



Department of Energy

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September 28, 2022

MEMORANDUM FOR WILLIAM "IKE" WHITE
SENIOR ADVISOR
OFFICE OF ENVIRONMENTAL MANAGEMENT

JILL M. HRUBY
UNDER SECRETARY FOR NUCLEAR SECURITY
ADMINISTRATOR
NATIONAL NUCLEAR SECURITY ADMINISTRATION

ASMERET A. BERHE
DIRECTOR
OFFICE OF SCIENCE

FROM: JOHN E. DUPUY 
DIRECTOR
OFFICE OF ENTERPRISE ASSESSMENTS

SUBJECT: *Plan for the Independent Review of Safety Basis Development
Processes – September 2022-December 2023*

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) provides independent appraisals of safety and security program and process implementation in accordance with DOE Order 227.1A, *Independent Oversight Program*.

On September 8, 2021, DOE accepted the Defense Nuclear Facilities Safety Board's Recommendation 2020-1 regarding nuclear safety requirements. On June 27, 2022, DOE issued an implementation plan that details the approach and actions to address the five categories and thirteen specific sub-recommendations contained in the Recommendation. EA is the lead organization responsible for completing section 5.4 of the plan to conduct an independent review of the safety basis development process.

The review will be conducted in two phases over the course of approximately 15 months. The attached EA plan provides information on the review methodology, schedule, team composition, and the document request list that will be used to support the data collection and analysis for the first phase of this review. The specific nuclear facilities to be included in the first phase will be communicated to sites directly via separate communication. The second phase of this review will involve selected site visits, as necessary, determined by the analysis conducted in the first phase. A separate review plan will be developed to conduct the second phase.

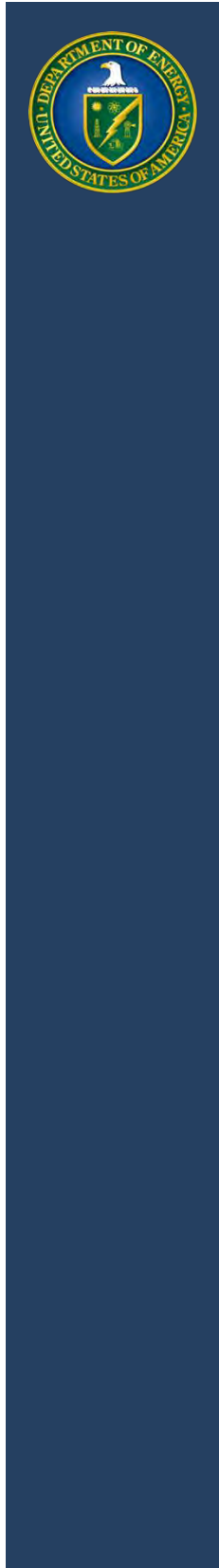


We appreciate your continued support and cooperation as EA works with DOE line management in safely achieving its mission objectives. If you have any questions, comments, or feedback, please contact me at (202) 586-2730. Alternatively, your staff may contact Kevin Kilp, Director, Office of Environment, Safety and Health Assessments at (301) 903-5392.

Attachment: *Plan for the Independent Review of Safety Basis Development Processes – September 2022-December 2023*

cc w/attachment: William F. West, EA-1
Candice S. Robertson (Trummell), EM-2
Catherine A. Tullis, EM-2.1
N. Nicole Nelson-Jean, EM-3
Gregory Sosson, EM-3.1
Brenda L. Hawks, EM-3.11
Frank A. Rose, NA-1
James J. McConnell, NA-1
Lisa D. Mangi, NA-COS
Cynthia A. Lersten, NA-1.1
Daniel Sigg, NA-ESH-1
Kelli A. Markham, NA-ESH-20
Janis M. Parenti, NA-LL
Theodore A. Wyka, NA-LA
Teresa M. Robbins, NA-NPO-1
David R. Bowman, NA-NV
Daryl J. Hauck, NA-SN
Jason A. Armstrong, NA-SV
J. Steve Binkley, SC-2
H. Harriet Kung, SC-3
Juston K. Fontaine, SC-4
Joanna Serra, SC-4
Michael J. Weis, SC-41
Theodore Pietrok, PNSO
Mark J. Do, EHSS-1.1
Garrett A. Smith, Jr., EHSS-30
Thomas G. Hiltz, EHSS-30
Brian J. DiNunno, EHSS-31
Caroline D. Garzon, EHSS-31
Michael D. Budney, SR
Brian T. Vance, DOE Hanford
Reinhard M. Knerr, CBFO
Connie M. Flohr, EM-ICP
Michael A. Mikolanis, EM-LA
Laura O. Wilkerson, OREM

