of workers³ and the public from operations conducted at DOE DNFs. The Board and the Department communicate and interact through a variety of mechanisms, including Board recommendations, reporting requirements, informational letters, public meetings, public hearings, briefings, discussions, and site visits. The DNFSB:

- Reviews and evaluates the content and implementation of DOE standards and directives relating to the design, construction, operation, and decommissioning of DOE DNFs;
- Performs analyses of design and operational data from DOE DNFs;
- Performs investigations of safety-related practices, incidents, and accidents at DOE DNFs;
- Reviews the design and construction of new DOE DNFs; and
- Makes recommendations regarding safety at DOE DNFs.

Within DOE, interactions with DNFSB are governed by DOE Order 140.1A, *Interface with the Defense Nuclear Facilities Safety Board*, issued June 15, 2020, that emphasizes DOE line management accountability and establishes clear requirements and responsibilities for DOE Federal and contractor staff when communicating and/or interfacing with DNFSB. Additional information regarding the interactions with DNFSB is available at:

<https://ehss.energy.gov/deprep/>.

III. Departmental Activities Related to the DNFSB

This section provides information regarding notable activities between DOE and DNFSB and other information related to nuclear safety at DOE DNFs. This section also provides information regarding responses to DNFSB requests for information, meetings, and briefings between the two agencies, and the status of reporting requirements.

A. Departmental Activities

DOE-DNFSB Joint Memorandum of Understanding

During FY 2021, DOE and DNFSB continued to develop a joint Memorandum of Understanding (MOU) that will provide a foundation to mutually improve agency-to-agency communication, transparency, and information sharing, as well as operational and interface efficiencies. On October 22, 2020, DOE and DNFSB senior leadership approved a joint MOU Working Group Charter to guide the MOU development process. In June 2021, the Working Group completed discussions and provided a path forward. In October 2020, DOE and DNFSB provided a joint briefing to the House and Senate Armed Services and Appropriations Committees regarding the status of the MOU. As of the end of FY 2021, the draft MOU is with DOE and DNFSB leadership for review and approval.

³ The National Defense Authorization Act for Fiscal Year 2020 modified the DNFSB mission to include health and safety of employees and contractors at DOE's DNFs.

SRS Building 235-F

Background: On May 9, 2012, the Board issued Recommendation 2012-1, *Savannah River Site Building 235-F Safety*, regarding facility safety and hazards from residual contamination within Building 235-F. DOE accepted the recommendation on July 10, 2012, and the Secretary issued the IP on December 5, 2012. In November 2014, the Department revised the IP to modify the schedule for its actions and deliverables including a new fire analysis evaluation. The Department completed all actions in the latest revision of the IP, which the Secretary formally signed in June 2020.

On December 23, 2020, DNFSB responded to the latest revision of the IP acknowledging that DOE had taken positive steps to reduce the risks posed by the hazards in Building 235-F. However, the Board noted that it was concerned that the IP did not ensure DOE would be able to maintain Building 235-F in a safe condition while it awaits its end state. DOE responded to the Board on February 25, 2021, stating that it intends to ensure that the latest revision of the safety analysis and supporting documentation appropriately document the technical basis for the performance characteristics and safety classification of the building's ventilation system and that the building is maintained in a safe condition through decommissioning.

Public Meeting and Hearing on the Status of SRS

On July 13, 2021, DNFSB held a virtual public meeting and public hearing. The public meeting focused on lessons learned and best practices for how DOE minimized nuclear safety impacts at SRS. The public meeting was composed of two discussions, the first with senior management from EM Headquarters and Savannah River Operations Office and the second with senior managers from NNSA Headquarters and NNSA Savannah River Field Office.

The public hearing had two main topics. The first topic focused on NNSA's ongoing actions at the Tritium Facilities that DOE cited as a basis to not accept Recommendation 2019-2, *Safety of the Savannah River Tritium Facilities*. The second topic focused on federal oversight and technical staffing needs by both EM and NNSA.

B. Program Office Activities

Office of Environmental Management

Programmatic Nuclear Safety Activities

In FY 2021, the EM Office of the Chief of Nuclear Safety continued to perform oversight, provide technical support, and execute technical activities, as appropriate, in support of EM nuclear operations. Specific activities included:

- Supporting the revision and issuance of DOE-STD-5506-2021, *Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities*.
- Coordinating with NNSA on implementing measures to improve management of TRU waste at EM Los Alamos Field Office in response to DNFSB letter, dated September 24, 2020, and associated DNFSB Technical Report 46, *Potential Energetic Chemical Reaction Events Involving Transuranic Waste at Los Alamos National Laboratory*.

- Evaluating the data of the *Independent Review of Generator Responses to the U. S. Department of Energy Headquarters Regarding Potentially Reactive Waste*, to determine programmatic improvements at EM sites.
- Conducting an independent EM Headquarters virtual review of the implementation of DOE-STD-1027-2018, *Hazard Categorization of DOE Nuclear Facilities*, at EM sites.
- Providing technical expertise and technical reviewers to support an EM Los Alamos Field Office review of the revisions to Area G safety basis documentation.
- Providing support to the Federal Operational Readiness Review of the Idaho Cleanup Project Integrated Waste Treatment Unit facility.
- Providing support to EM DNFs in response to the COVID-19 pandemic.

