

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

**DEFENSE NUCLEAR FACILITIES
SAFETY BOARD**

Washington, DC 20004-2901



January 6, 2022

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

Dear Secretary Granholm:

The Defense Nuclear Facilities Safety Board (Board) reviews and evaluates the content and implementation of Department of Energy's (DOE's) safety standards (i.e., directives and technical standards) pertaining to its defense nuclear facilities. Additionally, the Board makes safety recommendations for necessary changes to those safety standards that will help to ensure that public health and safety are adequately protected. Under this authority, on January 22, 2021, the Board informed the DOE that the Board had selected several safety standards to review in fiscal year 2021. Below is a summary of these safety reviews that the Board conducted in fiscal year 2021.

- **Draft DOE Standard 5506, *Preparation of Safety Basis Documents for Transuranic (TRU) Waste Facilities***—This safety standard provides assumptions, methods, and hazard controls to be used when developing safety basis documents for transuranic (TRU) waste facilities in the DOE complex. In 2021, the Board's staff met with DOE personnel on several occasions to discuss its comments on revisions to this safety standard, as described in the Board's July 26, 2021, letter to the Secretary of Energy. DOE incorporated these comments in the safety standard issued in August 2021. The Board's staff has discussed the importance of implementation with DOE's Office of Environmental Management and National Nuclear Security Administration, and will follow implementation of this safety standard in fiscal year 2022.
- **DOE Handbook 3010-94, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities***—This safety handbook provides a systematic compilation of airborne release and respirable fraction experimental data for nonreactor nuclear facilities in the DOE complex. DOE is currently revising select portions of the safety handbook. The Board's staff is reviewing the portions of

the safety handbook that DOE is revising, as well as the portions that it is not. The Board's staff will continue the effort in fiscal year 2022.

- **DOE Standard 1228-2019, *Preparation of Documented Safety Analysis for Hazard Category 3 DOE Nuclear Facilities***—The Board issued a February 8, 2021, letter to the Secretary of Energy identifying safety concerns with this safety standard, which evaluates required and recommended approaches for preparation of documented safety analyses for hazard category 3 nuclear facilities. These safety concerns include inconsistencies between this safety standard and DOE Standard 3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, that could lead to development of documented safety analyses that lack appropriate rigor, and that do not identify complete safety control sets for protection of the public and workers. This safety standard is also inconsistent with Title 10, Code of Federal Regulations (CFR), Part 830, *Nuclear Safety Management*, in its use of the graded approach to develop a documented safety analysis. The Board will follow any DOE actions that result from this letter.
- **DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*; DOE Order 426.1A, *Federal Technical Capability Program*; and DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities***—The Board's staff reviewed implementation of these directives as part of its review of DOE safety oversight effectiveness. The Board's staff met with DOE personnel on several occasions to discuss implementation of various safety requirements within these orders. The staff plans to report the results of this safety review to the Board in fiscal year 2022.
- **DOE Guide 424.1-1B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements***—DOE began revising this safety guide several years ago, and the Board's staff met with DOE personnel on several occasions in fiscal year 2021 to discuss the status. DOE has indicated that it plans to but has not started addressing the Board's safety concerns regarding the need for safety requirements in this area as described in Recommendation 2020-1, *Nuclear Safety Requirements*. The staff plans to provide oversight of DOE's efforts to address the Board's sub-recommendation related to the unreviewed safety question process.
- **Draft DOE Handbook 1224, *Hazard and Accident Analysis Handbook***—This safety handbook guides development of documented safety analyses for nuclear facilities to satisfy the safety requirements of a safe harbor method set out in 10 CFR Part 830, Subpart B, and may also be used to prepare and document safety hazard and accident analyses during facility design. DOE is currently revising the safety handbook, and the Board's staff provided comments to DOE in April 2021 on the December 2020 version of the draft safety handbook. The Board's staff met with DOE personnel on several occasions to discuss its comments and will continue the effort in fiscal year 2022.

