



U.S. Department of  
**ENERGY**

**Department of Energy  
Activities Relating to the  
Defense Nuclear  
Facilities Safety Board  
Fiscal Year 2012**

Report to Congress  
August 2013

United States Department of Energy  
Washington, DC 20585

## Message from the Secretary

Section 316(b) of the Atomic Energy Act of 1954, as amended, requires the Department of Energy to submit a written report to Congress addressing the Department's activities related to the Defense Nuclear Facilities Safety Board (Board). Enclosed is the Fiscal Year 2012 (FY12) report on Department of Energy Activities Relating to the Board.

The Board has a critical advisory role within the Department's safety framework for defense nuclear facilities. Its expertise in reviewing the Department's safety directives and nuclear facility designs helps strengthen the safety protocols at the Department's facilities nationwide, and we welcome the Board's advice and recommendations. Through healthy exchanges with the Board and its staff, we can together fulfill our shared goal of protecting workers and the public at the Department's defense nuclear facilities. We look forward to continuing to work closely with the Board in the coming year and welcome Congress' review of the attached FY12 Annual Report.

Highlights of the Department's accomplishments are included in the report's Executive Summary. Additional details, as well as the status of the Department's actions in response to Board recommendations and other Board input, are included in the body of the report.

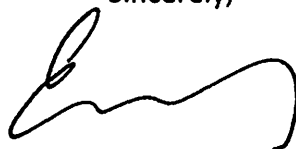
This report is being provided to the following members of Congress:

- **The Honorable Joseph R. Biden, Jr.**  
President of the Senate
- **The Honorable Ron Wyden**  
Chair, Senate Committee on Energy and Natural Resources
- **The Honorable Lisa Murkowski**  
Ranking Member, Senate Committee on Energy and Natural Resources
- **The Honorable Barbara A. Mikulski**  
Chair, Senate Committee on Appropriations
- **The Honorable Richard C. Shelby**  
Ranking Member, Senate Committee on Appropriations
- **The Honorable Dianne Feinstein**  
Chair, Senate Subcommittee on Energy and Water Development
- **The Honorable Lamar Alexander**  
Ranking Member, Senate Subcommittee on Energy and Water Development
- **The Honorable Carl Levin**  
Chair, Senate Committee on Armed Services
- **The Honorable James M. Inhofe**  
Ranking Member, Senate Committee on Armed Services

- **The Honorable Mark Udall**  
Chair, Senate Subcommittee on Strategic Forces
- **The Honorable Jeff Sessions**  
Ranking Member, Senate Subcommittee on Strategic Forces
- **The Honorable John Boehner**  
Speaker of the House of Representatives
- **The Honorable Harold Rogers**  
Chair, House Committee on Appropriations
- **The Honorable Nita M. Lowey**  
Ranking Member, House Committee on Appropriations
- **The Honorable Rodney Frelinghuysen**  
Chair, House Subcommittee on Energy and Water Development
- **The Honorable Marcy Kaptur**  
Ranking Member, House Subcommittee on Energy and Water Development
- **The Honorable Howard P. "Buck" McKeon**  
Chair, House Committee on Armed Services
- **The Honorable Adam Smith**  
Ranking Member, House Committee on Armed Services
- **The Honorable Mike Rogers**  
Chair, House Subcommittee on Strategic Forces
- **The Honorable Jim Cooper**  
Ranking Member, House Subcommittee on Strategic Forces
- **The Honorable Fred Upton**  
Chair, House Committee on Energy and Commerce
- **The Honorable Henry A. Waxman**  
Ranking Member, House Committee on Energy and Commerce

If you have any questions or need additional information, please contact me or Mr. Brad Crowell, Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,



Ernest J. Moniz

## Executive Summary

The Department of Energy (DOE or the Department) welcomes the opportunity to provide this annual report to Congress in accordance with Section 316(b) of the Atomic Energy Act of 1954, as amended. This report describes the Department's activities during Fiscal Year 2012 (FY12) related to the Defense Nuclear Facilities Safety Board (Board), including the Department's safety initiatives and activities, the status of Board recommendations, and interface activities between the Department and the Board. The Department has a unique role as owner, operator, and regulator of the nation's defense nuclear facilities, and the Board's expertise has enhanced the Department's nuclear safety posture at these facilities. Despite progress made during FY12, some very difficult issues relating to safety culture, safety assurance, and the design of both aging and new facilities came into focus during FY12 at several facilities.

### Department Safety Initiatives, Activities, and Reforms

The Department has undertaken safety initiatives, activities, and reforms, including safety initiatives to reinforce and ensure nuclear safety performance. These initiatives respond both to issues identified by the Board and to issues proactively identified by the Department through site and facility self-assessments and through the independent oversight activities of the DOE Office of Health, Safety and Security (HSS).

**Safety Culture.** The critical importance of safety culture was reiterated by the Secretary and Deputy Secretary in a memorandum to DOE managers on December 5, 2011, which emphasized the Secretary's expectations for a healthy safety culture. The memorandum provided the vision for how DOE's safety culture should support and be an integral part of completing its mission. Throughout FY12, DOE focused on safety culture assessments and improvements to resolve identified safety culture deficiencies at the Hanford Site Waste Treatment and Immobilization Plant (WTP) and the Pantex Plant, and to assess and improve safety culture throughout the DOE complex. Independent safety culture assessments were conducted for selected major nuclear design, construction and operational projects to identify safety culture concerns. These assessments provided insight to safety culture challenges across the Department. Significant efforts are needed to upgrade the safety culture of some organizations to meet DOE standards and expectations for a healthy organizational culture and working environment. Many corrective action plans have been initiated, and DOE is continuing to implement a sustained, long-term effort to complete these actions, to effectively change organizational cultures, and to support a thriving, safety-conscious work environment.

**Safety Assurance.** In July 2012, the Deputy Secretary informed the Board of the Department's processes for ensuring public safety from the operation of its nuclear facilities (including new designs and existing facilities), and a path forward to improve these processes. The path forward describes how the Department intends to respond to new information (e.g., new seismic hazards) and provides additional criteria by which DOE will evaluate the adequacy of a facility's safety basis for rare situations (exigent circumstances) where, for existing facilities, the hazard control set does not provide the level of accident mitigation called for in DOE standards. Further, the path forward describes the

documentation required in such situations and the process for obtaining approval of the facility safety basis.

***Aging Facilities and Adequacy of Design.*** During FY12, the Department initiated or accelerated activities specifically to address age-related issues at its most susceptible facilities, notably the Plutonium Facility (PF-4) at Los Alamos National Laboratory and Building 9212 at the Y-12 National Security Complex (Y-12). PF-4 is critical to the Department's mission and to national security. Several years ago, design safety analysis reevaluations indicated that the PF-4 structure could be more vulnerable to seismic activity than previously believed. Improvements to PF-4's structural integrity and close attention to material at risk have continued throughout the year. The updated structural analysis which provides a full understanding of the building vulnerabilities and which supports the development of the long-term path forward for reinforcing PF-4 is nearing completion. The Building 9212 Complex cannot meet the existing requirements for Hazard Category 2 nuclear facilities and is over 60 years old. Action to reduce the amount of radioactive material in the facilities and increased management attention to the physical condition of the facility has been effective in supporting safe and reliable operations.