Improvements in Radioactive Waste Operations Oversight

In response to the April 11, 2018, over-pressurized TRU waste drum event at the Idaho Cleanup Project Accelerated Retrieval Project V facility at the INL Site, DOE investigated and subsequently directed all radioactive waste generators to review their waste inventories and processes for contents that may cause similar situations. EM also issued a Safety Alert on May 28, 2019, with actions to be taken at EM sites with waste conditions similar to those at the INL Site. DOE also issued an Operating Experience Level 2 document on September 4, 2019, that requested waste management information from all sites. The data was collated, analyzed, and the results were shared with the DNFSB in a letter, dated January 6, 2020. Based on the data collected, EM conducted an independent review of the associated waste characteristics and controls. The results of the review are documented in the final report, *Independent Review of Generator Responses to the U. S. Department of Energy Headquarters Regarding Potentially Reactive Waste*, issued on July 19, 2021. EM reviewed the report and is still evaluating the actions taken at EM sites to address the issues identified in the report. The independent review report was shared with the DNFSB. The results of the EM review will be shared when complete.

DOE-STD-5506-2021, Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities

Since early 2020, DOE has been working on a revision of DOE STD-5506-2007. The standard, originally issued in 2007, specifies how DOE sites should analyze and control the hazards associated with TRU waste operations. The need for improvements in the standard were precipitated by the FY 2014 WIPP accident and the FY 2018 INL event.

On March 15, 2018, DNFSB transmitted Technical Report 43, *Deficiencies in DOE Standard 5506-2007, Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities*, which identified issues DNFSB believed should be addressed in the revised standard. EM worked with DNFSB to address its concerns and technical issues through the revision process via working group meetings and staff-to-staff presentations. Over 300 DNFSB comments were addressed by the DOE revision writing team. Only two technical concerns were unresolved:

1) underestimation of release fractions for container deflagrations, and 2) non-bounding amount of liquid fuel assumed in fuel pool fires.

The revised standard was published in August 2021. In response to DNFSB letter and reporting requirement dated, July 26, 2021, EM, along with NNSA, briefed the Board on September 24, 2021, addressing the two outstanding DNFSB technical concerns and the Department's plans for implementation of the revised standard.

National Nuclear Security Administration

Programmatic Nuclear Safety Activities

The NNSA Office of Safety, Infrastructure, and Operations continued to work toward improving technical expertise, operational excellence, performance culture and nuclear safety. Notable accomplishments included:

- Obtaining a temporary exemption for a DOE Laboratory Accreditation Program certification of the Pantex dosimetry program to allow Y-12 to process Pantex thermoluminescent dosimeters. This action was necessitated due to issues identified in the Pantex dosimetry equipment. Y-12 and Pantex are scheduled to apply for a combined accreditation certification in FY 2022;
- Improving Facility Representatives, safety professionals, and other staff technical and professional competence through high quality and position-specific training, mentoring, and other learning activities supporting qualification to Federal Technical Capabilities requirements;
- Continuing the implementation of the NNSA Safety Roadmap, a strategic plan providing direction for implementing initiatives designed to facilitate an effective and efficient safety oversight program. Accomplishments completed during FY 2021 included:
 - Developing a knowledge capture and preservation process to address demographic changes in the NNSA workforce; and
 - Continuing development of the Safety Analytics, Forecasting, and Evaluation Reporting (SAFER) Project. The purpose of this project is to develop a comprehensive, data driven analysis tool to significantly enhance the effectiveness of safety professionals in their oversight function and provide data driven risk informed awareness to improve the effective use of resources;
- Continuing to host bi-monthly safety conference calls with field offices to provide a forum for discussion of current events and challenges, sharing of lessons learned and best practices, and communicating NNSA-wide concerns and initiatives; and
- Briefing the NNSA Principal Deputy Administrator throughout the year to keep senior leadership informed of safety concerns, successful best practices, highest safety risks within current operations, actions being taken to address those risks, and interactions with DNFSB.

Improvements in Safety Oversight

In FY 2021, NNSA worked to integrate Headquarters and field office oversight to enhance the "One-NNSA" governance model. The implementation of this model has improved

communication, enhanced transparency, and improved operations throughout NNSA. A few improvements are highlighted below:

- Monitoring and trending NNSA operations through data driven metrics to identify and focus field and Headquarters assessment activities as part of the NNSA Site Integrated Assessment Program on those areas where the most significant improvements could be achieved;
- Completion of the Safety Basis Review Team Project to develop a more corporate process to integrate safety basis document reviews across NNSA using field office and Headquarter resources. This effort has been institutionalized in how NNSA supports safety basis reviews;
- Establishing a Conduct of Operations Working Group to collaboratively address enterprise and site-level issues through sharing recommendations and actions enhancing operational formality; and
- Enhanced cooperation and coordination with other DOE entities to address emerging issues to NNSA and DOE. For example, a safety advisory for oxygen deficient atmospheres was developed and coordinated with the DOE Office of Environment, Health, Safety and Security to draw attention to needed safety precautions to address a negative trend in this area.