- **Draft DOE Order 425.1, *Verification of Readiness to Start Up or Restart Nuclear Facilities***—DOE did not start revising this safety order until late in fiscal year 2021. The staff will review the draft safety order in fiscal year 2022.
- **Draft DOE Standard 1020, *Natural Phenomena Hazards Analysis and Design Criteria for DOE Facilities***—DOE did not start revising this safety standard in fiscal year 2021, as it originally intended. When DOE revises this safety standard, the staff plans to review it.
- **Draft DOE Standard 1066, *Fire Protection***—The Board’s staff reviewed the draft revision of several chapters in this safety standard and provided comments to DOE in 2021. The staff will continue the effort in fiscal year 2022.
- **Draft DOE Standard 1195, *Design of Safety Significant Safety Instrumented Systems Used at DOE Nonreactor Nuclear Facilities***—DOE began revising this safety standard in fiscal year 2020, and the Board’s staff provided comments at that time. DOE did not respond to the staff’s comments in fiscal year 2021. The Board’s staff looks forward to DOE’s response when DOE resumes the effort to update the safety standard.
- **Draft DOE Standard 1269, *Air Cleaning Systems in DOE Nuclear Facilities*, and draft DOE Handbook 1169, *Handbook for Use with DOE-STD-1269***—The Board’s staff discussed its comments on development of a new safety standard and revision of the associated nuclear air cleaning safety handbook. DOE has indicated that it will incorporate some but not all of these comments when it issues the technical standards. The Board’s staff plans to follow implementation of these safety standards.
- **Draft DOE handbook replacing EH-0545, *Seismic Evaluation Procedure for Equipment in U.S. Department of Energy Facilities***— DOE is converting the procedure into a safety handbook that provides comprehensive safety guidance for consistent seismic evaluations of equipment in DOE facilities. The Board’s staff reviewed and provided comments to DOE on early draft versions. DOE personnel have indicated that they are continuing to develop the new safety handbook, which incorporates the comments, and another draft revision should be available to the Board for comments in fiscal year 2022.
- **Draft DOE Limited Standard 3016, *Hazard Analysis Reports for Nuclear Explosive Operations***—This safety standard applies to the conduct of hazard analyses and preparation of hazard analysis reports for nuclear explosive operations conducted by DOE’s National Nuclear Security Administration (NNSA). DOE is currently revising the safety standard, and the Board’s staff provided comments to DOE in October 2021 on the July 2021 version of the draft safety standard. The Board’s staff met with DOE personnel on several occasions to discuss its comments and plans to follow the DOE responses, as appropriate, in fiscal year 2022.

- **Draft NNSA Supplemental Directive 452.2, *Nuclear Explosive Safety Evaluation Processes***—This supplemental safety directive applies to the conduct of nuclear explosive safety evaluations. The Board’s staff met with NNSA personnel on several occasions in 2020 to discuss the proposed changes. Subsequently, the staff provided comments to NNSA in January 2021 on the December 2020 version of the draft document. NNSA largely incorporated these comments in the revised supplemental safety directive issued in June 2021.

In determining which DOE safety standards and their implementations to review in fiscal year 2022, the Board has considered those that it has already started reviewing, that are planned for revision, that have complex-wide effects, and that establish controls for high-hazard activities. The Board has selected the following safety standards to review:

- **Draft DOE Handbook 3010, *Airborne Release Fractions/Rates and Respirable Fractions for Nonreactor Nuclear Facilities*,**
- **Draft DOE Handbook 1224, *Hazard and Accident Analysis Handbook*,**
- **Draft DOE Order 425.1, *Verification of Readiness to Start Up or Restart Nuclear Facilities*,**
- **Draft DOE Standard 1066, *Fire Protection*,**
- **Draft DOE handbook replacing EH-0545, *Seismic Evaluation Procedure for Equipment in U.S. Department of Energy Facilities*,**
- **Draft DOE Standard 1129, *Tritium Handling and Safe Storage*, and**
- **Draft DOE Order 435.1, *Radioactive Waste Management*.**

The Board may elect to add or change reviews of DOE safety directives and technical standards as it deems appropriate.

Sincerely,



Joyce L. Connery
Chair

c: Mr. Joe Olencz