The Secretary of Energy
Washington, D.C. 20585

April 24, 2015

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DNF SAFETY BOARD

The Honorable Jessie Hill Roberson
Vice Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue NW, Suite 700
Washington, DC 20004

Dear Madam Vice Chairman:

Enclosed is the Department of Energy's (DOE) Implementation Plan for Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2014-1, *Emergency Preparedness and Response*.

DOE is committed to achieving the end state of an effective and self-sustaining Emergency Management Enterprise, and more specifically, improving both its emergency preparedness and emergency response capabilities across all of the Department's defense nuclear facilities. The Implementation Plan provides the Department's approach for addressing the performance concerns expressed by the Board in Recommendation 2014-1.

The plan describes and prioritizes the actions to be taken to achieve successful implementation of the Recommendation. The actions identified in this Implementation Plan will also link to ongoing steps to enhance DOE's overall Emergency Management Enterprise process and demonstrate that responding to the DNFSB's Recommendation will improve the Department's overall emergency preparedness and response. DOE will provide updates to the Board every six months.

If you have any questions, please contact me or Ms. Deborah A. Wilber, Associate Administrator, Office of Emergency Operations, at (202) 586-9892.

Sincerely,

Ernest J. Moniz

Enclosure

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U. S. Department of Energy

Implementation Plan for Defense Nuclear Facilities Safety Board Recommendation 2014-1

Emergency Preparedness and Response

Washington, DC 20585

April 2015

EXECUTIVE SUMMARY

On September 3, 2014, the Defense Nuclear Facilities Safety Board (DNFSB or the Board) issued Recommendation 2014-1, *Emergency Preparedness and Response*, which identified the need to take actions to improve the emergency preparedness and response capability at the Department of Energy's (DOE) defense nuclear facilities. DOE acknowledges the finds identified in the Recommendation. This Implementation Plan (IP) describes how DOE will improve Emergency Preparedness and Emergency Response core capabilities at Defense Nuclear Facilities, while addressing the issues identified in the Board Recommendation. The IP prioritizes specific actions to be taken, in the short- and long-term, and includes milestones to be achieved along the path to completion.

This IP lays out an emergency management improvement process for DOE Headquarters and defense nuclear facilities, designed to strengthen the fundamental attributes that comprise a sound emergency management program. This effort will result in a structured set of defense nuclear facility process improvements and common methodologies across all defense nuclear facilities, which will narrow capability gaps identified in DNFSB Recommendation 2014-1. The actions noted in this IP will enhance the DOE overall oversight approach and improve the Department's overall emergency preparedness and response.

DOE is also prioritizing improvement actions related to the DNFSB report findings and other identified issues. As part of this effort, DOE will establish a framework to ensure that all corrective actions taken will effectively address specified DNFSB Sub-recommendations (1 and 2) and component elements.

The methodology used to meet the specified DNFSB Sub-recommendations and component elements begins with a prioritization process that includes a specific time frame for resolution. All high priority items are targeted for completion in 2015.

DOE is committed to achieving continuous improvement within its Emergency Management Enterprise. DOE recognizes that actions are needed to improve preparedness and response at the defense nuclear facilities as expressed in the Board Recommendation 2014-1. This IP will clearly define the accountable chain of command within Defense Nuclear Facilities and identify corrective actions to improve overall management performance in the following major areas of concern expressed within the DNFSB Recommendation:

1. Ineffective implementation of existing Defense Nuclear Facilities Emergency Management Enterprise requirements due to lack of specificity of expectations
2. Inadequate processes to address lessons learned and needed improvements to site programs
3. Weaknesses in the DOE verification and validation of readiness due to inconsistent conduct of oversight and enforcement of emergency management preparedness and response requirements

DOE will achieve improvements related to Sub-recommendation 1 with the following major actions identified in Section 6.1 of this document:

DOE will achieve improvements related to Sub-recommendation 1 with the following major actions identified in Section 6.1 of this document:

- Improve the management and oversight processes,
- Improve the corrective action process, and
- Establish a process that shares successes and opportunities with DOE Leadership.

Additionally, in response to Sub-recommendation 2, DOE will review and revise requirements for Defense Nuclear Facilities for process improvements through a revision to DOE O 151.1C in accordance with our directives process as discussed in Section 6.2.

This plan specifically addresses steps to improve emergency preparedness at defense nuclear facilities. However, emergency management is applicable to all parts of the Department. The steps outlined in this plan complement actions that the Department has already initiated to improve emergency management. To ensure consistency in approach, the Department will look for common-ground processes to implement improvements as needed at the non-defense nuclear facilities in coordination with Headquarters and field Departmental elements.

DOE shares the DNFSB commitment to improving its management of safety at our country's most sensitive defense nuclear facilities where our nuclear arsenal is maintained and where hazardous nuclear materials and components must be stored in secure and stable configurations.

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1.0 PURPOSE

The Department of Energy (DOE) is committed to achieving an end state of an improved Emergency Management Enterprise, and more specifically, improve emergency preparedness and emergency response capabilities across its defense nuclear facilities. In particular, DOE recognizes that actions are needed to improve preparedness and response at the defense nuclear facilities as expressed in Defense Nuclear Facilities Safety Board (DNFSB or the Board) Recommendation 2014-1, *Emergency Preparedness and Response*. This Implementation Plan (IP) will identify actions in response to the DNFSB Recommendation and lay out a plan for how and when—DOE will improve emergency management at defense nuclear facilities across the DOE enterprise.

This IP specifically addresses steps to improve emergency preparedness at defense nuclear facilities. DOE will look for common-ground processes to improve emergency management across the rest of the Department as needed, ensuring consistency of approach. While the update to DOE Order 151.1C may involve a restructuring of the Order, the rewrite will address emergency management requirements that all facilities are required to meet. DOE supports the recommendations of the DNFSB and, through this IP, will lay out a prioritization process with specific actions to be taken within the short- and long-term to improve the emergency preparedness and emergency response posture of Defense Nuclear Facilities. This IP addresses four major initiatives at our Defense Nuclear Facilities: improve the management and oversight process, improve the corrective actions process, reinvigorate a reporting process that shares successes and opportunities with DOE Leadership, and update DOE Order 151.1C.