C. Site-Specific Activities

Hanford Site

Waste Treatment and Immobilization Plant

In FY 2021, the Department continued construction of the Hanford Site Waste Treatment and Immobilization Plant for the safe immobilization and disposition of underground storage tank waste. Although impacted by the COVID-19 Pandemic, the design and construction of the Low-Activity Waste Facility, Balance of Facilities, and Analytical Laboratory was completed. Testing will occur for these facilities in FY 2022 to support feeding low-activity waste directly from tank farms to the Low-Activity Waste Facility and create a stable waste form for disposal of liquid supernate currently in storage at the Hanford Tank Farms.

On June 25, 2020, DNFSB transmitted a letter to the Secretary regarding concerns with the hazard categorization for the Low-Activity Waste Facility. Following discussions with DNFSB, the Department addressed these concerns in FY 2021 as part of the annual update to the Low-Activity Waste and Effluent Management Facility safety basis.

On October 14, 2020, DNFSB responded to the Department's August 30, 2019, letter regarding the resolution of technical issues related to erosion and corrosion wear allowances for the design of piping, process vessels, and pulse-jet mixers. The DNFSB letter concurred with the Department's position that these issues were resolved.

Building 324

In FY 2021, the structural modifications and removal of legacy debris from Building 324 hot-cells continued. Completion of these actions will eventually enable the remote excavation of highly-contaminated soil from beneath the building's B Hot-Cell.

In late 2019, several personnel contamination events resulted in pausing work inside radiological zones in Building 324 to conduct a review of operations including the strategy, risks, and controls necessary to remove highly radioactive soil from beneath the building. In FY 2021, training for high hazard operations was conducted as part of the facility's corrective action plan supporting resumption of operations. The Project Hazard Review Board approved a revised work package which improved contamination control, entry and exit controls, and personal protective equipment for pilot hole drilling operations.

Central Waste Complex

In November 2020, DNFSB initiated a review of the Central Waste Complex safety basis documents. The review was conducted virtually over the course of four meetings and focused on the hazard controls identified in the documented safety analysis (DSA) and technical safety requirements (TSR). The review team had proposed a walk down of the facility; however, with the travel restrictions in place due to the COVID-19 Pandemic, this portion of the review was not conducted.

242-A Evaporator Facility

In FY 2021, the DOE Office of River Protection initiated discussions with DNFSB regarding the need to revise commitments made by DOE in response to a June 18, 2014, DNFSB letter and a reporting requirement related to the DNFSB's safety basis review of the 242-A Evaporator Facility. The commitments identified in the DOE response were related to: (1) a fire-related vulnerability of safety-significant solenoid valves located in the condenser room, and (2) the adequacy of programmatic administrative controls for seismic shutdown. Discussions between the two agencies continued throughout the year.

Los Alamos National Laboratory

Technical Area 54, Area G

In FY 2021, Technical Area 54, Area G was operated in a restricted capacity while resolution of 25 potential inadequacies of the DSA were addressed. The Los Alamos Field Office worked closely with its cleanup contractor to review activities that could be safely performed within the boundaries of compensatory measures. Five Justifications for Continued Operation were approved by DOE in FY 2021. Resolution of the potential inadequacies of the DSA and implementation of the Justifications for Continued Operation are on schedule for FY 2022.

Plutonium Facility—Building 4 (PF-4)

In FY 2021, substantial progress was made to update the PF-4 DSA to comply with current nuclear safety requirements. The revised DSA is scheduled to be completed in FY 2022 and will provide updated safety basis support for the multiple programs within PF-4, including pit production to support the Department of Defense.

The Safety Design Strategy for the Los Alamos Plutonium Pit Production Project was approved by NNSA in FY 2021 and activities to remove old gloveboxes from PF-4 were initiated. In June 2021, DNFSB initiated a review of the Los Alamos Plutonium Pit Production Project and shared their observations with DOE in August 2021.

On September 24, 2020, DNFSB issued Technical Report 46, *Potential Energetic Chemical Reaction Events Involving Transuranic Waste at Los Alamos National Laboratory*. In response to this report and lessons learned from a PF-4 titanium oxidization event, revisions to the site TRU waste management processes were implemented in FY 2021 to improve the safe storage and shipment of TRU waste to WIPP. In FY 2021, several shipments of TRU waste from LANL to WIPP were successfully completed.

Radiological Laboratory and Utility Office Building

In FY 2021, repairs to address degradations in the fire protection system were completed in support of certifying this facility as a Hazard Category 3 nuclear facility. In addition, an Independent Verification Review was completed by NNSA of the newly developed DSA, which will allow for operations to increase the amount of Material at Risk within the building beginning in FY 2022. On December 8, 2020, DNFSB transmitted a letter to DOE regarding their review of the facility DSA stating that they did not identify any safety issues to the control strategy in the DSA.

TRU Waste Facility

The safety basis of the TRU Waste Facility was amended in FY 2021 to account for the upgrade of the fire suppression system and its reclassification as a safety significant system. Implementation of the DSA continued through FY 2021 in support of declaring the system fully operable as a credited safety system. On October 21, 2020, DNFSB transmitted a letter to DOE regarding their review of the facility DSA, stating that all previously open safety items were closed. The letter also identified new issues for DOE's consideration.

