The Secretary of Energy
Washington, DC 20585

December 29, 2014

The Honorable Peter S. Winokur, Ph. D.
Chairman
Defense Nuclear Facilities Safety Board
25 Indiana Avenue, NW, Suite 700
Washington, DC 20004-2901

Dear Mr. Chairman:

Enclosed please find the Department of Energy's (DOE) report, *Federal Safety Oversight Capability and Criteria for Oversight of High-Hazard Nuclear Facilities,* as requested in your May 1, 2014, letter, which closed Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations.* This report provides an overview of the Department's safety oversight infrastructure and processes, which ensure that DOE nuclear facilities are designed, constructed, and operated safely. The report also includes criteria used by the Department to periodically evaluate the effectiveness of elements of the Federal oversight.

Consistent with the actions associated with Commitment 16 from DNFSB Recommendation 2004-1, *Verify Federal Safety Assurance Capability*, the Department plans to perform a holistic evaluation of the effectiveness of DOE Federal nuclear safety oversight processes to identify areas for improvement. We have begun planning for performing this evaluation, which will be led by DOE senior management and conducted over the next year.

A briefing will be scheduled to discuss the enclosed report. If you have any questions or need additional information, please contact Dr. James O'Brien at (301) 903-1408, or by e-mail at james.o'brien@hq.doe.gov.

Sincerely,

Ernest J. Moniz

Enclosure

Department of Energy's

Federal Safety Oversight Capability and Criteria for Oversight of High-Hazard Nuclear Facilities

November 2014

EXECUTIVE SUMMARY

This report describes the Department of Energy's (DOE's) Federal Safety Oversight Capability and its criteria for evaluating the effectiveness of Federal safety oversight of high hazard nuclear facilities. This report has been prepared to respond to the Defense Nuclear Facilities Safety Board's (DNFSB's) request in its May 1, 2014, letter to DOE that closed DNFSB Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*.

DOE has a well-defined regulatory infrastructure for performing safety oversight that includes requirements in a Federal regulation (Title 10 Code Federal Regulation 830, *Nuclear Safety Management*), as well as requirements and guidance in DOE-specific Policies, Orders, Guides and Standards. As provided in DOE Policy 450.4A, *Integrated Safety Management Policy*:

> The ultimate responsibility and accountability for ensuring adequate protection of the workers, the public, and the environment from the operation of DOE facilities rests with DOE line management. The Department will meet this responsibility by:
>
> - Establishing functions and clear lines of responsibilities, authorities, and appropriate accountabilities;
> - Measuring safety management performance, with special emphasis on work related to high consequence activities by evaluating incident reports; using environment, safety, and health performance measures; and assessing performance; and
> - Holding itself and its contractors accountable at all organizational levels for safety performance through codified safety regulations, contract clauses, DOE directives, and the use of contractual and regulatory enforcement tools.

Line management includes Headquarters Program Offices and the Field Offices. DOE also provides safety oversight independent of the Program Office through its Office of Enterprise Assessments.

This report provides an overview of: 1) the DOE safety oversight regulatory infrastructure; 2) the Headquarters and Field safety oversight methods, processes, and criteria for the National Nuclear Security Administration, the Office of Environmental Management, and the Office of Science; 3) the Office of Enterprise Assessments safety oversight methods, processes and criteria; and, 4) a summary of the methods, processes, and criteria used to evaluate the effectiveness of federal oversight of high hazard nuclear operations at defense nuclear facilities.

Department of Energy's

Federal Safety Capability for Oversight of High-Hazard Nuclear Facilities

1. INTRODUCTION

This report describes the Department of Energy's (DOE's) Federal Safety Oversight Capability and its criteria for evaluating the effectiveness of Federal safety oversight of high hazard nuclear facilities.

This report has been prepared in response to the Defense Nuclear Facilities Safety Board's (DNFSB's) request in its May 1, 2014 letter to DOE that closed DNFSB Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*. It provides an overview of the methods, processes, criteria, activities, and observations associated with Federal safety oversight at defense nuclear facilities. It is organized in four sections that discuss:

- DOE regulations, policies, orders, and associated guidance concerning Federal line safety oversight of DOE contractor activities;
- DOE, including the National Nuclear Security Administration (NNSA) Program and Field Office safety oversight methods, processes, and criteria;
- Office of Enterprise Assessment's (the DOE organization responsible for independent oversight of Federal line safety oversight) safety oversight methods, processes, and criteria;
- A summary the methods, processes, and criteria used to evaluate the effectiveness of federal oversight of high hazard nuclear operations as defense nuclear facilities.