2.0 BACKGROUND

On September 3, 2014, the DNFSB issued Recommendation 2014-1, *Emergency Preparedness and Response*, and published the Recommendation in the Federal Register on September 23, 2014. The final Recommendation included two Sub-recommendations, stating:

1) *In its role as a regulator, by the end of 2016, standardize and improve implementation of its criteria and review approach to confirm that all sites with defense nuclear facilities:*
   a. *Have a robust emergency response infrastructure that is survivable, habitable, and maintained to function during emergencies, including severe events that can impact multiple facilities and potentially overwhelm emergency response resources.*
   b. *Have a training and drill program that ensures that emergency response personnel are fully competent in accordance with the expectations delineated in DOE's directive and associated guidance.*
   c. *Are conducting exercises that fully demonstrate their emergency response is capable of responding to scenarios that challenge existing capability, including their response during severe events.*
   d. *Are identifying deficiencies with emergency preparedness and response, conducting causal analysis, developing and implementing effective corrective actions to address these deficiencies, and evaluating the effectiveness of these actions.*

e. Have an effective Readiness Assurance Program consistent with DOE Order 151.lC, Comprehensive Emergency Management System, Chapter X.

2) Update its emergency management directive to address:

a. Severe events, including requirements that address hazards assessments and exercises, and "beyond design basis" operational and natural phenomena events.

b. Reliability and habitability of emergency response facilities and support equipment.

c. Criteria for training and drills, including requirements that address facility conduct of operations drill programs and the interface with emergency response organization team drills.

d. Criteria for exercises to ensure that they are an adequate demonstration of proficiency.

e. Vulnerabilities identified during independent assessments.

On November 7, 2014, the Secretary responded to Recommendation 2014-1; this was published in the Federal Register on December 1, 2014.

The Secretary's November 7 letter reported that DOE had already initiated actions to improve the Department's overall emergency management. Most prominent among these are actions related to the Operating Experience Level 1 (OE-1) 2013-01, *Improving Department of Energy Capabilities for Mitigating Beyond Design Basis Events*. This Secretarial direction required evaluation of emergency response to severe accidents and/or events that could have a widespread impact at all DOE facilities, including defense nuclear facilities, and for managers to make appropriate safety enhancements. This review, and any designated safety enhancements, was directed to be completed by the end of Calendar Year (CY) 2014. These reviews have resulted in activities to expand plans for severe event[1] scenarios at defense nuclear facilities. As can be seen below, additional training for responders has been conducted at many of the defense nuclear facilities and a series of discussion-based tabletop exercises performed to verify severe event procedures, interfaces and resources for multi-facility events, offsite asset resources and priorities, and critical decision-making. These were followed by full-scale exercises at ten[2] defense nuclear facilities, to formally test their capabilities for responding to severe events.

During the past fiscal year, other examples of emergency management program improvements across the defense nuclear complex include:

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[1] "Severe event" is used in this document, a broader term than "Beyond Design Basis Event (BDBE)". BDBEs refer to events related to facility design and safety systems. Severe events (e.g., severe natural phenomena events) are expected to cause major disruptions/damage to site-wide and offsite infrastructure, as well as, increased risk to onsite personnel, possibly resulting in injuries and fatalities. These events could potentially isolate a facility or site from onsite/offsite response assistance and infrastructure support.

[2] Hanford Site, Lawrence Livermore National Laboratory, Idaho National Laboratory, Los Alamos National Laboratory, Sandia National Laboratory, Pantex Plant, Y-12 National Security Complex, East Tennessee Technology Park, Nevada National Security Site, and Savannah River Site.

Severe event related improvements

- (Sandia) Conducted a Self-Assessment of Severe Natural Phenomena Events (NPE) which identified issues related to habitability and back-up power; corrective actions were developed and are being implemented and tracked.
- (Livermore) Improved the habitability of the site's Emergency Operations Center (EOC) with the replacement of its four high-efficiency gas absorption (HEGA) filters.
- (Livermore) Established a Lawrence Livermore National Laboratory (LLNL) Community Emergency Response Team (CERT) program to support its emergency response organization and the site population after a disaster/severe event.
- (Nevada) Implemented fully functional primary and alternate facilities for both the Operations Command Center and the EOC.
- (Idaho) conducted a severe NPE exercise which identified issues related to habitability and back-up power; corrective actions were developed and are being implemented and tracked.

Training and drill improvements

- (Sandia) Revised training procedures to include annual performance testing to demonstrate competency. Conducted a self-assessment and identified an issue in training record documentation.
- (Nevada) Drill and Exercise Program is integrated with the issues management processes and incorporates exercise After Action Report Findings into an Issue, which is assigned to a Responsible Manager.

Exercise improvements

- (Sandia) Severe event exercise scheduled for July 2015 to verify that corrective actions implemented from Fiscal Year (FY) 2014 Severe Event Exercise are effective.
- (Livermore) Conducted four exercises in FY2014 in response to a NPE (i.e., earthquake) to demonstrate the ability to respond to simultaneous events at multiple hazardous facilities.
- (SRS) SRNS-Tritium facility developed and conducted a tornado drill with all of the shifts affecting multiple facilities and all non-essential personnel.
- (West Valley Demonstration Project) Conducted an exercise to test and validate the effectiveness of the Emergency Response Organization, Technical Support Center, Incident Command, Joint Information Center and field support.

Readiness assurance improvements

- (Sandia) Conducted Self-Assessments to identify issues with Corrective Action implementation.
- (Livermore) Established an Accountability Disaster Call Center to improve communications with the field during a major earthquake or other disaster event and to provide prioritized damage assessment information to the Fire Branch Disaster Dispatch Center.

