Thomas A. Summers, Acting Chairman
Patricia L. Lee

DEFENSE NUCLEAR FACILITIES SAFETY BOARD
Washington, DC 20004-2901

March 28, 2025

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

Dear Secretary Wright:

In 2006, the U.S. Department of Energy (DOE) issued DOE Order 210.2, *DOE Corporate Operating Experience Program*, as part of its response to Defense Nuclear Facilities Safety Board (Board) Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*. The order establishes a comprehensive operating experience program designed to ensure the identification, evaluation, and incorporation of lessons learned from internal and external issues.

The Board reviewed DOE's implementation of DOE Order 210.2 and identified significant gaps in the coverage of operating experience related to nuclear safety. Primarily, the Board is concerned with the lack of operating experience program coverage for issues related to nuclear safety in headquarters-issued operating experience products. The Board also found gaps in coverage in other areas including external-to-DOE operating experience and in lessons learned from completion of major program missions and contract transitions. The enclosed staff report provides a detailed summary of the Board's findings. Given the high-hazard nature of these operations, the Board finds it essential that DOE take further actions to fully implement the requirements of DOE Order 210.2, consistent with DOE's response to Recommendation 2004-1. The Board acknowledges that DOE has begun to address some of these findings to improve the program's effectiveness, but further attention is necessary.

The Board advises that DOE address the findings in the enclosed report to strengthen implementation of DOE's operating experience program.

Sincerely,

Thomas A. Summers

Thomas A. Summers
Acting Chairman

Enclosure

c: Ms. Teresa Robbins, Acting Administrator, National Nuclear Security Administration
Mr. Dae Chung, Acting Principal Deputy Assistant Secretary, Office of Environmental Management
Mr. Todd Lapointe, Director, Office of Environment, Health, Safety and Security
Mr. Joe Olencz, Director, Office of the Departmental Representative to the Board

DEFENSE NUCLEAR FACILITIES SAFETY BOARD

Staff Report

February 3, 2025

Review of DOE's Corporate Operating Experience Program Implementation

Summary. A staff team from the Defense Nuclear Facilities Safety Board (Board) reviewed implementation of the requirements of Department of Energy (DOE) Order 210.2A, *DOE Corporate Operating Experience Program* [1]. The main objectives of the review were to evaluate:

- Coverage of operating experience at defense nuclear facilities related to nuclear safety under the DOE Corporate Operating Experience Program.
- Screening and coverage of external-to-DOE operating experience.
- Assessment and oversight of operating experience program implementation.

The staff team held interactions with various organizations at DOE headquarters and a selected site, specifically the Savannah River Site (SRS), regarding details and insights on DOE's operating experience program implementation. The organizations included DOE's Office of Environment, Health, Safety, and Security (DOE-EHSS); the National Nuclear Security Administration (NNSA); DOE's Office of Environmental Management (DOE-EM); and DOE and contractor organizations at SRS.

The staff team identified safety issues in the following areas that warrant attention and improvement for a fully effective program meeting DOE Order 210.2A requirements. Primarily, the staff team identified a lack of operating experience program coverage for issues related to nuclear safety in headquarters-issued operating experience products. The staff team also found gaps in coverage of external-to-DOE operating experience and in lessons learned from completion of major program missions and contract transitions.

Although DOE has plans to improve operating experience implementation in some areas, comprehensive DOE measures are warranted to ensure appropriate coverage of substantial nuclear safety issues. Improvements are needed in DOE operating experience program implementing documents and guidance, screening for operating experience coverage, and in operating experience program interactions with DOE line organizations and communities of practice. To ensure such improvements are sustained, DOE and contractor management should emphasize proper operating experience program use for substantial nuclear safety issues.

Background. In 2006, DOE developed DOE Order 210.2, *DOE Corporate Operating Experience Program*, in response to Board Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations* [2]. The purpose of the program is to provide a comprehensive operating experience program that ensures systematic, timely attention to identify, evaluate, and implement applicable lessons from internal and external issues. The operating experience program is a key component of the feedback and improvement function of

Integrated Safety Management (ISM) within DOE. In 2011, DOE revised the order and issued DOE Order 210.2A. DOE-EHSS is the lead office for the operating experience program.

The main products of the operating experience program include DOE lessons learned reports, operating experience summaries (OES), and operating experience level 1 through 3 documents. DOE lessons learned reports are generally issued by site contractors. OESs and operating experience level 1 through 3 documents are issued by DOE-EHSS with support from headquarters program offices or sites as necessary.