***Integration of Safety into New Facility Design.*** During FY12, the Secretary and a group of independent, highly capable subject matter experts reviewed technical challenges associated with the design of the WTP. In an effort to accelerate the resolution of the remaining technical issues, a design completion core team and a number of technical sub-teams were established and staffed with experienced employees from DOE, the national laboratories, and DOE's contractor. The technical sub-teams are focused on: (1) vessel testing; (2) in-service inspection and redundancy; (3) vessel analysis including analysis of "black cells" (enclosed concrete rooms containing tanks and piping in the WTP Pretreatment Facility that are designed to be sealed due to high levels of radioactivity, with no access by personnel over the anticipated 40-year operating life cycle of the plant); (4) erosion/corrosion; and (5) the identification of tank farm waste pre-treatment requirements.

Timely and comprehensive integration of safety into the design of the Uranium Processing Facility at Y-12 is also a concern, but FY12 has seen significant improvement resulting from narrowing the gap between the maturity of the engineering design and the safety case, resolving several Board technical issues (e.g., seismic design criteria, criticality safety criteria, and post seismic event ventilation capability), and improving the quality of the safety document.

***Work Planning and Control.*** Although the Department has required application of integrated safety management concepts in performing hazardous work for about 15 years, the Department continues to struggle to effectively implement consistent work planning and control processes across the complex. Many operating experience reports in the Department's safety databases identify poor work planning and control processes as the root cause. The Deputy Secretary committed to improving implementation through better implementation guidance, analysis of lessons learned, and clearly defined Federal oversight. Actions continue at several levels to continuously improve work planning and control processes through responses to specific Board concerns and proactive Departmental initiatives.

**Lessons from Fukushima.** In the six months following the March 2011 Fukushima Daiichi Nuclear Power Plant disaster in Japan, the Department took several actions to review the safety of its nuclear facilities and identify near-term improvements. These actions and recommendations were addressed in an August 2011 report to the Secretary of Energy, *Review of Requirements and Capabilities for Analyzing and Responding to Beyond Design Basis Events*. Based on recommendations in this report, DOE embarked on activities in FY12 to develop and refine guidance that supports improvements in DOE processes for analyzing and mitigating beyond design basis events at its nuclear facilities.

**Completion of Directives Reform Initiative.** During FY12, HSS completed the directives reform effort started in FY10. This accomplishment improved the Department's ability to execute its mission safely and efficiently. By removing unnecessary process requirements and eliminating directives that were either redundant or unnecessary for safety and health these revisions give added clarity and emphasis to essential safety requirements and to line management responsibility and accountability.

### **Board Recommendations**

The Board stated that it closed one recommendation in FY12, Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. The Board issued two new recommendations in FY12: Recommendation 2012-1, *Savannah River Site Building 235-F Safety*; and Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*. Fourteen recommendations remained open at the end of FY12. The number of open recommendations has remained fairly constant, ranging from 10 to 14 over the past decade, as new recommendations are issued and older ones closed.

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## I. Legislative Language

This report is provided in accordance with 42 U.S.C. § 2286e, wherein it is stated:  
SEC. 316. REPORTS. [42 U.S.C. § 2286e]

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

## II. Background and Organization

The Department of Energy (DOE or the Department) welcomes the opportunity to provide this annual report to Congress describing the Department's activities in fiscal year 2012 (FY12) that are related to the Defense Nuclear Facilities Safety Board (DNFSB or Board).

The Board is an independent executive-branch agency established by Congress in 1988 to provide recommendations to the Secretary of Energy regarding public health and safety issues at the Department's defense nuclear facilities. The Board reviews and evaluates the content and implementation of standards relating to the design, construction, operation, and decommissioning of the Department's defense nuclear facilities. Figure 1 shows the locations of DOE's major defense nuclear facilities.

The Board and the Department communicate and interact through a variety of mechanisms, including formal Board recommendations, formal reporting requirements, Board letters requesting action and information, letters providing suggestions, letters providing information (e.g., staff trip reports and reports on specific issues), Board-sponsored public meetings and hearings, Board briefings, discussions, and Board site visits. The Board's four public hearings in FY12 are listed in Appendix A, Table A.3. The remainder of this report is organized as follows:

- **Section III, Department Safety Initiatives, Activities, and Reforms**, describes broad-based Departmental activities affecting environment, safety, and health that are of interest to the Board.
- **Section IV, FY12 Progress on Board Recommendations**, describes Departmental activities completed or ongoing in FY12 to implement Board recommendations accepted by or under review by the Secretary of Energy.
- **Section V, Interface Activities**, describes Departmental activities to maintain communications and improve interaction between the Department and the Board.

- **Appendix A** contains tables illustrating the status of the open Board recommendations, reporting requirement commitments completed, and Board public meetings and hearings in FY12.
- **Appendix B** lists acronyms and abbreviations.