- (SRS) DOE-SR issued a formal letter to SRNS directing a comprehensive, independent review of all of the emergency management elements to address concern about a decline in emergency management program.
- (Nevada) Emergency Management program has qualified and experienced staff in developing/facilitating Root Cause Analysis to address the root issue and the extent of condition.
- (EM) EM-40 is developing a process to track findings/deficiencies identified during site assessments. Each finding will have a Corrective Action Plan (CAP) and will be tracked to closure. Over a period of time, the CAPs will produce trending data that will dictate EM's focus during site assessments and surveys. EM will periodically re-examine the effectiveness of closed CAPs after implementation of the corrective action(s).
- (Sandia) Identified an issue that resources are not adequate to implement an effective readiness assurance program, then submitted and received approval for a Full Time Equivalent (FTE)/Funding request for a Program Administration Team Lead.

Revitalization of defense nuclear complex infrastructure has been a major, shared concern of the Board and the Department for many years. Emergency management needs have not been excluded. The recent President's budget submitted to Congress included line item construction requests to address critical facilities. Existing EOCs at LLNL, Y-12, and Sandia are budgeted to be replaced with a common, robust design, to withstand a greater range of natural phenomena and provide better working spaces for emergency responders.

DOE Headquarters undertook several initiatives over the past year to address emergency management issues across its full range of responsibilities, which also enhance our capabilities to respond to emergencies at defense nuclear facilities.

- DOE established an Energy Incident Management Council (EIMC), chaired by the Deputy Secretary, to increase cooperation and coordination across the Department to prepare for, mitigate, respond to, and recover from emergencies. While the first EIMC effort was related to severe events, the focus of the EIMC is on the Department's national emergency management responsibilities. The first effort improved the Department's ability to respond to major disruptions to energy systems from severe events. These improvements were validated during the 2014 Hurricane Season. While the 2014 Hurricane Season did not have a major impact on the energy infrastructure in the continental United States, it was a very active season that required significant awareness efforts. There were 29 Tropical Storms that generated 21 hurricanes. Ten of those hurricanes were rated as Major Hurricanes by the National Oceanic and Atmospheric Administration. Three of the hurricanes had an infrastructure impact on Hawaii. Overall, a DOE review of its efforts during the season showed a much better integrated response to disruptions of the Nation's energy infrastructure, proactively informing DOE Leadership and the interagency community of efforts to restore damaged energy systems and components and to anticipate and mitigate future challenges related to the incident. This working group has also supported the development of increased situation reporting by the HQ Watch Office

to Departmental senior leaders, increasing their awareness of situations while clearly identifying where their input is necessary.

- DOE is conducting an ongoing project to revitalize the Headquarters Emergency Management Team (EMT). This project involves rewriting the HQ Emergency Plan and its implementing procedures, conducting job task analyses and developing position specific training for EMT members, and, ultimately, retraining EMT members on these new procedures. Plans for testing this expanded capability include frequent testing of the EMT through participation in a variety of emergency response scenarios such as:
  - nuclear weapons accident,
  - radiological release,
  - hazardous chemical spill,
  - active shooter,
  - severe event damage to DOE defense nuclear facilities, and
  - severe event damage to national infrastructure.

- DOE's working relationship with its Federal interagency partners was improved during 2014 through a series of exercises, most notably the annual multi-agency nuclear weapons accident exercise, 2014 NUWAIX, for which DOE was the lead planning agency. These relationships were also improved through participation in several national level events, such as the 2014 African Leadership Summit. During the Summit, the Headquarters demonstrated its ability to respond to multiple events and its improved intra-agency processes when the Office of Emergency Operations and the Office of Electricity Delivery and Energy Reliability began providing coordinated updates on the potential impacts of a hurricane on parts of the energy infrastructure along with updates on African Leadership Summit activities.

3.0 UNDERLYING CAUSES

The Board's evaluation of DOE's challenges in emergency management at defense nuclear facilities suggested three underlying root causes.

1. *"Ineffective implementation of existing requirements."* DOE recognizes that implementation of requirements has not been consistent.

2. *"Inadequate revision of requirements to address lessons learned and needed improvements to site programs."* DOE Order 151.1C will be updated to include details on addressing information gathered following severe events, such as the lessons learned from the March 11, 2011, earthquake and tsunami at the Fukushima Dai-ichi Nuclear Power Plant.

3. *"Weaknesses in DOE verification and validation of readiness of its sites with defense nuclear facilities."* DOE acknowledges a lack of consistent oversight and enforcement of its existing preparedness and response requirements and effectiveness of analyzing issues.

Common to these three Board identified causes was limited management involvement in the DOE emergency management program. DOE will rectify this situation by enforcing line management chain of command and accountability for the implementation of and oversight of the Emergency Management Enterprise.

4.0 BASELINE ASSUMPTIONS

- New regulations or executive direction will be reviewed for significant impacts to mission.
- DOE must secure the resources needed to execute this IP.
- The improvement actions in this IP will be implemented for Defense Nuclear Facilities.
- This IP will incorporate an "all hazards" approach to emergency management.
- IP actions will not disrupt day-to-day operations of the defense nuclear complex.

5.0 PERFORMANCE-BASED FRAMEWORK

DOE is implementing a focused effort at Defense Nuclear Facilities to prioritize improvement actions related to the DNFSB report findings and its own self-identified shortcomings. As part of this effort, DOE will establish a framework that ensures that all corrective actions taken as part of this IP will effectively address DNFSB specified Sub-recommendations (1 and 2) and component elements. By supporting overall improvements to our Emergency Preparedness and Emergency Response core capabilities, DOE will realize an improved Emergency Management Enterprise throughout our defense nuclear facility complex.

Within this Framework, Emergency Preparedness includes activities that provide emergency response personnel with the skills necessary to respond to an emergency and to demonstrate and maintain their proficiency. Emergency Preparedness also includes those actions associated with emergency planning, improving the plans and infrastructure that are vital to successful emergency response. DOE emergency preparedness programs will be designed to test our capabilities and will challenge our responders with scenarios that are drawn from the higher consequence end of the probability-consequence spectrum and will involve multiple response elements.