2. DOE SAFETY OVERSIGHT REGULATIONS, POLICIES, ORDERS, AND GUIDANCE

The governing regulation concerning DOE nuclear safety management is Title 10 of the Code of Federal Regulations (C.F.R.) Part 830, *Nuclear Safety Management*. The regulation specifies that the contractor for a DOE facility has the primary responsibility for implementing the nuclear safety requirements. It also discusses DOE's responsibilities for overseeing contractor performance.

The following three DOE policy statements provide details on DOE's expectations with regard to implementation of regulatory requirements, safety assurance, and oversight:

- DOE Nuclear Safety Policy (P 420.1);
- Integrated Safety Management Policy (P 450.4A); and
- DOE Oversight Policy (P 226.1B).

DOE's Nuclear Safety Policy establishes the overall nuclear safety philosophy underlying the design, construction, operation, and decommissioning of DOE's nuclear facilities, and provides the expectation that those activities will be conducted in a manner that ensures adequate protection of workers, the public, and the environment. The Integrated Safety Management (ISM) Policy builds on this basic safety philosophy and establishes the basic principles and core functions of ISM as applied to DOE nuclear facilities. The responsibility of DOE line management is explicitly discussed in the ISM Policy including that:

> The ultimate responsibility and accountability for ensuring adequate protection of the workers, the public, and the environment from the operation of DOE facilities rests with DOE line management. It further discusses that the Department will meet this responsibility by:
>
> - Establishing functions and clear lines of responsibilities, authorities, and appropriate accountabilities;
> - Measuring safety management performance, with special emphasis on work related to high consequence activities by evaluating incident reports; using environment, safety, and health performance measures; and assessing performance; and
> - Holding itself and its contractors accountable at all organizational levels for safety performance through codified safety regulations, contract clauses, DOE directives, and the use of contractual and regulatory enforcement tools.

DOE's Oversight Policy provides that effective and properly implemented oversight processes and assurance systems are expected to result in:

- DOE Headquarters and Field having assurance that site workers, the public, and the environment are protected while mission objectives are met, contract requirements are fulfilled; and operations, facilities, and systems are being effectively run and continuously improved;
- The establishment of metrics and targets for assessing performance and holding managers accountable for achieving their targets; and
- Improvements in the efficiency and effectiveness of DOE oversight programs by leveraging, when appropriate, the processes and outcomes of contractors' assurance systems.

Implementation of DOE policies related to safety assurance and oversight, including the training of DOE personnel to provide effective safety oversight, is accomplished through Orders and associated guidance documents.

Requirements and guidance from these Rules/Orders/Guides relative to safety oversight are briefly described below.

2.1 Approval of Contractor Safety Basis Documents

Title 10 C.F.R. Part 830 requires DOE to review and approve several different types of contractor-developed safety basis documents, including:

- Documented Safety Analysis (DSA) of the nuclear facilities;
- Technical Safety Requirements;
- Procedures for evaluating changes to the nuclear facility that ensure any Unreviewed Safety Questions (USQs) are identified;
- Changes to nuclear facilities involving USQs; and
- Alternate Methods for performing DSAs (standard methods are identified in 10 C.F.R. Part 830, Subpart B, Appendix A, Table 2).

Guidance for the preparation of DSAs is included in 10 C.F.R. Part 830, Subpart B, Appendix A. General guidance for the review and approval of contractor DSAs and USQ processes is included in DOE Guide (G) 226.1-2A, *Federal Line Management Oversight of Department of Energy Nuclear Facilities*. Sample CRADs for the review of safety basis documentation are included in Appendix C of DOE G 226.1-2A. Additional guidance concerning USQ programs is provided in DOE G 424.1-B, *Implementation Guide for Use in Addressing Unreviewed Safety Question Requirements*. DOE Standard (STD) 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents*, provides guidance and criteria for the review and approval of DSAs.

2.2 Approval of Readiness to Commence Operations

DOE Order (O) 425.1D, *Verification of Readiness to Start Up or Restart Nuclear Facilities*, establishes the requirements associated with line management conduct of Operational Readiness Reviews (ORRs) and Readiness Assessments prior to the startup or restart of a facility. The responsibilities for approving the startup are delineated in the Order. For new Hazard Category (HC) 1 or 2 facilities, startup must be approved by the Secretary of Energy or the Secretary's designee. For new HC-3 facilities, startup must be approved by the Cognizant Secretarial Officer (CSO) or the CSO's designee.

Determination that a facility is ready to undergo a Readiness Review or Readiness Assessment, as appropriate, is based in part on Startup Notification Reports (SNRs) prepared by the contractor and reviewed and approved by DOE field element management. Requirements associated with the preparation and review of SNRs are also discussed in DOE O 425.1D.