Nevada National Security Site

Device Assembly Facility (DAF)

Progress on the DAF ten-year seismic hazard assessment continued in FY 2021. The final soil-structure interaction analyses and generation of in-structure response spectra were completed. Additional activities, including structural analysis and structure, system, and component evaluation, are expected to commence in FY 2022.

The DAF Enhanced Staging Program was established in FY 2021 to provide a responsive and resilient staging capability for special nuclear material. In preparation for constructing a rack system and material handling area in the DAF, a prototype facility is being built at the Radiological/Nuclear Countermeasures Test and Evaluation Complex. Lessons learned from the construction of this prototype will be applied at the DAF. The prototype facility provides a location to train employees in preparation for upcoming DAF material handling and rack reconfiguration.

Significant modifications were implemented in FY 2021 to the DAF fire suppression system to include replacement or reconfiguration of the individual building lead-in lines and installation of a new domestic water line to separate the credited fire suppression system from the domestic water system. The existing DAF Fire Water Tank Refurbishment Project requires availability of an alternate credited water source to supply the fire suppression system. Accordingly, DAF conducted several fire water supply flow tests in FY 2021 to evaluate viability of an alternate water source. The initial and second flow tests were inconclusive. The results of a third flow test are currently being evaluated to determine if the alternate water supply is capable of meeting safety basis requirements.

Replacement of the DAF uninterruptable power supply system was completed in FY 2021. An alternate emergency lighting system for use in nuclear safety-related applications was identified and approved for use to support the necessary outage. Acceptance testing procedures have been developed to demonstrate operability.

U1a Complex

In FY 2021, efforts continued to reduce the reliance on Specific Administrative Controls consistent with the December 19, 2018, DNFSB letter regarding the U1a Complex safety basis.

A National Weapons Laboratory / NNSS Integrated Project Team continued working to design and deliver a new transport container that will provide the desired level of protection from credible mechanical, thermal, and electrical hazards. LANL serves as the Design Agency for the new transport container and led the multi-organizational integrated project team. A preliminary scope of work was developed in FY 2021 that includes functional and facility-specific requirements for the design and analysis of the new transport container.

During FY 2021, recommendations to improve the reliability of the U1a Complex hoist systems were developed. NNSS is currently evaluating the costs and benefits of implementing the recommendations.

Pantex Plant

Training and Conduct of Operations

During FY 2021, DNFSB conducted a programmatic review of Pantex Training and Conduct of Operations Programs. In the second quarter of FY 2021, Pantex initiated the development of an action plan based on DNFSB close-out notes in advance of issuance of the final report.

The Board transmitted a letter to the Secretary on June 9, 2021, detailing weaknesses in the two programs as well as concerns with organizational culture at Pantex. Pantex updated its corrective action plan to address the identified areas of concern in the DNFSB letter. The updated corrective action plan contains 24 actions that are designed to address the areas of concern that were identified in the Board's letter. At the end of FY 2021, 21 of 24 actions were completed. The Board was briefed on the status of the actions in August 2021.

Building 12-96 High Pressure Fire Loop Lead-in Construction Quality Assurance

On August 6, 2020, DNFSB transmitted a letter with a reporting requirement and the results of a DNFSB review of the construction of the Building 12-96 High Pressure Fire Loop Lead-in. On

December 16, 2020, NNSA responded to the reporting requirement and agreed with the conclusions in the DNFSB report. NNSA's response included a corrective action plan designed to address DNFSB concerns associated with the identification and management of requirements for safety class components, including quality assurance of the work throughout construction. By March 2021, all items within the corrective action plan were completed.

On November 10, 2021, the Board transmitted a letter to the NNSA Administrator stating that, "The Board finds the corrective actions and the associated deliverables to be comprehensive and resolve the identified safety deficiencies. The safety improvements made will help protect against mis-identification of safety basis requirements, quality requirements, and system boundaries on future construction projects."

Infrastructure Improvements

In December 2020, DNFSB conducted a review of the concrete chipping in Building 12-84, cracked concrete beam in Building 12-44, and beam connection damage in Corridor 12-104A, and DOE's actions to-date to address these potential structural issues. Pantex subsequently executed repairs in Building 12-84 and Corridor 12-104A. After an evaluation of the cracked beam in Building 12-44, it was determined that the structure in Building 12-44 was robust and that the beam would be closely monitored for any changes.

On January 21, 2021, DNFSB was provided a comprehensive response to the December 2020 review lines of inquiry. Following a walkdown of the completed work in August 2021, DNFSB communicated that they had no issues with the actions taken to address the structural deficiencies. As of the end of FY 2021, no final report of the December 2020 review or associated correspondence regarding this issue has been received from the Board.

Fire Protection

During FY 2021, the Pantex life sustainment plan for fire protection upgrades continued to be implemented. The plan identifies all needed upgrades to the fire protection systems, flame detection systems, and lead-in piping replacements to the high-pressure fire loop serving DNFs. DNFSB continued oversight of the identified construction activities. A total of seven flame detection systems and eight high-pressure fire loop lead-in replacements were completed for Buildings 12-99 Bay 2, 12-84 Bays 3 and 16, 12-44 Cell 6, and 12-104 Bays 1, 3, and 5. Fire suppression system upgrades at seven additional facilities were ongoing at the end of FY 2021 with completion scheduled for the first half of FY 2022.