The methodology to meet the specified DNFSB Recommendation begins with a prioritization process that includes a specific time frame and responsible lead organization associated with the actions. High priority items will include senior leadership involvement and direction and will be accomplished within CY2015.

DOE will report completion of actions to the Board as the milestones are completed. Additionally, periodic updates to the Board every six months are included as milestones.

6.0 STRUCTURING PROCESS IMPROVEMENT TO THE EMERGENCY MANAGEMENT ENTERPRISE

DOE's efforts to strengthen the Defense Nuclear Facility Emergency Management Enterprise through actions associated with Emergency Preparedness and Emergency Response will result in enhanced effectiveness of our larger Emergency Management Enterprise. The Department believes that these actions are appropriate for improving the overall effectiveness of the Emergency Management Enterprise and addressing the intent of DNFSB Recommendation 2014-1 in a measured and prudent fashion. Improvement for the DOE Enterprise will be coordinated across relevant program offices and field elements. The management and oversight process will be strengthened and enforced to ensure consistent and effective implementation of requirements. The corrective action process will emphasize critical evaluation of performance and resolving issues in a timely manner. The reporting process will be reinvigorated to incorporate regular reporting to demonstrate to leadership that progress is achieved in addressing emergency preparedness and emergency response issues at Defense Nuclear Facilities. Finally, DOE will review and revise the requirements within DOE Order 151.1C to ensure the continued protection of the health and safety of workers and the public and the environment.

6.1 IMPROVE READINESS OF THE DEPARTMENT'S EMERGENCY MANAGEMENT ENTERPRISE

To achieve the Department's desired end state of a much improved Emergency Management Enterprise, the Department will continue to improve, its readiness. The Department will also address the Board's concerns regarding the Department's efforts to effectively oversee and enforce compliance with its emergency management requirements. DOE will implement initiatives related to all three aspects of Readiness Assurance: improve the management and oversight process, improve the corrective actions process, and establish a reporting process that shares successes and opportunities with DOE Leadership.

6.1.1 IMPROVE THE MANAGEMENT AND OVERSIGHT PROCESS

The management and oversight processes will be improved through a revised all-hazards model. This model will enforce line management chain of command and accountability, a common oversight standard from which to conduct assessments, and provide an improved performance trending capability. A risk-based assessment approach will be used to ensure oversight is appropriately applied to each defense nuclear facility.

6.1.1.1 REVISE OVERSIGHT STRUCTURE AND APPROACH

The current requirements for readiness assurance and oversight of emergency management programs direct that all programs are similarly assessed, without differentiation. There can be duplication in the objectives and areas of attention of the three oversight organizations: the Field Element, Program Secretarial Office and the Office of Enterprise Assessments (EA).

To improve the effectiveness of emergency management oversight and identification of performance issues, the Department will shift to an approach that links the degree of oversight to the level of risk present at the defense nuclear facility, while still working to drive consistency.

To establish this oversight structure, the Deputy Secretary will charter a working group with representatives from across DOE, including both Headquarters and Field elements to define the framework of the performance-based assessment approach by October 1, 2015. This group will socialize the concepts and gain feedback. Each field element will be directed to determine, in coordination with their program office and EA, the appropriate performance level for each Defense Nuclear Facility by the end of FY2015. These process improvements will then be piloted FY2016. A report with recommendations will be made to the Deputy Secretary by February 1, 2017 for decision on inclusion into the next update of the Emergency Management Directive.

6.1.1.2 NEW SUPPORTING ASSESSMENT PROTOCOL

Board Recommendation 2014-1 and its supporting documentation point out inconsistencies in the oversight process. One major factor contributing to the inconsistent application of oversight is that currently within the defense nuclear facility complex, each organization has the option to create its own Criteria and Review Approach Document (CRAD). While there will always be a need to tailor a CRAD to the specific hazards at a particular defense nuclear facility, there is no assurance that organizations will use the same standard when looking at the same element.

A single, all-hazards focused source document that delineates what must be accomplished to satisfy the requirements of DOE's Emergency Management Directive will simplify the job of emergency management personnel at Defense Nuclear Facilities. A single source of criteria can also permit trending of issues at the program office and defense nuclear complex level, indicating areas where requirements need to be clarified or revised or where additional training needs to be developed and presented DOE will form a working group with representatives from across the relevant Headquarters and Field elements to develop a single CRAD.

This team will need to exchange information with the group developing reliability and habitability criteria for emergency response facilities and equipment (see Section 6.2.1) and criteria for safe facility shutdown during emergencies (see Section 6.2.2). This will ensure that the draft single CRAD is synchronized with the requirements being developed to fill gaps in DOE expectations that have been noted by the Board. This effort will also be coordinated with the actions to revise the other areas where the Board has noted improvements are needed in DOE Order 151.1C (see Section 6.2.3). The draft single CRAD will be available for use by January 4, 2016.

Once the single CRAD is developed, it will be piloted during CY2016. Areas of improvement that are needed in the single CRAD will be noted and reported to the Deputy Secretary by April 4, 2017. This will include lessons learned from the application of all parts of Sub-recommendation 1.

Following revision of the CRAD, it will be prepared for review through the Department's Directive System, with the objective of entering formal coordination by August 1, 2017. The final CRAD will be delivered by December 1, 2017, four months after beginning formal coordination.

As other areas of improvement are noted or new requirements or standards emerge, they will be submitted to the Office of Emergency Operations so that the CRAD is maintained. The CRAD will be controlled through the Departmental Directives Program as a living document.

Concurrently, the Department's Emergency Operations Training Academy (EOTA) will develop CRAD training for Federal personnel involved in oversight of emergency management programs. EOTA may start developing the training prior to the finalized CRAD. This training will initially be developed as a one-time process, and likely as a distance learning course, so that all Federal personnel currently involved in oversight can be trained on uses of the CRAD. Upon conclusion of the initial training course, lessons learned from implementation will be used to revise and modify the course and develop entry and refresher training to ensure program sustainability. Initial training of EA, program office and field element assessment personnel will be completed prior to the initiation of the CRAD pilot. Furthermore, EOTA will collaborate with the National Training Center in development and refinement of necessary tools and training to ensure consistent execution of DOE oversight policies.