2.3 Oversight of Day-to-Day Operations

DOE O 422.1, *Conduct of Operations*, includes a requirement for DOE

Site Offices to implement a Facility Representative (FR) program for line management overview of day-to-day operation at DOE nuclear facilities. Routine, day-to-day Field/Site Office oversight actives include:

- Maintaining safety-related operational awareness;
- Identifying and addressing safety vulnerabilities and issues;
- Confirming contractors' implementation of safety-related contract provisions that are based on safety-related regulations and directives;

- Reviewing event reports;
- Observing work; and
- Attending meetings (e.g., plan-of-the-day/plan-of-the-week).

The number of FRs needed at a site is determined by Field Office management, in accordance with DOE-STD-1063-2006, *Facility Representatives.* FRs are a key element of DOE safety assurance for its higher hazard nuclear facilities. FRs are the "eyes and ears" of the Site Office manager.

2.4 Oversight of Safety Systems

DOE O 420.1C, *Facility Safety*, includes a requirement for oversight of the contractor system engineering program (which focuses on ensuring the operability of nuclear facility systems categorized as safety class or safety significant for protection of the public and workers). Safety System Oversight (SSO) personnel report via safety managers to the Site Office managers.

2.5 Oversight of Safety Management Programs

Safety management programs (SMPs) are defined in the DSA. Examples of such programs include, but are not limited to:

- Fire protection programs;
- Criticality safety programs;
- Radiation protection programs;
- Radioactive waste management programs; and
- Emergency managements.

These are reviewed as part of the FR oversight activities as well as by specialized reviews of the program-specific topic. Comprehensive guidance for oversight of safety management programs is provided in DOE G 226.1-2A.

2.6 Federal Technical Capability

DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, requires that DOE line management "Maintain sufficient technical capability and knowledge of site and contractor activities to make informed decisions about hazards, risks, and resource allocation; provide direction to contractors; and evaluate contractor performance."

This requirement is primarily accomplished through implementation of DOE O 426.1, *Federal Technical Capability*, which outlines specific requirements and responsibilities for recruiting, deploying, developing, and retaining a technically competent workforce to provide effective oversight and ensure that DOE missions are accomplished in a safe and efficient manner. These objectives are achieved through the Federal Technical Capability Panel (FTCP) and the DOE Technical Qualification Program (TQP). Functional Area Qualification standards (FAQs) are in

place for all TQP positions. Staffing and qualification levels of the key positions of Senior Technical Safety Manager (STSM), FR, SSO, and Nuclear Safety Specialists (NSS) are reported quarterly.

The DOE National Training Center (NTC) is responsible for developing and providing training to support initial qualification of key TQP positions, as well as broad training applicable to all TQP participants. For example the NTC has a full curriculum for STSM and NSS positions, and training in key topics for FRs, SSOs, and other TQP participates. The NTC has also implemented an oversight training curriculum, which consists of an overview of the overall oversight process and requirements of DOE O 226.1B, assessment techniques, and fundamentals of performance management (i.e. how to establish performance measures, targets, and metrics).

3. LINE MANAGEMENT SAFETY OVERSIGHT PROCESSES, CRITERIA, AND ACTIVITIES

3.1 Overview

DOE's safety oversight infrastructure consists of line management oversight (based primarily at the Field or Site Offices, and supplemented by the Program Office) and independent oversight.

Field/Site Office oversight functions include two broad categories: (1) Oversight of DOE contractor activities, and (2) Self-Assessments of Field/Site Offices' activities and functions. Field/Site Offices have the most experience with the activities and hazards at their sites, and therefore are in the best position to evaluate site status and contractor safety performance. Accordingly, these offices' elements have primary responsibility for establishing and implementing DOE line management oversight of contractor performance.

The line oversight resources located at the site consist of:

- Safety Basis Subject Matter Experts (SMEs);
- Facility Representatives;
- Safety System Oversight personnel; and
- Safety Management Program SMEs.

Typically, these resources will report to a senior safety manager in the Field/Site Office, who reports to the Field/ Site Office manager.

Line oversight is supplemented and complemented by nuclear safety staff in the responsible program office. These offices monitor the performance of Field/Site Offices to ensure that the oversight systems for their nuclear facilities are working effectively. Program office oversight processes focus on their field elements, including reviewing contractor activities to the extent necessary to evaluate the effectiveness of the Field/Site Office's oversight of its contractors.

The following three subsections of this report provide detailed information on the line oversight responsibilities related to defense nuclear facilities of NNSA, the Office of Environmental

Management (EM), and the Office of Science (SC), and the processes, procedures, and criteria that they use to fulfill those responsibilities.