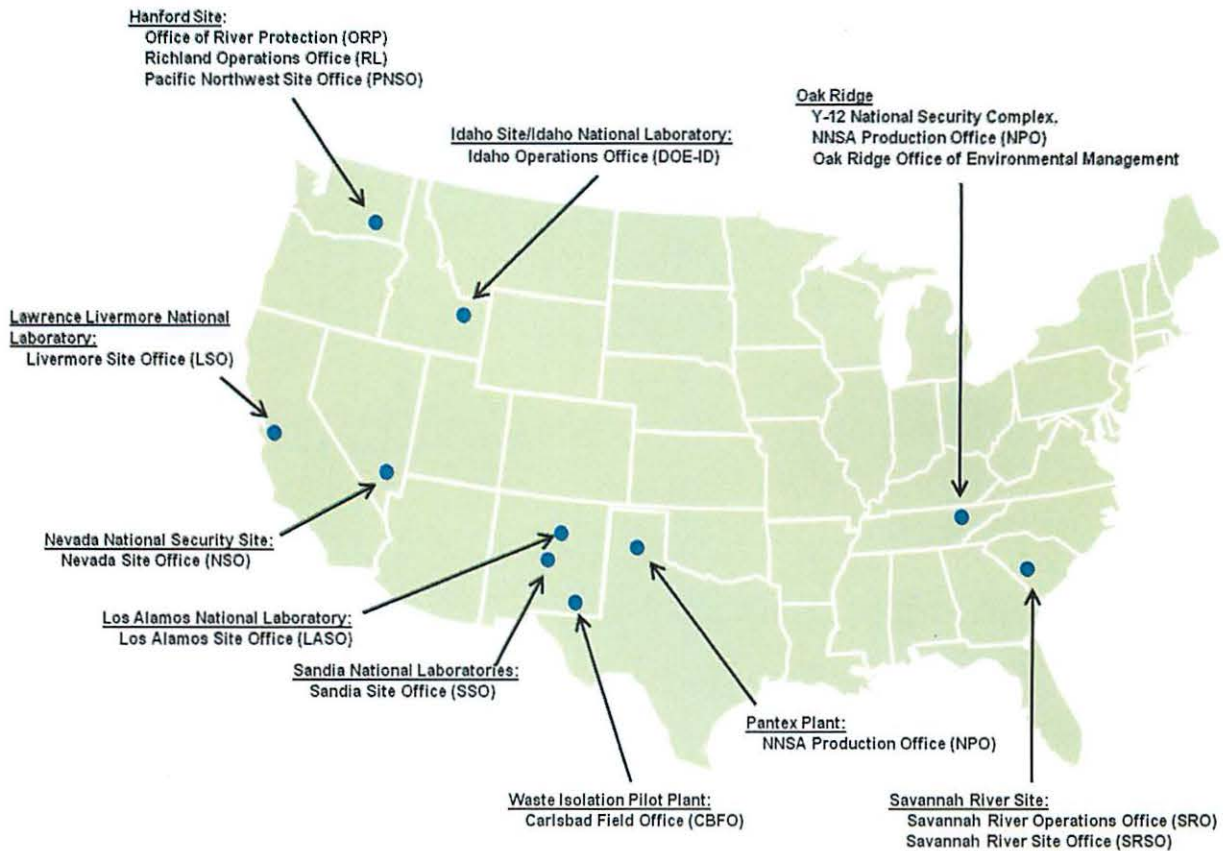


Figure 1. Department of Energy Defense Nuclear Facility Sites

### III. Department Safety Initiatives, Activities, and Reforms

This section describes the FY12 initiatives and activities the Department took to improve and ensure its nuclear safety performance throughout the complex. These activities address issues identified by the Board and issues identified through self-assessments and independent oversight efforts undertaken by the Department at its defense nuclear facilities.

## A. Safety Culture

Safety culture assessments and improvements were a focus for DOE throughout FY12 to resolve identified safety culture deficiencies at the Waste Treatment and Immobilization Plant (WTP) at the Hanford Site and to assess and improve safety culture throughout the DOE complex. Safety culture is also a Board priority. On June 9, 2011, the Board transmitted Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*, to the Secretary. This recommendation prompted DOE to redouble its efforts to foster a rigorous safety culture. During FY12, the Secretary confirmed the importance he places on a robust safety culture throughout the Department. The Office of River Protection (ORP) at Hanford moved to implement corrective actions at the WTP, and the DOE Office of Health, Safety and Security (HSS) initiated a broad assessment of the state of safety culture at WTP and other DOE sites. DOE developed safety culture-relevant guidance and training designed to elevate the importance of safety culture at nuclear facilities.

**Secretarial Reiteration of Safety Culture Expectations.** The Secretary and Deputy Secretary reiterated the critical importance of safety culture in a memorandum to DOE managers on December 5, 2011, which emphasized the Secretary's expectations for a healthy safety culture. The memorandum provided a vision of how DOE's safety culture should support and be an integral part of completing its mission. The Secretary also led a town hall meeting near the WTP in June 2012, which he used as a venue to emphasize his high expectations with regard to safety culture.

**Assessment of Safety Culture throughout DOE.** As part of the Implementation Plan (IP) to address DNFSB Recommendation 2011-1, the Secretary directed the performance of safety culture assessments at selected major nuclear design, construction, and operational projects to determine safety culture concerns (extent-of-condition assessments). Before beginning the assessments, DOE enhanced its capability to assess safety culture processes and capability through consultation with the Nuclear Regulatory Commission, several nuclear power generating utilities, and associated organizations to benchmark their processes. HSS contracted with nationally recognized experts in human performance analysis to support the data collection and analysis efforts. The assessments included a review that followed up on DOE's October 2010 review of WTP nuclear safety culture.

The projects and organizations reviewed for safety culture in FY12 were: the Office of Environmental Management (EM) Headquarters, Los Alamos National Laboratory (LANL) Chemistry and Metallurgy Research Replacement Project (CMRR), WTP and ORP, the Pantex Plant (Pantex), the Uranium Processing Facility (UPF) Project, and the Idaho Cleanup Project Sodium Bearing Waste Treatment Plant. Workforce commitment to execute the mission and site mechanisms to identify problems are positive observations of the reviews. Insufficient oversight, weak safety conscious work environment (SCWE) behaviors, and inadequate communication are areas in need of attention. Many sites have already started corrective action plans.

**Safety Conscious Work Environment Self-Assessment Guidance and Training.** A SCWE is a subset of safety culture related to a work environment in which employees feel free to raise safety concerns to management (and/or a regulator) without fear of retaliation. Drawing on the lessons learned from the safety culture extent-of-condition reviews at selected sites and related self-assessments at other sites

during FY12, DOE issued SCWE self-assessment guidance and developed a SCWE training course for DOE and contractor leaders. SCWE training was delivered to Headquarters and field staff beginning in August 2012. Development of two new courses tailored for workers and front line supervisors to complement the first course began in FY12.

## **B. Safety Assurance**

Safety is of vital importance in the execution of the Department's missions. DOE implements measures that permit a facility to operate in a manner that provides adequate protection of public health and safety. In July 2012, the Deputy Secretary forwarded to the Board a "path forward" that presented the Department's commitments to ensure adequate protection.

The path forward describes how to implement the Secretary's commitments for new and existing facilities, and how the Department intends to respond to new information (e.g., new seismic hazards). The path forward also provides additional criteria by which DOE will evaluate the adequacy of a facility's safety basis and its implementation, and describes the documentation required for areas that must be revisited or receive further management oversight and approval.

The provisions of the path forward comprise a Departmental commitment under the IP for Board Recommendation 2010-1, *Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers*, and the Department intends to include them in the final revisions to DOE Standard 3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, and DOE Standard 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents*.

## **C. Aging Facilities and Adequacy of Design**

Many of the Department's defense nuclear facilities are rapidly approaching or have already exceeded their expected life spans. Some of these facilities no longer meet modern safety standards, and the original design of some of the older facilities is acknowledged to be unable to meet current and credible design basis seismic or weather-related accidents or a rare "beyond design basis event" (BDBE). Recognizing this challenge, the Department is analyzing the most pressing age-related hazards confronting its older facilities and implementing measures to eliminate or mitigate them. During FY12, the Department initiated or continued with activities specifically to address age-related issues at its most susceptible facilities. Examples of current activities the Department is taking to address age-related concerns at two unique mission-critical facilities are provided below.

**Los Alamos National Laboratory Plutonium Facility (PF-4).** Board Recommendation 2009-2, *Los Alamos National Laboratory Plutonium Facility (PF-4) Seismic Safety*, was motivated by concerns about a postulated seismically-induced fire. The National Nuclear Security Administration (NNSA) has completed extensive structural modifications, and additional actions are being pursued to ensure that seismic concerns are thoroughly addressed. The facility upgrades initially drove the estimated dose to the hypothetical maximally-exposed offsite individual (MEOI) well below the 2008 documented safety analysis (DSA) but above the Department's evaluation guideline. However, the seismic analysis of

facilities and evaluation of risk updated the estimated dose to the hypothetical MEOI in April 2011 based on new information but it remained above the Department's guideline. Dose consequence calculations have been continuously debated since this update as a result of differing technical opinions on calculation parameters. Actions taken in the last three years – such as structural reinforcement, combustible and ignition source reduction, improved material packaging, and improved fire barriers – reduce the potential consequences from the postulated accident. However, additional actions are being pursued to ensure that seismic concerns are thoroughly addressed, especially efforts to better understand and model responses of the PF-4 structure to seismic events that could be linked to building collapse. Late in 2012, the site identified potential collapse mechanisms from a large, rare earthquake (i.e., a period of greater than 8,300 years) and initiated a PF-4 Safety Basis addendum. NNSA is moving forward with the Deputy Secretary's directed guidelines, including steps to be followed when an exigent condition causes design safety analysis calculations to exceed guidelines.