DOE has established a functioning program for operating experience under DOE Order 210.2A. DOE and its contractors issue operating experience products to the DOE complex for screening (i.e., determining applicability), evaluation, and use at DOE facilities to help prevent adverse events and share good practices. The Operating Experience Committee is established and holding periodic meetings.

Discussion. The staff team reviewed operating experience program implementation with a focus on coverage of substantial nuclear safety-related issues. The staff team identified safety issues warranting attention and improvement for a fully effective program meeting DOE Order 210.2A requirements. The staff team identified a lack of operating experience program coverage for issues related to nuclear safety in headquarters-issued operating experience products. The staff team also identified other implementation issues including lack of coverage of external-to-DOE operating experience and of lessons learned from completion of major program missions and contract transitions. These implementation issues are discussed below.

Lack of Coverage of Issues Related to Nuclear Safety in Headquarters-Issued Operating Experience Products—DOE Order 210.2A requires operating experience programs in each DOE organization to "…identify significant issues and lessons learned that may be of safety significance or have a bearing on the success of DOE missions and to make them available to the DOE complex." The staff team found that there is lack of coverage of substantial issues related to nuclear safety in headquarters-issued operating experience products (i.e., operating experience levels 1 through 3 documents and OES documents) shared complex wide.

The staff team reviewed all operating experience level 1 through 3 documents and OES documents (approximately 120) that have been issued since 2011 when DOE issued DOE Order 210.2A. Most of these operating experience documents involve occupational and industrial safety issues. A small number of operating experience levels 1 through 3 documents and OES documents issued since 2011 (averaging about four per year) are directly related to nuclear safety.

The Los Alamos National Laboratory (LANL) glovebox contamination release and intake by a nearby worker in January 2022 is a prime example of DOE's lack of development of an operating experience product for a substantial nuclear safety event. NNSA issued a detailed investigation report in May 2022 with numerous lessons learned on glovebox integrity and other issues [3]. NNSA also briefed the lessons learned from the investigation in summer 2022 to headquarters and site personnel, yet no operating experience product had been issued on this substantial event.

In a letter dated April 10, 2024, the Board noted that DOE did not share lessons learned complex-wide on this and other LANL glovebox integrity events and requested that DOE brief the Board on its plan for disseminating lessons learned using the operating experience program [4]. In August 2024, NNSA personnel informed the Board's staff that DOE was considering developing an operating experience program document addressing LANL glovebox integrity events. In December 2024, DOE issued operating experience level 3 document OE-3, 2024-04, *Enhanced Glovebox Integrity Inspections and Glovebox Community of Practice* [5].

In addition to LANL glovebox integrity events, the Board has often stressed the need for sharing lessons learned complex-wide and has specifically advised DOE to use the operating experience program to share lessons learned on other issues, including:

- SRS technical safety requirements implementation deficiencies in a letter dated August 14, 2018 [6]. In June 2019, DOE issued operating experience level 3 document OE-3, 2019-02, *Technical Safety Requirements Implementation at the Savannah River Site* [7].

- Pantex Plant external dosimetry program breakdown in a letter dated May 10, 2022 [8]. NNSA responded in a letter to the Board in October 2022 [9] stating that NNSA would work with DOE-EHSS to issue an operating experience product. The Pantex contractor issued DOE lessons learned reports following the Board's letter in August 2022, but an OES or an operating experience level 1 through 3 document has not been issued.

- Pantex Plant use of cast iron fittings in deluge fire suppression systems within multiple defense nuclear facilities in a letter dated April 9, 2024 [10]. In January 2025, DOE issued operating experience level 3 document OE-3, 2025-01, *Use of Cast Iron Fittings in Credited Fire Protection Systems* [11].

Also illustrative of the lack of operating experience products for substantial issues related to nuclear safety is the low number of criticality safety issues addressed in operating experience products over the past several years. DOE's criticality safety community has recently set up its own lessons learned database dedicated to criticality safety issues. While such a database can be beneficial to the criticality safety community to share and trend information, substantial criticality safety lessons learned are required to be formally shared per DOE Order 210.2A.