3.2 National Nuclear Security Administration

NNSA has 109 HC-2 and 12 HC-3 defense nuclear facilities. NNSA operates seven Field Offices, six of which are responsible for oversight of defense nuclear-related national laboratory and industrial facilities:

- Livermore Field Office
- Nevada Field Office
- Los Alamos Field Office
- Sandia Field Office
- NNSA Production Office (Y-12 Nuclear Security Complex and Pantex Plant)
- Savannah River Field Office

3.2.1 Overall Oversight Process – NNSA

Consistent with DOE O 226.1B, *Implementation of Department of Energy Oversight Policy*, NNSA oversight of high-hazard nuclear operations is conducted primarily by means of NNSA Field Office oversight of the contractor. This is achieved through a combination of formal assessments and operational awareness activities executed by qualified SMEs, FRs, and Field Office management. NNSA HQ oversight is focused on the Field Office processes, with limited participation in direct oversight of the contractor as described below.

NNSA HQ Oversight

Oversight of NNSA operations by HQ offices is executed through three primary elements. The first and foundational element of the HQ oversight is the biennial review process. NNSA Biennial Reviews of Nuclear Safety Performance were established nearly a decade ago as a major piece of NNSA HQ oversight of nuclear safety performance. They are the NNSA Administrator's self-assessment of nuclear safety. The reviews provide objective, value-added information for NNSA managers while evaluating Field Office and HQ oversight capability.

Nineteen nuclear safety functional areas (e.g., maintenance, FRs, etc.) are covered, as appropriate, during the Biennial Reviews, using formal CRADs to encourage consistent application of nuclear safety requirements and promote continuous improvement when deficiencies are identified. The reviews challenge the Field Offices to demonstrate implementation of all key nuclear safety programs through review of Field Office processes and their results. The NNSA delegation of key nuclear safety authorities is based on the satisfactory outcome of this evaluation. In some cases, these reviews have resulted in the imposition of compensatory measures to support Field Office execution of safety responsibilities and authorities.

The second element of HQ oversight is participation in the Site Integrated Assessment Plan (SIAP). Each fiscal year (FY), Field Offices prepare their oversight plans to schedule DOE Order-required and *ad hoc*, oversight assessments. Each site's SIAP is reviewed by HQ safety organizations with proposed additional activities relayed to the sites. HQ Safety SMEs may augment specific reviews during their conduct over the course of the year. This provides the two-fold benefit of providing "fresh eyes" to the Field Office while allowing the HQ staff to maintain an operational awareness of work taking place at NNSA field sites. Operational awareness assists HQ in the evaluation of a contractor's performance as well as providing for informed input to budgetary decisions related to infrastructure, safety, and staffing.

The final element of HQ oversight comprises *ad hoc* reviews to address specific issues or concerns that arise or are identified by either HQ or field staff. These reviews address staffing shortfalls in the safety basis approval processes, weaknesses in key safety management programs, and HQ and field response to these issues. These reviews have resulted in process changes and, in some cases, personnel transfers through detail assignments to provide support to improve performance culture in areas of concern. These three diverse elements of HQ oversight coalesce to provide an integrated picture of NNSA performance culture and provide the needed information to make reasoned resource decisions to help improve this culture. Over the past two years, HQ targeted assessments have included criticality safety at Los Alamos, the readiness program at Los Alamos, safety culture at Pantex, fire protection at Y-12, and safety basis at Livermore.

NNSA Field Office Oversight

As discussed previously, oversight of high-hazard nuclear operations by NNSA contractors is conducted primarily by NNSA Field Offices. Oversight activities and assessments are planned using the SIAP and conducted by qualified personnel (i.e., FRs, SSO personnel, and/or SMEs). Each Field Office has its own policies and procedures for conducting its oversight activities, and the details of the assessment process vary from one Field Office to another. However, Field Offices typically develop annual assessment plans and schedules, which serve as the bases for contractor oversight activities.

Broadly speaking, Field Office oversight activities can be categorized as "informal" or "formal" assessments. Operational awareness activities (OAAs) are informal, day-to-day assessments of contractor performance, and may include review of reports, attendance at meetings, inspection of field conditions, observation of work, evaluation of contractor performance data, and other activities conducted to maintain awareness of ongoing work processes and products. Formal assessments typically involve activities such as functional assessments of a topical area, more formal review of particular operations (e.g., start-up readiness reviews), or review of a safety system or other facility aspect (e.g., structural/seismic). These reviews generally require CRADS and more formal planning and execution. Operational awareness activities, combined with information derived from the management and operating (M&O) partner's Contractor Assurance System (CAS) processes and formal Federal assessments, serve as the foundation for NNSA and Field Office management and staff to make informed decisions regarding the health, success, and effectiveness of contractor activities. Feedback to the contractor is provided informally by means of day-to-day interaction, and more formally through correspondence with contractor management

In addition to oversight of contractor processes, activities, and products, Field Offices carry out periodic self-assessments to evaluate the effectiveness of oversight processes and to improve performance thought the implementation of lessons learned.