Pantex continued monitoring unexpected electrical faults on the newly installed flame detection systems. The information regarding the faults, including the status of the path forward and tracking/trending analysis was communicated regularly to DNFSB.

Savannah River Site

H-Canyon Exhaust Tunnel

On September 8, 2021, DNFSB transmitted a report on its review of Revision 14 of the H-Canyon DSA and TSR. The report recognized the new safety strategy that relies on seismic structural qualification of the process vessels and their connectors, reduction of Material at

Risk⁴, and the installation of a seismically evaluated portable compressed air system to remove flammable gases generated from radiolysis of the vessels' contents in a post-seismic condition.

Revision 17 of the DSA and TSR, were submitted to the Savannah River Operations Office on August 25, 2021, for review and approval. This revision incorporates several mission changes, a reduction of Material at Risk for all non-seismically initiated events (previously implemented for the seismically initiated accident scenarios) and downgrading several controls. These modifications address the completion of the Target Residue Material mission and the incorporation of the proposed Accelerated Basin De-inventory project which will require the storage of dissolved spent fuel in additional tanks.

Also incorporated into the DSA and TSR revision is the downgrading of the safety class H-Canyon Exhaust Ventilation System to safety significant status, Seismically Qualified Vessel Air Purge piping Specific Administrative Control in favor of a safety management program, and safety significant Vessel Instrument Air Purge to general service status.

Building 235-F

On April 27, 2021, DOE briefed the Board on the details of Revision 5 of the DSA. In June 2021, DOE approved the revised DSA and TSR. DOE fully funded Building 235-F deactivation activities in FY 2021 and completed implementation of Revision 5 of the DSA and TSR in September 2021.

Liquid Waste Operations

The highly integrated, closely coupled liquid waste system at the SRS entered a new phase in January 2021 when the Salt Waste Processing Facility (SWPF) began routine operations. This followed approximately three months of hot commissioning which began with the introduction of radioactive salt waste to SWPF in October 2020.

Although the SWPF is designed to process approximately 6 million gallons of salt waste annually, 2 million gallons were processed during its first eight months of operations. Operational challenges including fouling of cross flow filters and coalescers limited SWPF's ability to achieve the desired waste throughput. SWPF is working to analyze the solids and develop mitigation strategies to increase the throughput of the facility.

The balance of the liquid waste system ramped up operations to support SWPF's higher salt processing rates. The salt waste feed was prepared in 1 million-gallon batches and staged with significantly improved batch preparation times. A third salt waste batch preparation tank was also readied to support higher throughput rates in the future. The Defense Waste Processing Facility which receives the highly radioactive components removed from the salt waste by SWPF, continued to produce vitrified high-level waste canisters that contain both salt and sludge waste. The Saltstone Facility received and processed into grout more than three million gallons of decontaminated salt waste in FY 2021.

⁴ Material at Risk is the bounding quantity of radioactive material that is available to be acted upon by a given physical stress from a postulated accident. [DOE Standard 3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*]

Tritium Facilities

From the second to the fourth quarter of FY 2021, DNFSB conducted a formal review of the NNSA Tritium Facilities. The scope of the review included electrical distribution systems, facility lightning protection and grounding systems, verification of existing electrical system calculations, maintenance system activities associated with electrical systems focusing on maintenance backlogs, identification and review of any recent electrically related incidents, and other various electrical safety systems. The NNSA Savannah River Field Office approved a revision to the safety basis that resolves known issues and relies on several fire barriers as safety class controls to prevent a fire from propagating from one facility to another. The revised safety basis is scheduled to be implemented in FY 2025.

The Tritium Facilities H-Area New Manufacturing Facility has numerous wall and floor penetrations, considered fire impairments, that were identified in FY 2020 after a site procedure revision required additional inspections and documentation. Several of these penetrations are in the walls and floors of Building 233-1H which connect the H-Area New Manufacturing Facility and several other facilities. The DNFSB resident inspector, Tritium Facilities, and Savannah River Field Office personnel observed several of the accessible penetrations located in potential safety class barriers. The impairments are planned to be resolved prior to implementing the safety basis that credits the safety class fire barriers. A conceptual design package for these upgrades has not yet been developed.

Y-12 National Security Complex

Infrastructure

Infrastructure of DOE DNF's is an important issue for DNFSB and is incorporated into inspections and reviews. Y-12 continued to make significant progress implementing the Extended Life Program (ELP) that focuses on the strategic modernization of the infrastructure of Buildings 9215 and 9204-2E to sustain safe enriched uranium mission operations until FY 2040 or beyond.