**Y-12 National Security Complex, Building 9212.** Until the UPF can be constructed and become operational, enriched uranium (EU) operations will depend on continued operations within Building 9212, portions of which are over 60 years old. DOE has initiated a regimen of increased vigilance and close observation by the 9212 Continued Safe Operability Oversight Team (CSOOT), which regularly conducts facility risk reviews to assess the physical condition of Building 9212 to support safe operations. The CSOOT makes quarterly updates to senior management on their evaluations and recommendations regarding the continued safe operation of Building 9212.

In addition, the CSOOT provides an annual written report and briefing to NNSA and the Board. The CSOOT's FY12 annual evaluation of Building 9212 performance indicators, facility system and process condition assessments, and operations and safety data identified no safety issue that would currently provide reason for limiting operations in Building 9212. Line management responded promptly with increased attention to aging issues with respect to important safety-related fire suppression systems – end-of-life sprinkler heads – and identified corrosion issues in dry pipe systems. Replacement efforts were promptly implemented in both cases to facilitate continued safe operation. These events validated the ability of current oversight and infrastructure to respond to aging issues and to ensure that risk remains acceptable for continued safe operations in Building 9212. The Board has especially been concerned as the schedule for the UPF slipped, requiring Building 9212 to operate until at least 2022. Taking these concerns into consideration, a February 14, 2012, memorandum from the NNSA Deputy Administrator for Defense Programs outlined an accelerated UPF project strategy to begin transitioning EU processes out of Building 9212 in 2019.

#### **D. Integration of Safety into New Facility Design**

**Resolution of Technical Issues.** During FY12, the Secretary and a group of independent, highly capable subject matter experts reviewed technical challenges associated with the design of the WTP. These experts also provided independent analysis of some of the challenges associated with the construction and operation of the WTP.

To accelerate the resolution of the remaining technical issues, a design completion core team and a number of technical sub-teams were established and staffed with experienced employees from DOE,

the national laboratories and DOE's contractor. The technical sub-teams are focused on: (1) vessel testing; (2) in-service inspection and redundancy; (3) vessel analysis including analysis of "black cells" (enclosed concrete rooms containing tanks and piping in the WTP Pretreatment Facility that are designed to be sealed due to high levels of radioactivity, with no access by personnel over the anticipated 40-year operating life cycle of the plant); (4) erosion/corrosion; and (5) identification of tank farm waste pre-treatment requirements.

Further examples of initiatives and activities to integrate safety into new facility design are presented below in Section III.I, NNSA Defense Program Activities.

### **E. Work Planning and Control**

At the core of the implementation of integrated safety management (ISM) are effective work planning and control (WP&C) processes that ensure the safety of workers, the public, and the environment. The Department's missions rely on well-developed and consistently implemented WP&C programs. The Deputy Secretary committed to striving for continuous improvement by strengthening guidance through the Department directives system and ensuring adequate Federal and contractor oversight methods. The objective is to attain a lasting and consistent methodology for safe and successful WP&C.

Activities to strengthen WP&C implementation and oversight included the development and issuance of a revised DOE Guide 226.1-2, *Federal Line Management Oversight of Department of Energy Nuclear Facilities*, that includes criteria, review, and approach documents (CRADs) to assist in program implementation and oversight.

DOE and the Energy Facility Contractors Group (EFCOG) completed efforts that began in FY11 to improve contractor implementation, assurance, and Federal oversight of WP&C across DOE, allowing opportunities for improvement in the integration of WP&C programs. This effort resulted in the issuance of the detailed EFCOG WP&C Program Guideline document, which provides examples for developing an effective program.

### **F. Lessons from Fukushima**

In the six months following the March 2011 Fukushima Daiichi Nuclear Power Plant disaster in Japan, the Department took several actions to review the safety of its nuclear facilities and identify opportunities for near-term improvements. These actions were addressed in an August 2011 HSS report to the Secretary of Energy, *Review of Requirements and Capabilities for Analyzing and Responding to Beyond Design Basis Events*. Based on the recommendations in this report, DOE embarked on activities in FY12 to develop and refine guidance that supports improvements in DOE processes for analyzing and mitigating BDBEs at its nuclear facilities.

The main activity was a set of pilot reviews of BDBE analysis and mitigation features at four DOE nuclear facilities representing a range of DOE sites, nuclear facility types/activities, and responsible program offices. The pilot reviews focused on: (1) how BDBEs were evaluated and documented in the

facility DSAs; (2) potential BDBE vulnerabilities in the facilities; and (3) facility and site emergency management programs' preparations for responding to severe accidents and BDBEs.

The BDBE project also evaluated whether draft BDBE guidance on safety analysis and emergency management could be used to improve the analysis of, and preparations for mitigating, severe accidents and BDBEs. The pilot reviews confirmed that the primary BDBE threats had been identified and analyzed at the facilities reviewed, and that the related DOE requirements would be adequate if appropriately implemented. The pilot reviews validated the process and provided the practical experience and insights needed to refine the draft guidance related to evaluating BDBEs.

In addition, DOE sponsored a Nuclear Safety Workshop in September 2012 with the theme *Post Fukushima Initiatives and Results*. The workshop shared practices and initiatives related to nuclear safety culture, the regulatory framework related to BDBEs, and the use of risk assessments to support nuclear safety decision-making. The workshop drew over 200 attendees and provided national, international, government, academic, and industry perspectives.

### **G. Completion of Directives Reform Initiative**

During FY12, HSS completed the directives reform effort that started in FY10. These reforms give added clarity and emphasis to the essential safety requirements and responsibilities by removing redundancies in the existing directives, allowing tailoring of requirements to appropriately address the hazards, and more clearly defining roles and responsibilities. The Department's ability to accomplish its mission safely and efficiently has been greatly improved by instituting these revisions to the directives system.

### **H. Office of Environmental Management Activities**

In FY12, EM rolled out program-wide changes intended to improve safety culture across the DOE complex. Although some of these changes were related to execution of the IP for DNFSB Recommendation 2011-1, *Safety Culture at the Waste Treatment and Immobilization Plant*, these efforts extended well beyond WTP.

EM remained vigilant in identifying emerging safety issues through ongoing awareness and analysis of operational experience and efforts to improve WP&C. This effort culminated in the issuance of combined EM/NNSA guidance – developed through a partnership with EFCOG and major corporations that support EM work – to develop and enhance work planning expectations and best practices in the field. Examples of efforts supporting improvements in this area include:

- Participating in the development of the EFCOG WP&C Program Guideline document and CRAD supporting DOE Guide 226.1, *Federal Line Management Oversight of Department of Energy Nuclear Facilities*
- Performing WP&C and/or Conduct of Operations assessments at multiple sites



- Evaluating the URS Corporation's programmatic review of the Washington TRU Solutions WP&C program at the Waste Isolation Pilot Plant and the Washington Closure Hanford WP&C program at the River Corridor Closure Project.