3.3 Office of EM

EM has 47 HC-2 and 10 HC-3 defense nuclear facilities. EM operates six field elements associated with its oversight of defense nuclear facilities:

- Carlsbad Field Office
- Idaho Operations Office
- Oak Ridge Environmental Management
- Office of River Protection
- Richland Operations Office
- Savannah River Operations Office

3.3.1 Overall Oversight Process – EM

The EM safety oversight program is based upon the requirements of DOE O 226.1B. EM Federal safety oversight of nuclear operations occurs primarily in the field; thus, the majority of the Federal safety oversight staff is located in the field. Each EM field site is responsible for determining the required expertise to provide the appropriate Federal oversight and to develop procedures and schedules for carrying out that oversight. Field oversight consists of daily or routine actions to monitor contractor operations on a daily basis at the work activity level and more in-depth assessments of issues and programs. The routine, daily oversight is conducted primarily by FRs and SMEs. Each EM field site develops an annual schedule for assessing the operations taking place. This schedule includes nuclear facilities and topics relating to nuclear safety, and is prepared in a manner that accounts for activity risk, with higher-risk activities receiving greater oversight.

EM HQ Oversight

EM HQ conducts oversight of high-hazard nuclear operations, largely through the actions of the Office of Safety, Security and Quality Programs (EM-40). EM-40 is the primary office responsible for providing day-to-day safety and Quality Assurance (QA) operational oversight, feedback, interface, and assistance to the EM field/operations offices. In general, the EM-40 approach to safety oversight begins with the monitoring of departmental reporting databases, such as the Occurrence Reporting and Processing System (ORPS) and the Computerized Accident/Incident Reporting System (CAIRS), to maintain awareness of the events and issues being reported by field sites. EM-40 follows up on issues and events of significance, cross-cutting interest, and tracks and trends these topics. EM-40 also has electronic access to many of the internal daily and weekly reports within DOE field sites. Based upon those issues and trends, and after a review of the Field Office assessment plans, EM-40 offices then develop annual schedules to assess topics and field site Federal and contractor programs. EM-40 oversight

activities include direct review of contractor programs and processes and evaluations of EM field and Site Office oversight programs and activities.

The level and focus of EM-40 oversight varies with the specific missions of its subsidiary offices, as described below:

- *The Office of Safety Management (EM-41)* provides EM HQ SMEs who perform oversight assessments and "assist visits" throughout the EM complex. These SMEs perform reviews in areas such as fire protection and emergency response (DOE O 420.1C), nuclear safety basis (10 C.F.R. 830), nuclear criticality safety (DOE O 420.1C), and ISMS (DOE O 450.2, *Integrated Safety Management*). Assist visits are also conducted by EM-41 staff, either at the request of a field site or if there is a "for cause" concern that is determined by the field site or headquarters. EM-41 also provides the tracking, trending and reporting function of safety-related issues for EM HQ.

- *The Office of Operational Safety (EM-42)* is responsible for the routine monitoring of EM operational issues and follow-up of nuclear and occupational safety events, and the performance of operational safety oversight. EM-42 oversight activities may range from focused reviews of a specific activity or evolution to broader scope team reviews of site work planning and control, conduct of operations, or contractor assurance programs. EM-42 also evaluates implementation of the EM Field Office oversight program, typically with a focus on facility representative and safety system oversight programs.

- *The Office of Standards and Quality Assurance (EM-43)* is responsible for providing oversight of the EM QA program. EM-43 maintains a staff presence at several EM sites and activities. EM-43 annually develops an oversight and activities schedule that has been coordinated with the EM Field Offices. Upon coordination with the EM Field Offices, the HQ QA oversight staff performs assessments (audits, reviews, assist visits, surveillances) of the applicable DOE Field Office activities to determine whether EM-QA-001 has been effectively implemented, and may include an assessment of contractor activities if deemed necessary. These assessments are performed consistent with the *Standard Review Plan (SRP)-Protocol for EM Review/Field Assessment of Site-Specific QA Programs and QA Implementation Plans (QIPs)*.

- *The Office of Safeguards & Emergency Preparedness (EM-44)* is responsible for providing oversight of EM security and emergency response programs. EM-44 annually sets an oversight assessment schedule so that an assessment is performed of each operations/Field Office emergency management program at least once every three years as required by DOE O 151.1C, *Comprehensive Emergency Management System*, Chapter X. EM-44 oversight activities focus primarily on review of the DOE field element activities to determine the adequacy of the scope and implementation of field office self-assessment activities, Field Office oversight activities, Field Office technical capabilities and Field Office assurance systems. The HQ oversight assessment may include an assessment of contractor activities as deemed necessary.