The staff team and DOE personnel discussed the following potential contributing factors related to this lack of operating experience program coverage:

- DOE Oversight of Operating Experience Programs. DOE Order 210.2A requires DOE-EHSS to "perform annual self-assessment reviews on the effectiveness of the operating experience program to guide ongoing program improvements." Additionally, DOE headquarters and field offices are required to perform self-assessments to "include an assessment of the effectiveness of the organization's

operating experience program" as well as oversight of the contractor's implementation of its contractor assurance system consistent with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy* [12]. Further, DOE Order 210.2A requires contractors to "include an assessment of the effectiveness of the organization's operating experience program" as part of its contractor self-assessments.

The staff team found that, in some cases, assessments were not regularly performed, and completed assessments often focused on compliance rather than effectiveness of program implementation. In response to information requests, DOE-EHSS, NNSA, and DOE-EM personnel were not able to provide any completed assessments of the operating experience program to the staff team. DOE-EM personnel noted that operating experience assessments at sites have not been conducted by DOE-EM headquarters but that assessments by the DOE-EM chief of nuclear safety will include operating experience assessments going forward. SRS personnel provided both DOE field office and contractor assessments. Those assessments focused on basic program functionality but lacked explicit evaluation of program effectiveness at screening substantial issues and developing operating experience products for complex-wide use.

- DOE-EHSS Implementing Documents. The staff team reviewed implementing procedures and training documents related to the operating experience program. DOE-EHSS has distributed some implementing documents to the operating experience community over the years since DOE Order 210.2 was originally issued in 2006. These documents include a charter for the Operating Experience Committee, a checklist for issuing lessons learned, general operating experience program training, and a self-assessment checklist. These documents are not systematically controlled or issued. DOE-EHSS personnel noted that controlled procedures and enhanced training for personnel with operating experience program responsibilities are needed and being planned.

  DOE has not updated DOE Standard 7501-99, *The DOE Corporate Lessons Learned Program* [13], since issuance in 1999 and DOE Order 210.2A does not cite it. DOE-EHSS plans to revise DOE Standard 7501-99 to support operating experience program implementation by line organizations and may potentially convert it to a DOE guidance document covering the broad range of operating experience activities including proper development of program products. DOE-EHSS personnel noted that this effort will be defined in fiscal year 2025.

- Screening of Issues. The staff team reviewed how DOE-EHSS, NNSA, DOE-EM, and SRS review and screen events to identify which events present issues warranting coverage by an operating experience product. The staff team found that emphasis is lacking on identifying candidate issues related to nuclear safety warranting coverage by an operating experience product. NNSA and EM personnel noted that they utilize weekly meetings for review of occurrence reports and other operational issues as the chief forum for screening operating experience. Such

meetings and various other headquarters interactions sometimes result in NNSA or DOE-EM documenting lessons learned for issuance internally within those organizations, but seldom result in generation of operating experience products. SRS personnel indicated that training enhancements were needed to improve awareness of expectations for use of the operating experience program to generate DOE lessons learned reports for complex-wide use.

- Operating Experience Program Interactions with DOE Organizations and Communities of Practice. DOE-EHSS noted the need to increase operating experience program interactions with DOE headquarters and field organizations and with DOE communities of practice to improve awareness and use of the operating experience program. Such interactions include Operating Experience Committee members and other personnel with operating experience program responsibilities meeting with general communities of practice (e.g., Safety Culture Improvement Panel and the Energy Facility Contractors Group) or functional area communities of practice (e.g., criticality safety or fire protection). These interactions by operating experience program personnel could help DOE headquarters, field, and contractor organizations appropriately identify program products for issues related to nuclear safety.

The lack of coverage of substantial issues related to nuclear safety in operating experience products could be addressed by improved protocols with proper screening and by management emphasis on developing an operating experience product when appropriate. DOE and NNSA headquarters and field organizations should emphasize appropriate operating experience program use with operations personnel, subject matter experts, and communities of practice.

Other Operating Experience Program Implementation Issues—The staff team identified the following safety issues where DOE's operating experience program implementation does not meet program requirements and responsibilities in DOE Order 210.2A.

- Lack of External-to-DOE Operating Experience. DOE Order 210.2A requires DOE organizations to establish a formal process "to review and evaluate operating experience from DOE and related government or industry programs, technologies and facilities." The order lists several external sources of operating experience (e.g., the Nuclear Regulatory Commission and the International Atomic Energy Agency). DOE Order 210.2A states that this "requirement may be satisfied by regular participation in the review of external events conducted by the Operating Experience Committee (OEC)." DOE Order 210.2A also identifies that DOE-EHSS "Promotes and manages the OEC, whose members perform in-depth reviews of DOE and *external* operating experience to determine its relevance and share both internal and *external* lessons learned" [emphasis added].