EM continues to work with the sites to promote the widespread use of performance indicators targeted at identifying trends, positive and negative, so action can be taken before an event occurs. Initial pilot efforts in FY12 showed promise and their continued use and refinement remain a priority as EM works to expand their implementation throughout the organization.

EM completed verification of the Corporate Quality Assurance Plan (QAP) across the DOE complex in FY12.

## **I. NNSA Defense Program Activities**

NNSA activities involving interactions with the DNFSB during FY12 included: maturing safety basis documents, advancing the readiness of technologies, continuing design of the UPF, progress in improving the nuclear explosive safety (NES) closure process, and other Board-related activities.

**UPF Design.** The UPF at Y-12 is NNSA's effort to acquire a facility to sustain the nation's long-term highly enriched uranium processing capabilities. The Board had observed that the engineering efforts significantly outpaced the safety case development, imparting a risk of engineering design modifications if additional nuclear safety requirements emerge late in the design. This risk was exacerbated by the contractor's preliminary safety design report (PSDR), a top-level safety document that did not meet quality expectations when originally delivered. Achievements since the beginning of FY12 include narrowing the gap between maturity of engineering design and the PSDR, resolving several Board technical issues (seismic design criteria, criticality safety criteria, and post seismic confinement capability).

**NES Closure Process.** On November 7, 2011, the DNFSB issued a letter to NNSA stating that the Board believed the tracking and closure process for NES findings and senior technical advisor (STA) comments at the Pantex Plant did not adequately meet the intent of DOE Manual 452.2-2, *Nuclear Explosive Safety Evaluation Processes*. To address these matters, NNSA identified and committed to make changes to DOE Manual 452.2-2 that will improve the process for handling NES findings and STA comments.

**Other Board-Related NNSA Activities.** NNSA received a letter from the DNFSB on March 3, 2012, concerning an event at the Pantex Plant in the fall of 2011 involving operations conducted outside the NES-approved process. In addition to an investigation by B&W Pantex, NNSA performed an independent review of the overall NES change evaluation process at the Pantex Plant. The review identified weaknesses and recommendations for B&W Pantex, the NNSA Production Office (NPO), and the Office of Stockpile Management within Defense Programs (NA-12). Actions to evaluate and disposition the weaknesses and recommendations were initiated in FY12.

DOE established Central Technical Authority (CTA) positions within the Department in response to DNFSB Recommendation 2004-1, *Oversight of Complex, High-Hazard Nuclear Operations*. The CTA for NNSA is the NNSA Administrator. The Chief of Defense Nuclear Safety (CDNS) provides technical support to the CTA in several areas, including: providing biennial reviews of NNSA offices; nuclear safety requirement exemptions; NNSA liaison with DNFSB; interpreting and developing nuclear safety policies, requirements, and guidance; serving as differing professional opinion manager; and conducting independent analyses and investigations.

CDNS biennial reviews of NNSA site offices, initiated in 2005, continued in FY12. Three rounds of biennial reviews have been conducted at all site offices except the Y-12 Site Office (YSO), which will be reviewed once the consolidation of YSO and the Pantex Site Office into the NNSA Production Office (NPO) is complete. Significant technical and security matters at Y-12 merited immediate, high level attention and will require future oversight and reviews. Each round of reviews indicated steady improvement in site office performance. In the first round, only 67 percent of the functional areas met their objective. This number increased to 90 percent after the second round of reviews and 95 percent after the third.

## IV. FY12 Progress on Board Recommendations

### Overview

The Board issues recommendations to the Secretary on issues or circumstances it believes must be resolved to ensure adequate protection of public health and safety. The Secretary is required to respond to each Board recommendation within 45 days of its publication in the *Federal Register* (or longer, if granted additional time). In addition, the Secretary must provide an IP to the Board within 90 days of publication in the *Federal Register* of the Secretary's acceptance of the recommendation (or longer, upon appropriate notice).

The Department's policy is to begin IP development in parallel with the development of the Department's response if it is expected that the Secretary will accept the recommendation in whole or in part. The Department strives to complete all IP commitments within one year of issuance of the IP. However, most IP commitment schedules extend beyond one year due to the scope and technical complexity of the safety issues being addressed, the lengthy DOE concurrence processes for revising its directives, and the challenges inherent in implementing and verifying complex-wide changes.

Appendix A, Table A.1, *Open Board Recommendations*, lists the 14 recommendations that remained open at the end of FY12, the date they were issued, and the timeframe that DOE currently projects for completing the associated IP commitments. The number of open recommendations has remained fairly constant from 10 to 14 over the past decade as new recommendations were issued and older ones closed.

All recommendations (both open and closed), the associated IPs, and a chronological record of related correspondence between DOE and the Board can be accessed on the websites of the Departmental Representative to the DNFSB (DR) or the Board.

The Board stated that it closed one recommendation in FY12: Recommendation 2001-1, *High-Level Waste Management at the Savannah River Site*. The Board issued two new recommendations in FY12: Recommendation 2012-1, *Savannah River Site Building 235-F Safety*, and Recommendation 2012-2, *Hanford Tank Farms Flammable Gas Safety Strategy*.

## **Recommendations Closed in FY12**

### ***2001-1: High-Level Waste Management at the Savannah River Site***

By letter dated December 7, 2011, the Board stated that it closes Recommendation 2001-1. The recommendation was issued in 2001 to address the critical shortage of tank space in the SRS HLW system, which threatened to delay stabilization of nuclear materials at SRS and could impact vitrification activities at the SRS Defense Waste Processing Facility. In its letter, the Board noted that DOE had not only addressed the immediate issue of leaks in an old-style tank but also had successfully completed corrective actions focused on selecting and developing salt processing capabilities and improving HLW management at SRS.

## **Recommendations Opened in FY12**

### ***2012-2: Hanford Tank Farms Flammable Gas Safety Strategy***

The Board issued Recommendation 2012-2 on September 28, 2012. The recommendation reflects the Board's assessment that current operations at the Hanford tank farms require safety-significant active ventilation of double-shell tanks to ensure the removal of flammable gas from the tanks' headspace. A significant flammable gas accident could have considerable radiological consequences, endanger personnel, contaminate portions of the tank farms, and seriously disrupt the Hanford waste cleanup mission. The Board also recommends that DOE install real-time monitoring to measure tank ventilation flow rates and perform other upgrades to indication systems used to perform safety related functions.

### ***2012-1: Savannah River Site Building 235-F Safety***

The Board issued Recommendation 2012-1 on May 9, 2012. The recommendation reflects the Board's assessment that the Department should take action to remove and/or immobilize the residual contamination within Building 235-F because of the potential dose consequences associated with a radiological release to collocated workers and the public. The Board also believes that DOE must take near-term action to more effectively prevent a major fire in Building 235-F. The Secretary accepted the recommendation, agreeing that action must be taken to reduce the hazards associated with the material at risk that remains as residual contamination within Building 235-F. The Secretary's acceptance letter noted that DOE has taken action to remove special nuclear material from Building 235-F, remove transient combustible material, and limit access to the building.