- *Chief of Nuclear Safety (CNS) for EM* applies a risk-informed approach to operational awareness and functional area assessments. The approach ranks nuclear facilities to inform priority facilities for assessment, review frequency, and resource-loaded schedule. CNS staff have collected data on 93 nuclear facilities (including both defense and non-defense facilities) and ranked their risk, based on several criteria and weighting factors. Facilities with the highest risk ranking receive staff attention during the periodic site visits (DOE and site-wide issues are also addressed). In addition to operational awareness oversight, CNS provides staff augmentation and participates in project reviews as specialized technical expertise is requested. For example, support has been, and will continue to be, provided for criticality safety, QA, software QA, Natural Phenomena Hazard assessments, and specialized safety analyses. Furthermore, the CNS staff participates in Construction Project Review and Peer Review teams. A major accomplishment of the CNS staff was the development of the EM Standard Review Plan. This plan is available to bring more rigor and consistency to the various project reviews conducted by HQ and Field Offices. The CNS continues to champion the Standard Review Plan and is developing modules for additional review topics.

EM Field Office Oversight

In accordance with DOE O 226.1B, sites have adopted a tiered oversight protocol that provides varying levels of formality and scope. An "Operational Awareness" oversight activity may only be several hours in duration and consist of a DOE staff member monitoring a specific contractor activity, while more formal team assessments may consist of multiple staff members and take up to two weeks to complete. Team assessments typically utilize formal CRADs in order to direct the assessors to areas of importance. In the case of the small sites, the EM Consolidated Business Center assists in identifying oversight needs and providing staff assistance as necessary. In some cases, EM field sites request staff members from other sites, or EM HQ participates in their field oversight activities in order to provide expertise not available locally or to provide an outside perspective. EM field assessment activities also typically include self-assessments of field oversight programs; this is typically accomplished by focusing on several narrow topic areas for self-assessments annually, and one large self-assessment of the Federal oversight program on a two- or three-year periodicity.

3.4 Office of Science

SC has responsibility for one defense nuclear facility. The facility is located at the Pacific Northwest National Laboratory (PNNL) and is identified as Hanford Building 325, an HC-2 defense nuclear facility.

SC HQ-level oversight is provided directly by the SC CNS. SC field-level oversight is provided by the Pacific Northwest Site Office (PNSO) with support from the SC Integrated Support Center (ISC). Safety Basis Approval Authority for Building 325 has been delegated to the PNSO Manager by the SC Deputy Director for Field Operations (SC-3).

3.4.1 Overall Oversight Process – SC

The SC process for nuclear safety oversight is described in procedures contained in the Office of Science Management System (SCMS), primarily under the Facility Safety, Operations, and

Infrastructure and Environment, Safety and Health Oversight subject areas, as well as the PNSO Nuclear Safety Procedure.

SC HQ Oversight

SC HQ oversight is performed primarily by the SC Senior Nuclear Safety Advisor (SNSA) who also serves as the SC CNS. This individual typically prepares an Annual Performance Plan (APP) that describes oversight activities for the next year of all SC HC-1, -2 and -3 nuclear facilities. The APP contains an Integrated Assessment Plan schedule that defines planned reviews associated with safety basis documentation, facility walkthroughs, facility representative program, startup notifications, readiness, facility operational updates, safety basis implementation, delegations/qualification, and hazard categorization.

Over the past two years, HQ walkthroughs of B-325 have been performed with the PNSO B-325 FR (most recently in April 2014). Monthly interface meetings between PNNL, PNSO and SC-3 staff have been occurring that include discussions of B-325 and DNFSB activities, lessons learned and changes to directives. The SNSA served as a qualifying official for the PNSO Environment, Safety and Health (ES&H) Division Director during this period and reviewed the PNSO FTCP TQP self-assessment. The SNSA has also performed reviews of SMP documents and SSO reports at the request of PNSO. Weekly conversations occur between the PNSO Nuclear Safety Specialist and the SC SNSA on a variety of nuclear safety issues.

SC Field Office (PNSO) Oversight

PNSO develops an Annual Performance Plan that describes the oversight activities to be performed over the next year (including oversight of B-325). From the APP, an integrated assessment schedule is developed based upon a risk-based assessment plan that incorporates the evaluation of contract deliverables, contract and regulatory requirements, areas of risk, and Site Office objectives. The Integrated Assessment schedule is periodically assessed and updated as relevant and emerging performance information is evaluated. The following is a list of the formal oversight assessments carried out by PNSO over the last two years related to the Building 325 safety basis. This list is in addition to numerous safety basis document reviews:

- Fire Protection Program (includes DOE review of contractor self-assessment) and Fire Suppression System Assessment;
- Offsite Transportation Safety Program Assessment NMMP Implementation Effectiveness Assessment;
- USQ Document Surveillance;
- Natural Phenomena Hazards Assessment Building 325 Fire Suppression System Assessment; and
- Criticality Safety Program and Criticality Alarm System (May 19 – 23, 2014).