The ELP has two major elements: the ELP IP and the ELP Safety Strategy. The ELP IP identifies and prioritizes the required facility sustainment activities while providing the necessary details to support funding and scheduling requirements. A key ELP IP accomplishment in FY 2021 was the completion of the Nuclear Facilities Electrical Modernization portfolio of projects, which provided upgrades and replacements to key existing electrical infrastructure in Buildings 9204-2E and 9215. In concert with the ELP IP, the ELP Safety Strategy focuses on identifying and addressing gaps between the existing facility design and current regulatory codes and standards providing data to identify and address nuclear safety risks. Significant progress was made in FY 2021 to update the seismic hazard assessment and evaluate fire and ventilation codes and requirements.

Y-12 also focused on ensuring safe mission operations in Building 9212 until its replacement by key enriched uranium mission transformation projects, including the Uranium Processing Facility. Replacement technologies for existing aging mission processes in Building 9212

continued to make progress. In FY 2021, Y-12 initiated a critical spare parts program and continued planned outages focused on key mission support systems to improve system reliability.

Along with a strong maintenance, repair, and replacement program; efforts continued in FY 2021 to remove Material at Risk from Building 9212. Approximately 1.5 metric tons of uranium was removed from the building in FY 2021. In addition, eight out-of-service systems were permanently isolated. In July 2021 the Board provided a letter to DOE regarding out-of-service systems in Building 9212 and identified criticality safety improvements for out-of-service systems that have not been isolated.

Nuclear Criticality Safety (NCS) Program

In March 2021, the Board requested a briefing on the Y-12 NCS Program, and other topics of interest, such as Conduct of Operations and the impending contract transition. In April 2021, NNSA briefed the Board on the NCS Program, improvements made to the NCS Program since the uranium accumulation events in FY 2017-2018, and how Y-12 is evaluating the adequacy of actions to resolve more recent NCS issues, such as the risks presented by legacy uranium holdup in out-of-service equipment. The briefing also included an overview of Y-12's Integrated Comprehensive Roadmap to improve NCS performance. Feedback from the DNFSB indicated that the briefing addressed all requested areas.

On July 7, 2021, DNFSB transmitted a letter to the Secretary noting that Y-12 had taken the necessary steps to address the NCS risk presented by a specific subset of out-of-service equipment. However, the letter raised concerns regarding the continued discovery of other out-of-service items and weaknesses in the Y-12 issues management system. The letter also noted the impending contract transition and the need for proper transition of open issues to the new contractor. NNSA had previously identified weaknesses with the contractor issues management process and was closely evaluating and tracking corrective actions to improve the process. Also, NNSA initiated the development of a contract transition management plan and specific performance goals to ensure a seamless contract transition with special emphasis on key improvement initiatives, including issues management and NCS.

Uranium Processing Facility

Construction significantly progressed in FY 2021 for all Uranium Processing Facility buildings. The Salvage and Accountability Building, Process Support Facility, and the Main Process Building structures were completed. Fabrication, factory acceptance testing, and delivery continued for process equipment and gloveboxes. Many of the process skids were delivered and installed. The Tool Preparation System group of the Main Casting Glovebox was received in FY 2021 and installation continued through the end of FY 2021. The enclosure was welded together and concrete was placed for the floor.

In March 2021, DNFSB visited the Uranium Processing Facility and received a briefing on various nuclear safety topics, including Revision A of the DSA and TSR submitted to NNSA in September 2021, Revision 0 of facility criticality safety evaluations, criticality accident alarm system and radiation testing, and design authority role and staffing. DNFSB was provided a tour of Uranium Processing Facility construction sites to observe construction progress.

In June 2021 DNFSB and NNSA visited the equipment vendor to observe testing for the Main Casting Knockout Glovebox Line, as well as testing of the Knockout Glovebox House Vacuum Systems and Mold Stack Up-Enders. In addition, initial checkout, and operation of the MagneMotion System in a section of the Stack Loading Glovebox Line was observed. No issues were identified.

Waste Isolation Pilot Plant

Safety System Confinement Ventilation System

In April 2021, DOE informed DNFSB that the Salt Reduction Building concrete walls did not meet specifications. The deficiencies observed in the concrete walls included exposed rebar and voids that required structural repairs. DNFSB did not communicate any issues with the actions taken to repair the walls. Progress on this and other activities were, and continue to be, discussed with DNFSB on a weekly basis.

WIPP Safety Basis

On December 9, 2020, the EM Carlsbad Field Office (CBFO) held a teleconference with DNFSB to discuss CBFO's conclusions in the Safety Evaluation Report for Revision 7 of the WIPP DSA. A follow-on teleconference to complete these discussions was held on February 3, 2021. Subsequent to these discussions, DNFSB assessed CBFO's responses and requested an additional teleconference be scheduled for the DNFSB to have its assessment conclusions verified by the CBFO for factual accuracy. This teleconference was held on September 23, 2021.

Safety Significant Controls

In October 2019, the WIPP Safety Instrumented Alarm System was inoperable for almost four weeks. CBFO provided initial findings of the event to DNFSB in response to February 2020 discussions between the two organizations. Following the discussions, an internal independent CBFO team conducted a full-scale assessment and extent of condition review of the event. That review led to additional findings that were communicated to DNFSB in April 2020 and September 2020.