## Other Open Recommendations

### ***2011-1: Safety Culture at the Waste Treatment and Immobilization Plant***

The Board issued Recommendation 2011-1 on June 9, 2011. The recommendation reflects the Board's assessment that, taken as a whole, the Board's investigative record indicates that the safety culture at WTP is in need of prompt, major improvement and that corrective actions will only be successful and enduring if championed by the Secretary of Energy. The Secretary accepted the recommendation, and the IP was delivered to the Board on December 27, 2011. On September 14, 2012, an IP addendum was delivered to supplement the original IP based on information and experience to date during execution of the IP.

During FY12, the Department completed ten non-recurring<sup>1</sup> IP commitments, including two for which the Secretary was the responsible manager and two for which the Deputy Secretary was the responsible manager, consistent with the recommendation language that the Department assert Federal control "at the highest level" and direct, track, and validate the specific corrective actions to be taken to establish a strong safety culture within the WTP Project. The Secretary formally communicated his expectations to the Undersecretary for Nuclear Security regarding safety culture at the WTP and reiterated his expectations as the keynote speaker at a WTP town hall meeting and in other meetings with WTP employees.

In January 2012, HSS issued the results of its independent oversight assessment of nuclear safety culture and management of nuclear safety concerns at the WTP, following up on the October 2010 HSS review of the WTP nuclear safety culture. In April 2012, ORP issued a Safety Culture Improvement Plan to initiate needed improvements in the ORP safety culture. Also in April 2012, Bechtel National, Inc., the WTP prime contractor, issued a comprehensive corrective action plan for strengthening the nuclear safety quality and culture at the WTP. This plan addresses the findings of the January 2012 HSS independent assessment.

In Recommendation 2011-1, the Board also recommended that DOE conduct extent-of-condition reviews to determine the state of safety culture at sites/facilities other than the WTP. During FY12, HSS collaborated with independent safety culture experts to conduct such evaluations at selected DOE organizations, as discussed in Section III.A. During FY12, HSS issued individual reports for four facilities: WTP (January 2012), CMRR (April 2012), UPF (June 2012), and Pantex (November 2012). Preliminary analyses of these reviews indicate both strong points and areas requiring attention. Strengths include workforce commitment to the mission, strong efforts to improve personnel safety, multiple mechanisms to identify problems, and initiatives to formalize work procedures. Areas requiring attention include pressures created by internal and external stakeholders, high-stress standards of performance, insufficient oversight by site offices and Headquarters organizations, an overly narrow perspective on safety in general, double standards with respect to accountability, and methods of communication. These reports are available on the DR website. A consolidated summary

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<sup>1</sup> Recurring IP commitments include regularly or periodically scheduled reports, briefings, or updates that DOE provides the Board.

report for the HSS reviews, as well as the self-assessments described in the next paragraph, is expected in November 2013 and is an action called for in the IP.

During FY12, extent-of-condition self-assessment reviews were also conducted at contractor sites with defense nuclear facilities and/or construction projects and at the Federal offices with associated oversight responsibilities. These include site and field offices, project offices, Headquarters program offices, and the Office of Acquisition and Project Management. When complete, these self-assessments of site safety culture will provide further insights into the overall safety culture throughout the Department. Results of these extent-of-condition self-assessments will inform HSS's consolidated report, as described previously.

### ***2010-2: Pulse Jet Mixing at the Waste Treatment and Immobilization Plant***

The Board issued Recommendation 2010-2 on December 17, 2010. The recommendation addresses the Board's concern that equipment testing and analysis at the WTP should be enhanced to establish with confidence that the pulse jet mixing (PJM) and waste transfer systems will perform adequately at full scale. The Secretary accepted the recommendation and committed to more testing to provide additional confidence that PJM and waste transfer systems for the WTP will achieve their design and operating requirements. The IP was delivered to the Board on November 10, 2011.

During FY12, DOE completed 15 non-recurring IP commitments. However, in May 2012 DOE informed the Board that, based on scoping test data, revisions to the IP would be required. In August 2012, the Secretary and a group of independent technical experts began assessing WTP technical issues. The assessment included the plant's capability to detect equipment failure and to repair failed equipment inside the WTP Pretreatment Facility. Based on the scoping data findings and ongoing technical analyses, the Secretary informed the Board that as the Department gains a better understanding of the plant design verification strategy, DOE will be in a position to develop a revised IP for this recommendation. Technical sub-teams have been formed to analyze the remaining technical issues.

### ***2010-1: Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers***

The Board issued Recommendation 2010-1 on October 29, 2010. The recommendation advised DOE to amend 10 CFR Part 830, *Nuclear Safety Management*, by incorporating a revised DOE Standard 3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, into the text as a requirement. The recommendation also requests that the revisions to DOE Standard 3009-94 reflect the Board's desire to see clearly delineated criteria for methodologies, accident scenarios, and mitigation options, as well as a clearly defined approval authority for safety analyses at defense nuclear facilities.

The Secretary partially accepted the recommendation, and DOE transmitted the IP to the Board on September 26, 2011. The IP provides an approach for updating the Department's DSA standards and requirements to improve performance of hazard and accident analysis and the identification of safety

controls. The actions taken pursuant to the IP also reinforce and expand on the improvements made during DOE's recently completed directives reform initiative.

DOE completed one non-recurring milestone in FY12, an evaluation of improvements to DOE Standard 3009. The product from this completed milestone was delivered to the Board on January 6, 2012.

In July 2012, the Deputy Secretary developed and delivered to the Board a detailed "path forward" that presented the Department's commitments to assure adequate protection and to support DOE Policy 420.1, *Department of Energy Nuclear Safety Policy*, including its Technical Basis Document, DOE/HS-0006. The path forward describes how the Department will implement the Secretary's commitments for new and existing facilities and how it intends to respond to new information (e.g., new seismic hazards). The path forward also provides additional criteria by which the Department can evaluate the adequacy of the safety basis and its implementation, and describes the documentation required for areas that must be revisited or that must receive further management oversight and approval. The provisions of the path forward fulfill a Departmental commitment under Recommendation 2010-1. The Department intends to include these provisions in the revised DOE Standard 3009, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, and DOE Standard 1104, *Review and Approval of Nuclear Facility Safety Basis and Safety Design Basis Documents*. As part of the Department's IP efforts, the revision of DOE Standard 3009 was actively pursued during FY12, including significant efforts to incorporate the perspectives of key stakeholders, such as site offices, contractors, and the DNFSB.

#### ***2009-2: Los Alamos National Laboratory Plutonium Facility Seismic Safety***

The Board issued Recommendation 2009-2 on October 26, 2009. The recommendation advises the Department to implement near-term actions and compensatory measures to reduce the consequences of potential seismic events at PF-4 and to develop and implement a longer-term strategy to reduce consequences from seismic events. The Secretary accepted the recommendation on February 2, 2010, and transmitted the IP to the Board on July 13, 2010.

DOE completed the last two non-recurring IP milestones in FY12: approval of the refined accident analysis, and glovebox stand seismic upgrades. The recommendation remains open because of the extended timeframe for the installation of active confinement ventilation and pending further structural analysis and development of modifications; NNSA continues to update the project execution plan for safety significant components for upgrades to mitigate consequences to seismic activity. Quarterly briefings to the Board continue.