Kevin G. Kilp, EA-30
David A. Young, EA-30
Kevin M. Witt, EA-31
Kimberly G. Nelson, EA-32
Jack E. Winston, EA-33
Joseph J. Waring, EA-34
Daniel M. Schwendenman, EA-34
Eric G. Nicoll, EA-40



Plan for the Independent Review of Safety Basis Development Processes

September 2022 – December 2023

Office of Enterprise Assessments
U.S. Department of Energy

Plan for the Independent Review of Safety Basis Development Processes

September 2022 – December 2023

Submitted by:

Daniel M. Schwendenman
Office of Nuclear Engineering and Safety Basis Assessments
Office of Environment, Safety and Health Assessments
Office of Enterprise Assessments

Reviewed by:

Joseph J. Waring
Director
Office of Nuclear Engineering and Safety Basis Assessments
Office of Environment, Safety and Health Assessments
Office of Enterprise Assessments

Approved by:

Kevin G. Kilp
Director
Office of Environment, Safety and Health Assessments
Office of Enterprise Assessments

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The DOE directives referenced in this plan are located at the URL link:

<https://www.directives.doe.gov>

Plan for the Independent Review of Safety Basis Development Processes

September 2022 – December 2023

I. INTRODUCTION

This document outlines the plan by the Office of Nuclear Engineering and Safety Basis Assessments (EA-34), an Environment, Safety and Health Assessments (EA-30) office within the U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA), to fulfill the actions in DOE's *Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2020-1: Nuclear Safety Requirements*, section 5.4, Conduct an Independent Review of the Safety Basis Development Process, for which EA is the lead responsible organization. Section 5.4 of the implementation plan is provided in appendix A.

On September 8, 2021, DOE accepted Defense Nuclear Facilities Safety Board's Recommendation 2020-1 regarding nuclear safety requirements. On June 27, 2022, DOE issued an implementation plan that details the approach and actions to address the five categories and thirteen specific sub-recommendations contained in the Recommendation. This review plan fulfills milestone 5.4.1 of the implementation plan. The review (milestone 5.4.2 of the implementation plan) will benchmark current practices against approved procedures and identify where improvements can be made for future safety basis submittals.

II. METHODOLOGY

This review will be conducted in accordance with DOE Order 227.1A, *Independent Oversight Program*, and EA-30-00 (Rev. 4), *Office of Environment, Safety and Health Assessments Protocol for Oversight Activities*. The review will be conducted in two phases over the course of approximately 15 months. The first phase of this review will involve data collection from selected defense nuclear facilities. This phase will identify the types of quality and timeliness issues associated with safety basis document submittals and approvals. The document request list to support data collection is provided in appendix B. A list of sites to be included in the review is also included in appendix B; the specific nuclear facilities to be included in the first phase will be communicated to sites directly.

The DOE Office of Environment, Health, Safety and Security (EHSS) maintains a public list of safety basis documents in the complex ([safetybasisreport.pdf \[doe.gov\]](https://www.doe.gov/safetybasisreport.pdf)). There are 171 safety basis documents for facilities on this list, about 100 of which are associated with defense nuclear facilities within the scope of this review. Most of these safety basis documents are documented safety analyses (DSAs) prepared to DOE-STD-3009¹; however, there are also DSAs for interim operations prepared to DOE-STD-3011¹, transportation safety documents prepared to DOE Order 460.1¹, reactor DSAs prepared to NRC Regulatory Guide 1.70¹, decommissioning facilities DSAs prepared to DOE-STD-1120¹, and hazard analysis reports for nuclear explosive operations prepared to DOE-STD-3016¹. The initial data call will include a representative sampling of defense nuclear facility DSAs across the DOE complex and will, to the extent possible, include at least one DSA prepared to each standard. Safety design basis documents prepared in accordance with DOE-STD-1189¹ will not be considered in this review.

Based on evaluation of the information collected, safety basis documents with a history of quality issues resulting in delayed submittals and numerous comments/conditions of approval from DOE will be

¹ See Section V: References for DOE directives and standards information.

selected for follow-up in the second phase to obtain additional, detailed information to allow evaluation of the processes and recommendations for improvement. In addition, safety basis documents that do not appear to have had quality or approval timeliness issues will be included for follow-up evaluation to determine whether process-related attributes contributed to the lack of issues and thus may be considered best practices. The results of this data collection and analysis will be documented in an EA field note (an internal EA record).