The CBFO completed its final assessment report of the event on December 9, 2020. The report addressed DNFSB's concerns, identified deficiencies requiring further corrective actions, including oversight weaknesses and program implementation concerns related to conduct of operations, training and qualification, configuration management, and the contractor assurance system.

Following review of CBFO's assessment report, DNFSB transmitted a letter on August 13, 2021, stating that the Board concluded that "WIPP personnel have now taken appropriate corrective actions for this event." The letter also stated that, "... there are important lessons to be learned from [the event] to strengthen the performance and capabilities of the Carlsbad Field Office and the WIPP contractor."

At the end of FY 2021, the CBFO was continuing follow-on actions to ensure all corrective actions were being fully addressed.

Underground Ventilation System-700C Mine Fan

In FY 2021, WIPP focused attention on bringing the 700C mine fan back into service. A 4-hour hot test was successfully conducted on January 31, 2021, following a Contractor Management Self-Assessment and an Implementation Verification Review of Revision 7 of the WIPP DSA. DNFSB observed these reviews remotely. An evaluation of the radiological data collected during the test was conducted and presented at a public town hall meeting on April 15, 2021. The data indicated that radiological exposure was below occupational exposure limits established by Title 10 of the Code of Federal Regulations (CFR) Part 835, *Occupational Radiation Protection*.

Preparations for a 40-hour test and balance run of the 700C mine fan were made and validated via a Management Self-Assessment and Implementation Verification Review followed by a Contractor Readiness Assessment, observed by DNFSB, during August 2021. The final Contractor Readiness Assessment report was issued on August 31, 2021. The 40-hour test is scheduled to be conducted in early FY 2022.

Waste Management

In FY 2021, four incidents involving incoming waste shipments from DOE sites and subsequent handling of waste containers at WIPP resulted in inquiries by DNFSB.

- December 2020. A full TRUPACT container was incorrectly labeled as empty and moved from the Contact Handled TRU Bay to the Parking Area Unit. Corrective actions to prevent recurrence were implemented.
- March 2021. WIPP was notified by LANL that waste containers containing potential pyrophoric material had been shipped and received at WIPP and emplaced in the underground between July and September 2020. After a full evaluation, it was determined that the containers were compliant with the WIPP Waste Acceptance Criteria and did not constitute a hazard for the WIPP underground.
- May 2021. WIPP discovered that some DOE sites were calculating overpack weights by choosing a nominal weight and adding 5 percent to that value, as opposed verifying the weights using a calibrated scale as required. WIPP notified the Nuclear Regulatory Commission of the potential violation of the Certificates of Compliance and implemented appropriate corrective actions.
- May 2021. WIPP notified the CBFO that two shipments enroute to the WIPP site from the INL Site contained duplicate package numbers. CBFO, the WIPP contractor and the INL Site determined that the data for one of the shipments was correct and this shipment resumed transit to WIPP. The other shipment was determined to have erroneous data and was returned to the INL Site. The data error was caused by an issue with the Waste Data

System software, managed and maintained by WIPP. A revision of the software was initiated to correct this issue. The DNFSB was informed of the progress on revising the software in September 2021. DNFSB did not communicate to DOE any issues with the corrective actions implemented in response to these incidents.

D. Other Responses to DNFSB

Requests for Information

In FY 2021, the Department responded to 313 specific requests for information that resulted in providing over 4,300 documents to the DNFSB.

Meetings and Briefings with the Board

The Department participated in 10 meetings or briefings with the Board in FY 2021. Table 3.1 identifies the meetings and briefings and the DOE Program office(s) involved.

Table 3.1. FY 2021 DOE – Board Meetings or Briefings

Date	DOE Program Office	Subject
01/28/2021	EM	EM-1 Periodic meeting with the Board
02/23/2021	NA	IP for Recommendation 2019-1, <i>Safety of the Savannah River Site Tritium Facilities</i>
04/08/2021	NA	Y-12 Nuclear Criticality Safety
04/27/2021	EM	SRS Building 235-F
06/08/2021	NA	SAFER Project
06/09/2021	EM, NA	DOE Nuclear Criticality Safety Programs
08/19/2021	EM	EM-1 Periodic meeting with the Board
08/30/2021	NA	Pantex Conduct of Operations
09/02/2021	NA	NA-1 and NA-2 Introductory meeting with the Board
09/24/2021	EM	Revised DOE-STD-5506-2021, <i>Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities</i>

Reporting Requirements

The following table provides the status of DOE response to Board reporting requirements, pursuant to 42 USC Section 2286b(d).