Undertaking the actions listed in Section 6.1.1 will improve the measurement of performance, both through assessments of programmatic performance in assessments and response performance during exercises.

6.1.2 IMPROVE THE CORRECTIVE ACTIONS PROCESS

Once performance is measured, it is vital that the problems are subjected to formal scrutiny to ensure that the cause or causes of the shortcoming has been accurately identified and that the responsibility of correcting the shortcoming within an established schedule has been assigned. As the Board has noted, the Department's corrective action process lacks the formality of requiring a causal analysis piece to the overall process.

Effective corrective action systems require that the line management organization ensure proper oversight and closure with independent oversight included to verify the work has actually been performed. Utilizing existing program line oversight and independent oversight, DOE will ensure deficiencies are corrected in a timely manner. Emergency management is the last line of defense for protecting the health and safety of workers and the public and the environment. PSO and EA assessments will validate corrective actions for the most serious findings (such as deficiencies[3]) and for those findings that are recurring.

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[3] A Deficiency is an actual or projected failure to meet an evaluation criterion, thereby directly impacting the associated basic emergency management activity. (See DOE Guide 151.1-3, Chapter 4.)

To monitor improvements to Emergency Management through corrective actions a working group comprised of representatives from DOE Headquarters and Field elements will be created to establish procedures for tracking and ensuring the closure of corrective actions, including incorporating best practices across the Department. This group will revise existing protocols as appropriate to drive consistency and excellence in emergency management. This group will report the revised procedures to the Deputy Secretary by December 1, 2015. The new procedures will then be tested by program office and field element oversight officials during the remainder of FY2016.

6.1.3 REINVIGORATE THE REPORTING PROCESS

Recommendation 2014-1 and subsequent discussions with DNFSB staff indicate a concern regarding Departmental senior managers' awareness of the existing deficiencies in emergency management programs and performance identified by reviews conducted by the DNFSB staff and DOE independent and line management assessments. An important first step in implementing Recommendation 2014-1 is to ensure that known deficiencies are identified and addressed.

As a priority effort, DOE management will determine the current status of known deficiencies in emergency management programs at defense nuclear facilities across the complex. By June 25, 2015, the Deputy Secretary will direct the Cognizant Field Element Managers for defense nuclear facilities to determine the status of existing deficiencies in emergency management programs. This effort will examine existing Independent Oversight reports, Program Office and Cognizant Field Element assessment reports, reports required in response to the OE-1, and Emergency Readiness Assurance Plans (ERAPs), starting from the Fukushima events (i.e., from March 2011). The report will include the scheduled actions for correcting these deficiencies and identify the office responsible for validating the corrective action was successful in correcting the cause. The report will be submitted to the Deputy Secretary by December 1, 2015.

This reporting will continue while a regular tracking system is developed. Any deficiency that has had all corrective actions completed and the corrective actions verified and validated will be dropped from reporting.

In order to enhance transparency and accountability, the report will be submitted to the Program Secretarial Officer for concurrence and then to the Office of Emergency Operations for consolidation.

DOE will establish a working group consisting of representatives from DOE Headquarters and Field elements to develop a systematic approach to provide operational awareness to DOE leadership on the status of emergency management deficiencies and corrective actions at Defense

Nuclear Facilities. The working group will report on the feasibility of the methods and their recommendations to the Deputy Secretary by April 4, 2016.

6.2 UPDATE THE DOE COMPREHENSIVE EMERGENCY MANAGEMENT ORDER

The DOE Emergency Management Order (DOE Order 151.1C) was last revised in 2005. The need to improve the requirements in the Order is highlighted by:

- the inconsistent interpretation[4] and implementation of requirements at some DOE sites;
- the need for improvements to site programs; and
- the need to incorporate lessons learned, most notably those from Fukushima, addressing severe events, into the Order.

While the update to DOE Order 151.1C may involve a restructuring of the Order, the rewrite will still address a baseline set of emergency management requirements that all Defense Nuclear Facilities must meet. Additional requirements may be added to the baseline, commensurate with the hazards at the facility.

Sections 6.2.1 and 6.2.2 describe the process that will be used to address issues related to reliability and habitability of emergency response facilities and support equipment and coordination of training and testing of the facility operations and emergency operations personnel to achieve safe shutdown of facilities and protect workers and the public under the full spectrum of emergency conditions. Section 6.2.3 will outline specific updates in DOE Order 151.1C.

As DOE progresses in addressing DNFSB Recommendation 1, it is likely that potential new requirements needed to adequately address defense nuclear facilities within the departmental emergency management program as issues are discovered. These potential new requirements will be included in the overall effort to revise DOE Order 151.1C, as part of the response to DNFSB Sub-recommendation 2.

6.2.1 DETERMINE RELIABILITY AND HABITABILITY CRITERIA

DOE Order 151.1C requires each site to provide facilities and equipment to adequately support a response to an emergency. This includes a facility to use as a command center, provision for use of an alternate location if the primary command center is not available, and adequate equipment to support an emergency response. DOE Order 151.1C addresses reliability and habitability by requiring compliance with applicable Federal, State, and local laws/regulations/ordinances for

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[4] Since DOE Order 151.1C was published, there have been more than 50 official interpretations of requirements issued.

fundamental worker safety. Revisions to the Order will address baseline requirements for the reliability and habitability of emergency response facilities and support equipment. DOE Guide 151.1-4 provides information about what constitutes a habitable response facility. To address these issues, DOE will form a working group consisting of representatives from DOE Headquarters and Field Elements to analyze criteria necessary to provide a reliability and habitability standard for emergency response facilities and support equipment. A means of measuring the adequacy of these criteria will be provided in a technical paper. These recommendations will be provided to the Associate Administrator for Emergency Operations by December 1, 2015 and reviewed by the relevant Program offices. The results of the paper will be incorporated into the updated emergency management order, as appropriate.