4. OFFICE OF ENTERPRISE ASSESSMENTS SAFETY OVERSIGHT PROCESSES, CRITERIA, AND ACTIVITIES

4.1 Overview

The Office of Enterprise Assessments (EA) was created in May 2014, assuming the independent oversight responsibilities previously carried out by the Office of Enforcement and Oversight in the Office of Health, Safety and Security (HSS).

EA's programs provide an independent assessments of safety, emergency management, security, and cyber programs and performance. EA's programs are designed to determine whether these, and other critical areas, as directed by the Secretary of Energy, are appropriately addressed by line management. Within EA, the Office of Environment, Safety and Health (ES&H) Assessments conducts expert led and supported, performance based evaluations of DOE sites, facilities, organizations, and operations in the areas of ES&H and emergency management, with particular emphasis on the unique hazards associated with nuclear operations and the effectiveness of DOE Line (Program and Site Office) oversight. The Office of Environment, Safety and Health Assessments also conducts special reviews and studies of ES&H and emergency management topics and activities, where warranted, based on circumstances or performance or as directed by senior DOE management or the EA Director. In selecting and prioritizing reviews, EA may consider requests by DOE line management.

The results of the evaluations are communicated by:

- Validated reports that document the results of site reviews and identify findings, issues, and opportunities for improvement. (The reports are provided to line management and posted on the Department's website.);
- Reports that document the results of cross-cutting targeted reviews and include lessons learned and recommendations for improvement; and
- Briefings to senior DOE and contractor managers and stakeholders.

4.2 Organization

The Office of Environment, Safety and Health Assessments is composed of three sub-offices that conduct assessments in the areas of nuclear safety and the environment; worker safety and health; and emergency management.

- The Office of Nuclear Safety and Environmental Assessments has nine Federal Site Leads, who are assigned to each DOE site with nuclear facilities and activities, and three Federal technical SME staff members (e.g., Safety Basis, Design and Engineering SMEs).
- The Office of Worker Safety and Health Assessments has three Federal staff members with expertise in occupational safety and health programs and performance.
- The Office of Emergency Management Assessments has one Federal staff member with expertise in emergency management program and performance.

These sub-offices conduct various operational awareness activities, assessments, and cross-cutting reviews of nuclear facilities, with primary emphasis on nuclear safety. The three EA Offices are supported by contractor SMEs.

4.3 Types of Reviews and Review Process

In conjunction with its independent oversight activities, for each fiscal year (FY), EA establishes a set of "targeted review areas," which provide specific areas of focus for the Office's oversight reviews. Targeted areas that were in progress in 2014 included reviews of fire protection; occupational radiological controls; safety-class or safety-significant structures, systems and components; and work planning and control. In addition, most independent oversight emergency management reviews during 2014 were focused on the ability of DOE sites to respond to severe natural phenomena events.

EA has established a set of protocols and CRADs, which are posted on its web sites to guide the conduct of its assessments. The protocols are established to promote consistently high quality reviews and cover such topics as the site lead program, qualification standards, high hazard nuclear facility oversight small team oversight activities, and development and maintenance of CRADs. Currently, EA has about 40 CRADs that cover a wide range of ES&H and emergency topics, including:

- Safety Basis;
- Engineering Design;
- Nuclear Facility Hazard Analysis;
- Emergency Management Program Exercises Program;
- Emergency Management Program Technical Basis and Emergency Preparedness;
- Criticality Safety Controls Implementation;
- Preparedness for Severe Natural Phenomena Events;
- Safety Systems;
- Feedback and Continuous Improvement;
- Occupational Radiation Protection Program;
- Fire Protection;
- Nuclear Facility Construction;
- Nuclear Facilities Safety Systems; and
- Nuclear Safety Component and Services Procurement.

4.4 Reviews Performed In FY 2014

During FY 2014, EA conducted more than 35 independent oversight activities across a broad range of focus areas, including readiness reviews, design requirements and configuration management, construction quality, operational awareness, and safety culture, along with targeted reviews at several facilities. Some reviews included or identified follow-up activities to ensure

that findings during previous reviews were being appropriately addressed. EA review reports issued in FY 2014 are provided in the table below.