Table 3.2. FY 2021 Responses to Board Reporting Requirements

Date of Letter	DOE Program Office and Site	Reporting Requirements	Completion Date
08/06/2020	NA, Pantex	A report outlining how NNSA's plans to ensure that construction projects at the Pantex Plant's nuclear facilities correctly identify safety basis controls and invoke quality assurance requirements commensurate with a project's importance to safety.	12/16/2021

Table 3.2. FY 2021 Responses to Board Reporting Requirements

Date of Letter	DOE Program Office and Site	Reporting Requirements	Completion Date
09/24/2020	EM and NA, LANL	A report addressing: 1) whether the hazards associated with the current transuranic waste container population at Los Alamos National Laboratory are consistently and adequately controlled and DOE's basis for this position, and 2) whether the revision to DOE Standard 5506 will address the broader implications of these concerns, as they are applicable to other DOE sites.	03/30/2021
12/23/2020	EM, SRS	A notification of DOE's intent to address the ventilation system items at Building 235-F and annual updates regarding deactivation progress in Building 235-F, the results of radiological surveys and inspections to verify that contamination in the facility is not spreading, status updates on establishing a final end state determination with regulatory authorities, and the updated schedules for activities required to achieve such a final end state.	02/25/2021
02/11/2021	EM and NA, All DNF Sites	DOE to provide the annual metrics table and briefing on the Department's Nuclear Criticality Safety Program. (Revised to only a briefing for FY 2021)	06/09/2021
06/09/2021	NA, Pantex	A report on the status of NNSA's actions to holistically address the issues raised in the Board's review of Training and Qualification Program and Conduct of Operations Implementation at the Pantex Plant, including how these actions will be maintained during contract transition.	08/05/2021
06/10/2021	DOE Headquarters, All DNF Sites	A report and briefing on DOE's implementation of Order 420.1C, <i>Facility Safety</i> , requirement to periodically assess the seismic hazard.	
07/26/2021	EM and NA, All DNF Sites	A briefing on concerns and planned implementation of the revised DOE-STD 5506, <i>Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities</i> .	09/24/2021
08/26/2021	NA, NNSS	A report and briefing that addresses safety questions pertaining to the safety basis at the Nevada National Security Site's Radioactive Waste Facilities.	
09/08/2021	EM, WIPP	A report and briefing that describes DOE's plan for safely managing nuclear waste materials containing mixtures of nitric acid or nitrate salts with polysaccharides.	

IV. Status of DOE Implementation Plans

A. Process Overview

The Board issues recommendations to the Secretary, via letter and publication in the *Federal Register*, regarding measures it feels that the Department should adopt to ensure adequate protection of workers and the public from activities conducted at DOE DNFs. By law, the Secretary is required to accept or reject, in whole or in part, the Board recommendation within 45 days of its publication in the *Federal Register* unless granted an extension by the Board. If the Secretary accepts all or part of the recommendation, an IP addressing the recommendation's concerns is required to be transmitted to the Board within 90 days of the publication of the Secretary's response, or additional time may be permitted upon notice of the need for additional time sent to Congress and the Board.

The Secretary is required to complete the items in the IP within one year of issuance. If additional time is needed, DOE is required to submit a report to Congress discussing the reasons for delay and providing a schedule for completion of the IP items. Generally, the scope and technical complexity of the nuclear safety issues usually require more than one year for completion.

Board recommendations, IPs, and a chronological record of related correspondence between DOE and the DNFSB are available on the DOE Office of the Departmental Representative to the DNFSB website at: <https://ehss.energy.gov/deprep/>.

B. Implementation Plan Status

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

Issue Date: February 20, 2019.

On February 23, 2021, NNSA briefed the Board on the status of IP actions. In FY 2021, 16 IP actions were completed. By the end of FY 2021, 62 of 69 actions of the IP were completed. The remaining actions are scheduled to be completed by the end of FY 2023.

Recommendation 2020-1: Nuclear Safety Requirements

Issue Date: February 21, 2020.

On June 1, 2021, DNFSB issued a letter reaffirming and revising this recommendation to include the following five topical areas: (1) aging infrastructure management; (2) methodology of hazard category designation; (3) DOE approvals of safety basis documents; (4) evaluation of DSA preparation and review process; and (5) safety basis process and requirements.

On September 8, 2021, the Secretary responded to the Board's revised recommendation and reaffirmation with a final decision to accept the recommendation. The Secretary agreed with addressing the technical concerns raised by the Board but noted that DOE cannot commit to a specific outcome in a future rulemaking and will perform a regulatory analysis to evaluate whether any changes to 10 CFR Part 830 should be proposed through a future rulemaking process. The Department is in the process of developing an IP to address the final recommendation.

Appendix. Acronyms and Abbreviations

AEA	Atomic Energy Act of 1954, as amended
Board	Defense Nuclear Facilities Safety Board
CBFO	Carlsbad Field Office
CFR	Code of Federal Regulations
DAF	Device Assembly Facility
Department	Department of Energy
DNF	Defense Nuclear Facility
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DSA	Documented Safety Analysis
ELP	Extended Life Program
EM	Office of Environmental Management
FY	Fiscal Year
Hanford	Hanford Site
INL	Idaho National Laboratory
IP	Implementation Plan
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MOU	Memorandum of Understanding
NA	National Nuclear Security Administration
NCS	Nuclear Criticality Safety
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
ORNL	Oak Ridge National Laboratory
Pantex	Pantex Plant
PF-4	Plutonium Facility—Building 4
SAFER	Safety Analytics, Forecasting, and Evaluation Reporting
SC	Office of Science
Secretary	Secretary of Energy
SNL	Sandia National Laboratories
SRS	Savannah River Site
STD	Standard
TRU	Transuranic
TSR	Technical Safety Requirements
USC	United States Code
WIPP	Waste Isolation Pilot Plant
Y-12	Y-12 National Security Complex