6.2.2 DETERMINE CONDUCT OF OPERATIONS (SAFE SHUTDOWN) AND EMERGENCY MANAGEMENT INTERFACE REQUIREMENTS

Currently, there are no specific requirements or guidance within the DOE emergency management order or its accompanying guides regarding safe shutdown or the importance of the interface between conduct of operations and emergency response. Actions taken to stop the progression of an accident or to safely shut down a facility during an emergency event are equally as important as those taken to protect workers and the public from the impact of the accident.

The DOE emergency management program focuses on protecting its workers and the public from the effects of a hazardous materials release after an accident. It addresses situations where facility controls fail and when the safety basis or design of the facility is exceeded. At the same time, each facility also has procedures on how to operate and maintain the facility within the safety basis at all times. During an emergency, steps to limit the progression of the emergency, or to safely shut down a facility so workers can "walk away" from the facility, leaving it in a safe configuration, fall within the purview of the facility safety/conduct of operations program. Because the interface between conduct of operations and emergency response is crucial to ensuring the safety of workers, the public, and the environment, specific, consistent requirements are needed to ensure safe shutdown of facilities and to establish an effective interface between conduct of operations drills and emergency response drills and exercises.

To address these issues, DOE will form a working group consisting of representatives from DOE Headquarters and Field elements. The working group will be chartered to develop a technical paper that analyzes improvements necessary to ensure safe shutdown of defense nuclear facilities. To measure proficiency in meeting these changes, use of drills and/or exercises will be studied, as well as their periodicity. In addition, the paper will address improvements needed to ensure an adequate interface exists between conduct of operations drills and emergency response organization drills/exercises. These recommendations will be provided to the Associate Administrator for Emergency Operations by December 1, 2015. The results of the paper will be incorporated into the updated emergency management order, as appropriate.

6.2.3 UPDATE DOE ORDER 151.1C

DOE will evaluate and update DOE Order 151.1C, *Comprehensive Emergency Management System*, to address issues identified in Board Recommendation 2014-1. The results obtained from addressing the first Sub-recommendation will be incorporated into the revision to the Order, as appropriate.

The restructured Order will mirror the approach used in communities across the nation to conduct an all-hazards response, such as that used in National Incident Management System (NIMS) and the National Response Framework (NRF). Additional requirements above and beyond NIMS NRF may be considered as necessary. This order revision will be conducted in accordance with Directive Review Board requirements based in DOE Order 251. It will be scalable, flexible, and adaptable for all facilities, aligning key roles and responsibilities across the DOE Defense Nuclear Facility Complex, linking oversight at all levels of the agency, and will include the participation of defense nuclear facility contractors. The minimum emergency management requirements will be outlined for base programs that may be scaled up using hazard annexes addressing, for example, defense nuclear, nuclear, and hazardous material (biological, chemical, and radiological) facilities. The restructured Order will bring ease of application and consistency to emergency management programs across the complex. It will also be flexible enough to respond to incidents ranging from local, single facility events, to multiple facility regional events.

To ensure a baseline consistency, the guidance contained in the DOE Guide 151.1-series will be evaluated for potential incorporation into the Order. The revised Order will also formalize the severe event approach which served as the basis for Attachment 1 to the OE-1, *Improving Department of Energy Capabilities for Mitigating Beyond Design Basis Events*, dated April 2013.

Incorporation of the results of Section 6.2.1 and 6.2.2 of this IP into the revision of DOE Order 151.1C will also address related commitments made in *A Report to the Secretary of Energy: Review of Requirements and Capabilities for Analyzing and Responding to Beyond Design Basis Events,* dated August 2011; and *A Report to the Secretary of Energy: Beyond Design Basis Event Pilot Evaluations*, dated January 2013.

DOE will work to ensure that emergency response training at Defense Nuclear Facilities is focused on response proficiency and that exercises test the true representation of risks posed by those facilities. Specific changes will be made to ensure a consistent approach to the development of position specific training and successful demonstration of Emergency Response tasks at defense nuclear facilities.

DOE will update the Order to define the scope of exercises required to be performed at DOE defense nuclear facility to meet requirements includes challenging scenarios. Specifically, challenging exercises would be expected to involve high consequence scenarios, multiple response elements, offsite effects, and a unified command response structure. In order to improve the oversight process and avoid excessive overlap of exercise dates, DOE will move to coordinate the scheduling of exercises. This will avoid excessive overlap of exercise dates. The

7.0 MILESTONES

The Department believes that these actions are appropriate for implementing the overall intent of DNFSB Recommendation 2014-1 in a measured and prudent fashion. These actions will further strengthen the Emergency Preparedness and Response Program and help to protect the public and workers at the DOE's defense nuclear facilities as well as the rest of the DOE complex. The table below lists the Milestones as they appear in the text of this IP. This table is followed by a graphic which shows the relationship between the various milestones.