Type of Review	Sites, Facilities, and Topics
Major Nuclear Projects	• Idaho Site Integrated Waste Treatment Unit Contractor Readiness Assessment • Los Alamos National Laboratory Transuranic Waste Facility Safety Basis and Design Development • Hanford Site Waste Treatment and Immobilization Plant Construction Quality • Savannah River Site Salt Waste Processing Facility Construction Quality and Fire Protection Systems • Hanford Site K-West Annex Facility Construction Quality • Uranium Processing Facility Project Design Requirements and Configuration Management Program
Safety Culture	• Hanford Waste Treatment and Immobilization Plant • Evaluation of Line Self-Assessments of Safety Conscious Work Environment
Occupational Radiological Controls	• Lawrence Livermore National Laboratory • Oak Ridge National Laboratory Radiochemical Engineering Development Center and High Flux Isotope Reactor Facilities • Savannah River Tritium Facilities • Los Alamos National Laboratory • Sandia National Laboratories
Nuclear Facility Safety Systems	• Hanford Plutonium Finishing Plant Safety Significant Confinement Ventilation System • Nevada National Security Site Safety Significant Blast Door and Special Door Interlock Systems • Los Alamos National Laboratory Technical Area 55 Safety Class Fire Suppression System • Pantex Plant Safety Significant Blast Door and Personnel Door Interlock Systems
Fire Protection Programs	• Oak Ridge Transuranic Waste Processing Center • Lawrence Livermore National Laboratory
DOE Line Management Oversight Processes and Programs	• Richland Operations Office • Sandia Field Office • Nevada National Security Site • Pantex Plant • National Nuclear Security Administration Production Office

	Readiness Review Program • Los Alamos Field Office Oversight of Radiological Controls
Emergency Management	• Technical Basis and Emergency Preparedness at the National Energy Technology Laboratory • Preparedness for Severe Natural Phenomena Events at the Portsmouth Gaseous Diffusion Plant
Industrial Safety	• Electrical Safety in the Hanford 222-S Laboratory • Hanford Chronic Beryllium Disease Prevention Program • Bonneville Power Administration Safety Management Program
Cross Cutting Reports	• Emergency Preparedness for Severe Natural Phenomena Events

5. METHODS, PROCESSES, AND CRITERIA FOR EVALUATING EFFECTIVENESS OF FEDERAL SAFETY OVERSIGHT

DOE performs evaluations of the effectiveness of federal oversight using several means:

- Field Office self-assessments;
- Program Office assessments of Field Offices ;
- CDNS and CNS assessments; and
- Independent Oversight by the Office of Enterprise Assessments.

These evaluations occur on a regularly scheduled periodic basis (e.g., bi-annually) and are focused on specific elements of the federal oversight, including oversight of:

- Facility Representative program;
- Safety System Oversight;
- Facility readiness processes;
- Radiation Protection;
- Conduct of Maintenance, Training, and Operation;
- Safety Analysis Review and Approval; and
- Technical Safety Requirement Review and Approval.

The criteria for performing these assessments include criteria on whether DOE has established the oversight processes required by DOE Order 226.1B .1a and whether these processes are being effectively implemented. The detailed criteria are included in Site and Program procedures and protocols as discussed in Section 4, above. Examples of the criteria used are:

- Required management, oversight, and assessment programs important to nuclear safety activities, such as facility readiness and authorization, program management, nuclear safety, fire protection, emergency management, radiological protection, occupational safety and industrial hygiene, quality assurance, occurrence reporting, contractor assessment, and issues management are adequately defined, effectively integrated into existing Site Office programs and are satisfactorily implemented;

- Site Office oversight processes include evaluation of the adequacy of implementation of the various Safety Management Programs;

- Site Office validation of readiness is adequate, including Site Office validation of the contractor's closure actions; and

- Qualification of Site Office personnel with oversight responsibilities specific to facility operations, such as the Site Office Senior Technical Safety Managers, Facility Representatives, Authorization Basis Specialists, Safety System Oversight Engineers, and safety Subject Matter Experts are documented by formal training and qualification requirements, are complete, and are adequate to address the hazards identified with facility operations and the required safety controls.

One important approach/criterion used by the Office of Enterprise Assessment is to evaluate the whether the Site Office oversight has been effective in identifying contractor performance issues and in tracking the resolution of the issues to facilitate nuclear safety performance improvements.

In addition to these periodic evaluations, the Department evaluates the effectiveness of its oversight as part of the evaluation of accidents and events. For example, the Office of Environmental Management's accident investigation of the WIPP fire included a very critical review of the federal oversight as documented in the WIPP accident investigation report. Similarly, NNSA performed a critical review of federal oversight inadequacies that contributed to criticality safety program weakness at the LANL's Plutonium Facility. The processes and criteria for performing these evaluations are documented in the evaluation plans.