#### ***2009-1: Risk Assessment Methodologies at Defense Nuclear Facilities***

The Board issued Recommendation 2009-1 on July 30, 2009. The recommendation advises DOE to establish policies and associated standards and guidance on the use of quantitative risk assessment methodologies (referred to as probabilistic risk assessment) at the defense nuclear facilities. The Secretary accepted the recommendation on November 3, 2009 and subsequently transmitted the IP to the Board. On April 27, 2010, the Secretary transmitted Revision 1 of the IP to the Board.

Two non-recurring IP actions remain open, both related to the appropriate Department-specific guidance, standards, or policy expectations that are necessary to ensure the appropriate and consistent use of quantitative risk assessment in nuclear safety analysis and to related decision making to support the design and operation of defense nuclear facilities. Risk assessment and management was the topic of one breakout session during the September 19-20, 2012, Nuclear Safety Workshop hosted by DOE. Discussions during this session included DOE examples of quantitative risk assessment and the DOE draft standard on the subject.

#### ***2008-1: Safety Classification of Fire Protection Systems***

The Board issued Recommendation 2008-1 on January 29, 2008. The recommendation advises DOE to develop new and revise existing standards applicable to the design and operation of fire protection systems to be relied upon as a primary means of protecting the public and workers from radiological hazards at DOE defense nuclear facilities. The Secretary accepted the recommendation on March 19, 2008, and transmitted the IP to the Board on July 23, 2008.

DOE completed one IP milestone in FY12: Draft Revision of DOE Standard 1066, *Fire Protection Design Criteria*. This draft standard, which incorporates specific design and operational criteria for sprinkler and other selected fire protection systems, has been submitted for DOE-wide review. Three non-recurring IP milestones remain open.

#### ***2007-1: Safety-related In Situ Nondestructive Assay (NDA) of Radioactive Materials***

The Board issued Recommendation 2007-1 on April 25, 2007. The recommendation addresses the measurement of radioactive material holdup at defense nuclear facilities and cites a need for three specific improvements: standardized requirements for performing measurements, design requirements for new facilities that would facilitate accurate holdup measurement, and research and development activities for new instrumentation and/or measurement techniques. The Secretary accepted the recommendation on June 28, 2007, and transmitted the IP to the Board on October 24, 2007. No non-recurring IP commitments remain open.

#### ***2005-1: Nuclear Material Packaging***

The Board issued Recommendation 2005-1 on March 10, 2005. The recommendation acknowledges that DOE has made progress in the stabilization and storage of its excess nuclear materials, but calls for DOE to further enhance nuclear safety by developing technically justified criteria for packaging systems for nuclear materials on a DOE-wide level. The Secretary accepted the recommendation on May 6, 2005, and transmitted the IP to the Board on August 17, 2005.

The Department completed the final non-recurring IP milestone in FY11; only recurring milestones remain. Onsite repackaging activities will continue on a priority basis until all material is properly packaged. The Department expects to propose closing this recommendation in FY14 after three associated activities are complete: production of new storage containers, development of a path for new container certification, and repackaging of very-high-risk and high-risk material is in progress.

**2004-2: Active Confinement Systems**

The Board issued Recommendation 2004-2 on December 7, 2004. The recommendation cites the Board's assessment that benefits that would accrue if the Department changed its safety policy to require active confinement ventilation systems for all new and existing hazard category 2 and 3 defense nuclear facilities with the potential for a radiological release. The Board also recommended that the Department evaluate all new and existing defense nuclear facilities and enhance and update associated DOE directives and standards.

The Secretary accepted the recommendation on March 18, 2005. Revision 1 of the IP was transmitted to the Board on July 12, 2006. The revised IP commits to review all hazard category 2 and 3 defense nuclear facilities to ensure that the selected confinement strategy is properly justified and documented. In accordance with the IP, priority was given to design and construction projects, including ongoing major modifications to existing facilities.

DOE has met all non-recurring commitments in the IP except for updating its nuclear safety directives to incorporate guidance for the use of active confinement ventilation systems.

**2004-1: Oversight of Complex, High-Hazard Nuclear Operations**

The Board issued Recommendation 2004-1 on May 21, 2004. The recommendation cites Board concerns regarding a number of safety issues related to the central technical authority, delegations of safety responsibilities, technical capability, nuclear safety research and development, lessons learned from significant external events, and ISM. On August 30, 2011, DOE transmitted to the Board an updated IP which identifies three broad areas for improvement: strengthening Federal safety assurance, learning from internal and external operating experience, and revitalizing ISM implementation.

Five non-recurring IP commitments remain open. In FY12, DOE issued Guide 226.1-2, *Federal Line Management Oversight of DOE Nuclear Facilities*. DOE continues to work with the Board to fully satisfy the remaining commitments of the IP. Significant progress has been made on the nuclear safety research and development commitments. A charter for a committee has been written, a team assembled, and research and development database opportunities explored.

**2002-3: Requirements for the Design, Implementation, and Maintenance of Administrative Controls**

The Board issued Recommendation 2002-3 on December 30, 2002. The recommendation cites technical inadequacies in a number of safety-related administrative controls (now called specific administrative controls) proposed for, or in use at, various defense nuclear facilities. The Board noted that in many cases DOE and/or its contractors have asserted that the methods used to establish specific administrative controls comply with existing DOE directives. However, the Board concluded that the DOE directives system did not contain adequate requirements for the design, implementation,



and maintenance of specific administrative controls. The Secretary accepted the recommendation on January 31, 2003 and transmitted the IP to the Board on June 26, 2003.

DOE proposed closing this recommendation in 2007. The Board was last briefed on November 30, 2011. HSS has undertaken efforts to ensure that specific administrative controls are being applied effectively across the DOE complex. These efforts involved site, program office, and NNSA evaluations of specific administrative control implementation at targeted sites, including LANL, Y-12, Lawrence Livermore National Laboratory, Pantex, SRS, Sandia National Laboratories, and the East Tennessee Technology Park. Program offices are working with these sites to ensure that the formal corrective actions are closed on a reasonable schedule. Additionally, the program offices are in the process of verifying more broadly that specific administrative controls are being evaluated across all program sites.

### ***2000-1: Prioritization for Stabilizing Nuclear Materials***

The Board issued Recommendation 2000-1 on January 14, 2000. The recommendation advises DOE to accelerate the schedule for stabilizing and repackaging high-risk, unstable special nuclear materials, spent fuel, unstable solid plutonium residues, and highly radioactive liquids that pose potential safety concerns for the public, workers, and the environment. The Secretary accepted the majority of the recommendation on March 13, 2000, and Revision 2 of the IP was transmitted to the Board on July 22, 2002. On July 23, 2004, DOE submitted an update of the IP that is specific to LANL; on November 28, 2005, DOE submitted an IP update specific to Hanford. This recommendation applies to both NNSA and EM sites. All NNSA commitments are complete, with the exception of various stabilization activities at LANL; all EM commitments are complete, with the exception of the stabilization of Hanford K-Basin sludge materials, i.e., the Sludge Treatment Project (STP).

One IP commitment was completed in FY12: the Hanford STP Phase-II alternatives analysis to develop treatment and packaging technologies.