Table 7.0 – Recommendation 2014-1 Integrated Milestones

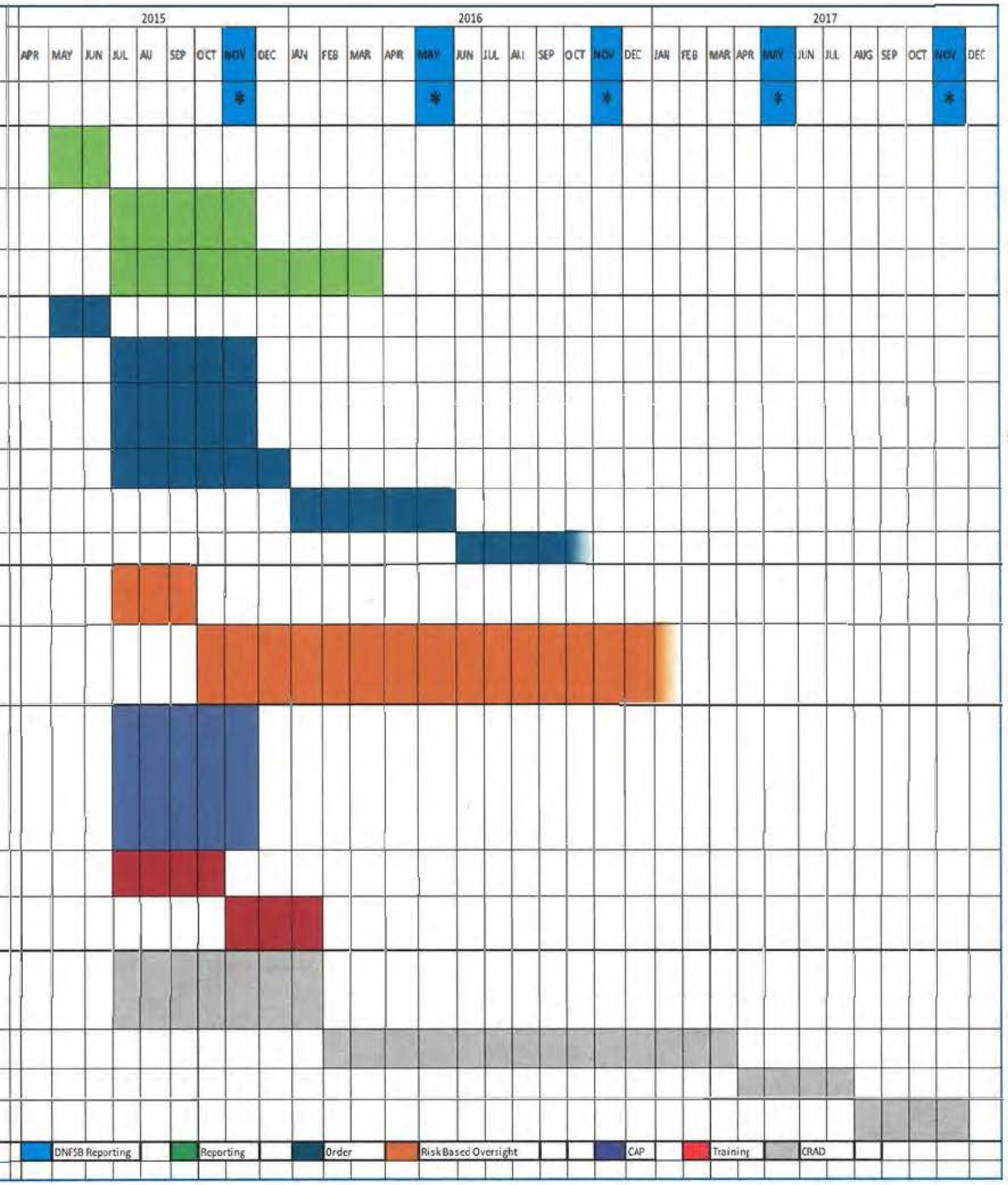
Links to DNFSB Rec	IP Section	Priority	Responsible Organization	Milestones/ Commitment	Deliverable	Anticipated Delivery Date
1	6.1.1.1	1	Office of Emergency Operations / NA-40	Draft Risk Based Oversight Approach	Copy of the Approach	10-1-15
1	6.1.1.1	2	Office of Emergency Operations / NA-40	Report on lessons learned from Oversight Approach Pilot	Copy of the Report	2-1-17
1	6.1.1.1	2	Office of Emergency Operations / NA-40	Secretarial Direction to Implement the Risk Based Approach	Copy of the Secretarial Directive	5-2-17
1	6.1.1.2	4	Office of Emergency Operations / NA-40	Develop CRAD and lines of inquiry for assessing emergency management programs and risk	CRAD Draft	1-4-16
1	6.1.1.2	4	Office of Emergency Operations / NA-40	Report on the Pilot use of Draft CRAD	Copy of the Report	4-4-17
1	6.1.1.2	4	Office of Emergency Operations / NA-40	Draft CRAD to RevCom	Copy of the RevCom Draft	8-1-17
1	6.1.1.2	4	Office of Emergency Operations / NA-40	Publish final CRAD in Directives System	Copy of Final CRAD	12-1-17

Links to DNFSB Rec	IP Section	Priority	Responsible Organization	Milestones/ Commitment	Deliverable	Anticipated Delivery Date
1	6.1.1.2	4	Office of Emergency Operations / NA-40.2	Establish training for use of CRAD	Letter to DNFSB with CRAD training schedule	11-1-15
1	6.1.1.2	4	Office of Emergency Operations / NA-40.2	Complete initial training for use of CRAD	Letter to DNFSB reporting completion of initial training	2-1-16
1	6.1.2	2	Office of Emergency Operations / NA-40	Draft Revised Corrective Action Procedures	Copy of draft procedures	12-1-15
1	6.1.2	2	Office of Emergency Operations / NA-40	Report on pilot of draft corrective action procedures	Copy of the report	11-1-16
1	6.1.2	2	Office of Emergency Operations / NA-40	Secretarial Direction to Implement the Revised Corrective Action Procedures	Copy of the Secretarial Directive	2-1-17
1d	6.1.3	1	Office of Emergency Operations / NA-40	Develop memo for Deputy Secretary to PSOs on status of known deficiencies	Copy of Memo	6-25-15
1d	6.1.3	1	Office of Emergency Operations / NA-40	Report of current deficiencies	Copy of Report	12-1-15
1d	6.1.3	3	DOE CIO	Report on the feasibility of an automated system	Copy of Report	4-4-16
2b	6.2.1	2	Office of Emergency Operations / NA-40	Criteria for reliability and habitability	Copy of Report	12-1-15
2a,c , & d	6.2.2	2	Office of Emergency Operations / NA-40	Criteria for safe facility shutdown and requirements for testing readiness to implement the criteria	Copy of Technical paper	12-1-15