As part of the second phase of this review, site visits will be conducted as necessary at selected sites to facilitate interviews with members of the contractor organizations responsible for safety basis document preparation, select project and operational personnel involved in the process, and the resident DOE management responsible for safety basis document review and approval. The purpose of these onsite visits will be to determine potential causes for quality issues or successes and identify lessons learned, best practices, and recommendations for process improvement. Identification of sites for the second phase of this review does not mean that all nuclear facilities at that site or all contractor organizations at that site responsible for nuclear facilities will be subject to onsite activities. The schedule for the second phase, scope of onsite activities, and lines of inquiry will be reflected in a new review plan following the initial data collection and evaluation in the first phase.

The entire review is not intended to be a requirements-based compliance review but, rather, a process review to discover those obstacles in processes that prevent timely preparation and approval of high-quality safety basis documents. Preliminary results of this review will be presented in a briefing to representatives of EHSS and the relevant Program Secretarial Offices (PSOs) following completion of the second phase. The results will then be documented in a final report noting lessons learned, best practices, and recommendations. In accordance with milestone 5.4.2 of the implementation plan, this report will be transmitted to EHSS-1 and the relevant PSO for action as determined by the report addressees.

III. SCHEDULE

As identified in the implementation plan, this review is planned to be completed within 18 months of the implementation plan's issuance date, which establishes a target completion date of December 27, 2023. The preliminary schedule for the review activities is provided below. The dates for completing each activity are intended to allow completion of the review by the target completion date but may be adjusted as needed to accommodate site schedules, personnel availability, or other EA activities. After the first phase of activities is completed, a new review plan will be issued that includes a more detailed schedule for the remainder of the review.

Determine representative sample of safety basis process and product documents to review	September 15, 2022
Send requests for data to selected sites	September 22, 2022
Receive documents (or access to their location in electronic format) from selected sites	October 14, 2022
Complete evaluation of data to identify additional documents to review and sites to visit	January 31, 2023
Issue new review plan	February 15, 2023

Conduct onsite visits (sites to be determined and reflected in new review plan)	March 2023 - August 2023
Conduct briefing of preliminary review results and start preparing report	September 25, 2023 (tentative)
Deliver report to EA-1 for approval (60-day process from briefing to submittal to EA-1)	December 1, 2023 (tentative)

IV. REVIEW TEAM

The Team Lead, Daniel M. Schwendenman, of the Office of Nuclear Engineering and Safety Basis Assessments (EA-34), will be assisted by the EA technical specialists shown below. During the second phase of the review, additional team members will be included and representatives from other DOE program offices may participate in onsite visits as long as independence is maintained within a program (e.g., an NNSA representative would not be part of an onsite review of another NNSA nuclear facility). The Team Lead will ensure that consistency is maintained throughout the review.

Team Lead

Daniel M. Schwendenman

Team Members

Elizabeth Dunn

Katherine S. Lehew

Eric R. Swanson

V. REFERENCES

The following are the latest versions of requirements documents referenced in this review plan. In some cases, prior versions of standards used in preparing DSAs and technical safety reviews (TSRs) may be in use under existing contracts. Those prior versions are omitted from this list for simplicity.

1. DOE O 227.1A, *Independent Oversight Program*, 12-21-2015
2. DOE O 460.1D Chg 1, *Hazardous Materials Packaging and Transportation Safety*, 6-10-2022
3. DOE-NA-STD-3016-2018, *Hazard Analysis Reports for Nuclear Explosive Operations*, October 2018
4. DOE-STD-1120-2016, *Preparation of Documented Safety Analysis for Decommissioning and Environmental Restoration*, March 2016
5. DOE-STD-1189-2016, *Integration of Safety into the Design Process*, December 2016
6. DOE-STD-3009-2014, *Preparation of Nonreactor Nuclear Facility Documented Safety Analysis*, November 2014
7. DOE-STD-3011-2016, *Preparation of Documented Safety Analysis for Interim Operations at DOE Nuclear Facilities*, January 2016
8. NRC Regulatory Guide 1.70 Rev. 3, *Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants (LWR Edition)*, November 1978

Appendix A

**DOE Implementation Plan, Section 5.4
Conduct an Independent Review of the Safety Basis Development Process**

DOE will conduct an independent review of the current safety basis development processes at defense nuclear facilities to determine whether improvements can be made for future submittals. This review will focus on both the contractor activities to prepare safety basis documents and the DOE activities to review and approve safety basis changes in a timely manner. This review, which will be led by the DOE Office of Enterprise Assessments (EA) with participation from Program Office subject matter experts (SMEs), will be conducted in two phases over the course of approximately 18 months. These activities will help achieve the objectives of sub-Recommendation 4.a. and DOE's acceptance.