## **V. Interface Activities**

In addition to formal recommendations, the Board and its staff regularly communicate with DOE by letter, and they visit the Department's defense nuclear facilities to review the implementation of safety initiatives, examine defense nuclear facilities and operations, and attend briefings. Information about DNFSB interactions with DOE, including all correspondence, is available by site and by fiscal year on the DR website at <http://www.hss.doe.gov/depdep/>

In addition to meeting IP commitments, DOE responds to commitments requested by the Board through the issuance of formal letters establishing reporting requirements pursuant to 42 U.S.C. Section 2286b(d). During FY12, DOE completed 19 actions related to such reporting requirements. These are shown in Appendix A, Table A.2.

Four public hearings were held during FY12. These are listed and summarized in Appendix A, Table A.3.



## Appendix A. FY12 Summary: Open Recommendations, Reporting Requirement Commitments Met, and Public Meetings and Hearings

**Table A.1 Open Board Recommendations**

Rec #	Title	Date Opened	Timeframe for Completing Implementation Plan
2012-2	Hanford Tank Farms Flammable Gas Safety Strategy	09/28/2012	Plan Under Development
2012-1	Savannah River Site Building 235-F Safety	05/09/2012	IP Issued December 2012
2011-1	Safety Culture at the Waste Treatment and Immobilization Plant	06/09/2011	2014
2010-2	Pulse Jet Mixing at the Waste Treatment and Immobilization Plant	12/17/2010	2016
2010-1	Safety Analysis Requirements for Defining Adequate Protection for the Public and the Workers	10/29/2010	2014
2009-2	Los Alamos National Laboratory Plutonium Facility Seismic Safety	10/26/2009	All Plan Milestones are Complete
2009-1	Risk Assessment Methodologies at Defense Nuclear Facilities	07/30/2009	2014
2008-1	Safety Classification of Fire Protection Systems	01/29/2008	2013
2007-1	Safety-Related In Situ Nondestructive Assay of Radioactive Materials	04/25/2007	Closed
2005-1	Nuclear Material Packaging	03/10/2005	2014
2004-2	Active Confinement Systems	12/07/2004	2014
2004-1	Oversight of Complex, High-Hazard Nuclear Operations	05/21/2004	2014
2002-3	Requirements for the Design, Implementation, and Maintenance of Administrative Controls	12/11/2002	All Plan Milestones are Complete

2000-1	Prioritization for Stabilizing Nuclear Materials	01/14/2000	2015
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**Table A.2 Formal Reporting Requirement Commitments Completed in FY12**

Letter #	Commitment Title	Date Completed
SL11-023	A report on the hazards and controls associated with the anhydrous ammonia system at the Waste Treatment and Immobilization Plant	11/16/2011
SL11-019	A report on the validity of the heat transfer analyses from process vessels in the Pretreatment Facility at the Waste Treatment and Immobilization Plant	11/16/2011
SL11-021	A report and briefing on the revised safety basis at the Savannah River Site tritium facilities	12/07/2011
SL11-017	A report outlining actions taken or planned by DOE to address weaknesses in the fire protection program at the Waste Isolation Pilot Plant	12/21/2011
SL05-026	Annual briefing on the contents of the annual revision to the Pantex Nuclear Material Management Program	01/27/2012
SL11-024	A report and briefing on the Maintenance Program at the Hanford Waste Encapsulation and Storage Facility	02/02/2012
SL03-031	Annual report on the Department's Nuclear Criticality Safety Program	02/28/2012
SL11-022	A report and briefing on the weaknesses in conduct of operations and technical procedures at the Y-12 National Security Complex	02/29/2012
SL11-026	A report and briefing on actions NNSA has taken or plans to take to ensure the Plutonium Facility's glovebox system and fire detection and alarm system can perform their safety functions at Lawrence Livermore National Laboratory	03/08/2012

Table A.3 Board Public Meetings and Hearings in FY12

Date	Topic	Location	Summary
11/17/2011	Seismic safety of the Plutonium Facility, Los Alamos National Laboratory	Santa Fe Community Convention Center, <i>201 West Marcy Street, Santa Fe, NM 87501</i>	Explored safety matters and gathered other information related to public and worker health and safety for defense nuclear facilities at the Los Alamos National Laboratory
03/22/2012	Status of actions related to unresolved technical safety issues and DOE's Implementation Plan for Recommendation 2011-1	Three Rivers Convention Center <i>7016 West Grandridge Boulevard Kennewick, WA 99352</i>	Session I - Status of actions related to unresolved technical safety issues in the design of the Waste Treatment and Immobilization Plant  Session II - Status of actions related to DOE's implementation plan for Recommendation 2011-1, <i>Safety Culture at the Waste Treatment and Immobilization Plant</i>
05/22/2012	Status of actions related to unresolved technical safety issues and DOE's Implementation Plan for Recommendation 2011-1 - Supplemental Panel Session	Defense Nuclear Facilities Safety Board Headquarters  <i>625 Indiana Avenue NW Washington, DC 20004</i>	A continuation of hearing Session II of March 22, 2012, on DOE's implementation plan for Recommendation 2011-1, <i>Safety Culture at the Waste Treatment and Immobilization Plant</i>
10/02/2012	Factors that Could Affect the Timely Execution and Safety of the Uranium Processing Facility (UPF) Project	Knoxville Convention Center  <i>701 Henley Street Knoxville, TN 37902</i>	Explored NNSA's Oversight roles and responsibilities, federal staffing, Board's concerns from April 2, 2012 letter, gap between safety basis and design, risk of deferred scope and safety implications of the space/fit issue.

## Appendix B. Acronyms and Abbreviations

BDBE	Beyond Design Basis Event
Board	Defense Nuclear Facilities Safety Board
CDNS	Chief of Defense Nuclear Safety
CFR	Code of Federal Regulations
CMRR	LANL Chemistry and Metallurgy Research Replacement Project
CNS	Chief of Nuclear Safety
CTA	Central Technical Authority
CRAD	Criteria, Review, and Approach Document
CROOT	Continued Safe Operability Oversight Team
DCT	WTP Design Completion Team
Department	Department of Energy
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DR	Departmental Representative to the DNFSB
DSA	Documented Safety Analysis
EFCOG	Energy Facility Contractors Group
EM	Office of Environmental Management
EU	Enriched Uranium
FY	Fiscal Year
HLW	High Level Waste
HSS	Office of Health, Safety and Security
IP	Implementation Plan
ISM	Integrated Safety Management
LANL	Los Alamos National Laboratory
MEOI	Maximally-Exposed Offsite Individual
MOX	Mixed Oxide
NES	Nuclear Explosive Safety
NNSA	National Nuclear Security Administration
NPO	NNSA Production Office
ORP	Office of River Protection
Pantex	Pantex Plant
PF-4	LANL Plutonium Facility
PJM	Pulse Jet Mixing
QAP	Quality Assurance Plan
SCWE	Safety Conscious Work Environment
SRS	Savannah River Site
STA	Senior Technical Advisor
STP	Sludge Treatment Project
SWPF	SRS Salt Waste Processing Facility
TRU	Transuranic
UPF	Y-12 Uranium Processing Facility
WP&C	Work Planning and Control
WTP	Waste Treatment and Immobilization Plant

Y-12  
YSO

Y-12 National Security Complex  
Y-12 Site Office