  DOE has not adequately addressed external operating experience in Operating Experience Committee meetings and in operating experience program products.

There is also a lack of issues related to nuclear safety in the few external operating experience items discussed by the Operating Experience Committee or issued in operating experience products. DOE-EM, NNSA, and SRS personnel noted their organizations encourage personnel to participate in external committees, and monitoring of external sources is on an ad-hoc basis and through participation in the Operating Experience Committee review of external operating experience per DOE Order 210.2A as noted above.

DOE-EHSS personnel agreed that the Operating Experience Committee has not focused on external operating experience and that approaches to reviewing external operating experience are not well defined. DOE-EHSS has established a working group to determine actions to improve coverage of external operating experience.

- Lack of Coverage for Completion of Major Program Missions and Contract Transitions. DOE Order 210.2A contains a responsibility for DOE program secretarial officers to develop and promulgate relevant operating experience including "*lessons learned following completion of major program missions and contract transitions*." Both NNSA and DOE-EM personnel noted that this responsibility is not explicitly implemented in operating experience program procedures. While lessons learned from major program completions or contract transitions are often discussed and some shared internally by NNSA or DOE-EM through various means, no operating experience products have been produced in line with this responsibility.

Conclusion. The staff team reviewed DOE operating experience program implementation with a focus on coverage of substantial issues related to nuclear safety. The staff team identified safety issues that warrant attention and improvement to ensure a fully effective program meeting DOE Order 210.2A requirements. Primarily, the staff team identified a lack of operating experience program coverage for issues related to nuclear safety evident in headquarters-issued operating experience products. Additionally, the staff team found a lack of coverage of external-to-DOE operating experience and of lessons learned from completion of major program missions and contract transitions evident in operating experience products.

References

[1] Department of Energy, *DOE Corporate Operating Experience Program*, DOE Order 210.2A, April 2011.

[2] Defense Nuclear Facilities Safety Board Recommendation 2004-1 to Department of Energy, *Oversight of Complex, High-Hazard Nuclear Operations*, May 21, 2004

[3] Department of Energy National Nuclear Security Administration, *Incident Review of the January 7, 2022, Contamination Event at the Los Alamos National Laboratory for Lessons Learned*, May 20, 2022.

[4] Defense Nuclear Facilities Safety Board Letter to Department of Energy, *Safety Issues Pertaining to Glovebox Safety and Glovebox Glove Integrity Programs at Los Alamos National Laboratory*, April 10, 2024.

[5] Department of Energy, Operating Experience Level 3, OE-3, 2024-04, *Enhanced Glovebox Integrity Inspections and Glovebox Community of Practice*, December 2024.

[6] Defense Nuclear Facilities Safety Board Letter to Department of Energy, *Use of DOE Operating Experience Program for Lessons from Technical Safety Requirement Implementation at the Savannah River Site*, August 14, 2018.

[7] Department of Energy, Operating Experience Level 3, OE-3, 2019-02, *Technical Safety Requirements Implementation at the Savannah River Site*, June 2019.

[8] Defense Nuclear Facilities Safety Board Letter to Department of Energy, *Opportunities for Improvement Related to Federal Oversight and Contractor Management of the External Dosimetry Program at the Pantex Plant*, May 10, 2022.

[9] Department of Energy National Nuclear Security Administration Letter to Defense Nuclear Facilities Safety Board, *Response to the Board's May 10, 2022, Letter Regarding the External Dosimetry Program at the Pantex Plant*, October 7, 2022.

[10] Defense Nuclear Facilities Safety Board Letter to Department of Energy, *Quality Assurance Measures Applied to Ceiling Replacement Activities at the Pantex Plant*, April 9, 2024.

[11] Department of Energy, Operating Experience Level 3, OE-3, 2025-01, *Use of Cast Iron Fittings in Credited Fire Protection Systems*, January 2025.

[12] Department of Energy, *Implementation of Department of Energy Oversight Policy*, DOE Order 226.1B, May 2022.

[13] Department of Energy, *The DOE Corporate Lessons Learned Program*, DOE Standard 7501-99, December 1999.