The first phase will involve conducting a survey of defense nuclear facilities to collect and analyze information associated with parameters of safety basis preparation processes of the various contractor organizations, as well as processes by the cognizant approval organizations. Based on this analysis, six to eight sites will be selected for follow-up to obtain additional, detailed information to allow evaluation of the processes and recommendations for improvement. This evaluation is not intended to be a requirements-based compliance review, but rather, a benchmarking process review to discover those obstacles in the processes that prevent timely preparation and approval of high-quality safety basis documents. This review will be conducted in accordance with an approved review plan. The second phase will be a final report documenting the results of the review and providing recommendations. This report will be transmitted to EHSS-1 and the relevant (PSOs) for action as determined by the recipients. During the development of the review plan and final report, DOE will keep the DNFSB informed on the content. Additionally, EA will brief the DNFSB or DNFSB staff, as requested, on the outcome of the review.

Issues identified in the recommendations will be evaluated and those recommendations accepted for action will be implemented by the appropriate office/site, as necessary. Actions are expected to be initiated within six months of the issuance of the final report by either the EHSS, and/or Program Offices, depending on the final recommendations provided in the report.

Milestone 5.4.1 - Development and Issuance of a Review Plan

Lead Responsible Organization: Office of Enterprise Assessments

Deliverable: Review Plan detailing the review scope for an independent review of the safety basis development, review, and approval process

Expected Completion Date: 3 months after issuance of IP [implementation plan]

Milestone 5.4.2 - Perform an independent review of the submittal and approval of safety documents

Lead Responsible Organization: Office of Enterprise Assessments

Deliverable: Report documenting the results of the review and providing recommendations. Transmit to EHSS-1 and PSOs for action

Expected Completion Date: 18 months after issuance of IP

Milestone 5.4.3 – Initiate action based on independent review recommendations

[Note: this milestone is the responsibility of other offices, as appropriate, and is not part of this review plan]

Appendix B

Document Request List

The following documents (or access to their location in electronic format) should be provided by October 14, 2022, to support the data collection for the first phase of this review. The nuclear facilities for which this information is requested will be identified in site-specific requests. The request will not include all the defense nuclear facilities at the site but only those facilities considered to provide a representative sample. Additional documents may be identified before the onsite visits at selected sites, which will be part of the second phase of this review.

- Contractor procedures governing safety basis document preparation, and any recent revisions to the procedures that would demonstrate process improvements
- Recent safety basis submittal packages, including at least one submittal that requested DOE approval
- Schedules, plans, correspondence, or other documentation indicating that safety basis submittals are on a planned schedule, and any documentation explaining schedule changes
- Field office procedures governing safety basis document review and approval
- Records of comments provided by DOE and their resolution (if not part of the safety basis submittal packages or safety evaluation report (SER))
- SERs and SER addendums for safety basis changes and annual updates (if issued)
- Recent correspondence either indicating a safety basis submittal package was withdrawn or rejected or identifying quality issues with safety basis submittals
- Contractor and field office performance metrics addressing quality and timeliness of safety basis document submittals
- Lists of positive unreviewed safety question determinations since 2020 and submittal packages of resulting safety basis changes, if any
- Reports of assessments (management or independent) performed by the contractor or oversight activities conducted by DOE of the safety basis document preparation process
- Documentation of process improvement initiatives related to safety basis document preparation
- Responses to DNFSB correspondence describing issues with safety basis documents, if reporting requirements were included in the correspondence, or evidence that follow-up actions were taken if no reporting requirements were specified

The following sites will be included in the first phase of this review:

Hanford Site
Idaho Closure Project
Lawrence Livermore National Laboratory
Los Alamos National Laboratory (NNSA)
Los Alamos National Laboratory (EM)
Nevada National Security Site (NNSA)
Oak Ridge (EM)
Pacific Northwest National Laboratory
Pantex Plant
Sandia National Laboratories
Savannah River Site (EM)
Savannah River Site (NNSA)
Waste Isolation Pilot Plant
Y-12 National Security Complex