Links to DNFSB Rec	IP Section	Priority	Responsible Organization	Milestones/ Commitment	Deliverable	Anticipated Delivery Date
2	6.2.3	1	Office of Emergency Operations / NA-40	Justification Memo for change to DOE Order 151.1C	Copy of Justification Memo	6-25-15
2	6.2.3	2	Office of Emergency Operations / NA-40	Informal Coordination Draft of DOE O 151.1D	Copy of draft	1-4-16
2	6.2.3	2	Office of Emergency Operations / NA-40	Formal Coordination Draft DOE O151.1D into RevCom	Copy of Draft	5-2-16
2	6.2.3	2	Office of Emergency Operations / NA-40	Final DOE O 151.1D	Copy of issued Order	11-1-16
	9.0		Office of Emergency Operations / NA-40	Update DNFSB	Briefing	Every 6 months

Figure 7.0 – Milestones Timeline

	Seq	Milestones/Commitment	Priority	Anticipated Delivery Date
	0	REPORTING REQUIREMENT TO DNFSB	NA	
REPORTING	1	Develop memo for Deputy Secretary to PSOs on status of known deficiencies	1	6/25/2015
	4	Report of current deficiencies	1	12/1/2015
	12	Report on the feasibility of an automated system	3	4/4/2016
DOE O 151.1D	2	Justification Memo for change to DOE O 151.1C	1	6/25/2015
	6	Criteria for reliability and habitability	2	12/1/2015
	7	Criteria for safe facility shutdown and requirements for testing readiness to implement the criteria	2	12/1/2015
	8	Informal Coordination Draft of DOE O 151.1D	2	1/4/2016
	14	Formal Coordination Draft DOE O151.1D into RevCom	2	5/2/2016
	16	Final DOE O 151.1D	2	11/1/2016
RISK-BASED OVERSIGHT	3	Draft Risk Based Oversight Approach	1	10/1/2015
	17	Report on lessons learned from Oversight Approach Pilot	2	2/1/2017
CORRECTIVE ACTION PLANS	5	Draft Revised Corrective Action Procedures	2	12/1/2015
TRAINING	9	Establish training for use of CRAD	4	11/1/2015
	10	Complete initial training for use of CRAD	4	2/1/2016
CRAD	11	Develop CRAD and lines of inquiry for assessing emergency management programs and performance	4	1/4/2016
	18	Report on the Pilot use of Draft CRAD	4	4/4/2017
	20	Draft CRAD to RevCom	4	8/1/2017
	21	Publish final CRAD in Directives System	4	12/1/2017



8.0 SUMMARY

The emergency response and emergency preparedness actions identified in this IP demonstrate DOE's commitment to enhanced operational effectiveness of its Emergency Management Enterprise and protecting the public and workers at the DOE's defense nuclear facilities. The Department believes that these actions will improve the overall effectiveness of the Emergency Management Enterprise and will address the intent of the DNFSB Recommendation 2014-1 in a measured and prudent fashion.

9.0 ORGANIZATION AND MANAGEMENT

Overall execution of this IP is the responsibility of the Associate Administrator of the Office of Emergency Operations, who is assigned as Responsible Manager. The EIMC, chaired by the Deputy Secretary, will provide strategic direction and oversight for the execution of this Implementation Plan. The EIMC provides the forum for management decisions related to the adequate resourcing of the Emergency Management Enterprise.

The Emergency Management Advisory Committee (EMAC), which includes Federal staff responsible for emergency management in Headquarters staff and program offices as well as at the Cognizant Field Elements, will support development of the technical products committed to in the Plan. The Cognizant Field Element members of the EMAC may be supported by contractors from DOE Sites and National Laboratories. Responsibility for the implementation of changes in emergency management policy and requirements will reside with the Program Secretarial Officers.

DOE will engage the DNFSB staff during the development of the products and deliverables identified in this Implementation Plan to allow for DNFSB staff input. The Department will provide progress reports to the Board approximately every six months.

Attachment 1 Acronyms

AU	Office of Environment, Health, Safety, and Security
BDBE	Beyond Design Basis Event
Board	Defense Nuclear Facilities Safety Board
CAP	Corrective Action Plan
CATS	Corrective Action Tracking System
CERT	Community Emergency Response Team
CRAD	Criteria and Review Approach Document
CY	Calendar Year
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
DOE-SR	Department of Energy-Savannah River Office
EA	Office of Enterprise Assessments
EIMC	Energy Incident Management Council
EMAC	Emergency Management Advisory Council
EMI SIG	Emergency Management Issues Special Interest Group
EMT	Emergency Management Team
EOC	Emergency Operations Center
EOTA	Emergency Operations Training Academy
ERAP	Emergency Readiness Assurance Plan
FTE	Full Time Equivalent
FY	Fiscal Year
HEGA	High-Efficiency Gas Absorption
IP	Implementation Plan
LLNL	Lawrence Livermore National Laboratory
NIMS	National Incident Management System
NPE	Natural Phenomena Event
NRF	National Response Framework
OE-1	Operating Experience Level 1 document
SRNS	Savannah River Nuclear Solutions
SRS	Savannah River Site

Attachment 2 References

Defense Nuclear Facilities Safety Board Recommendation 2014-01, *Emergency Preparedness and Response, dated 9-2-2014*
DOE Letter from Secretary Moniz to Chairman Winokur, dated 11-7-2014.
A Report to the Secretary of Energy: Review of Requirements and Capabilities for Analyzing and Responding to Beyond Design Basis Events, dated August 2011.
A Report to the Secretary of Energy: Beyond Design Basis Event Pilot Evaluations, dated January 2013.
DOE-IG-0657, *The Department's Continuity Planning and Emergency Preparedness*, dated August 11, 2004.
DOE IG-0845, *Improvements Needed in the Department's Emergency Preparedness and Continuity of Operations Planning*, dated January 3, 2011.
DOE Order 151.1C, *Comprehensive Emergency Management System*, dated 11-2-2005
DOE Guide 151.1-3, *Programmatic Elements*, dated 7-11-07
DOE Guide 151.1-4, *Response Elements*, dated 7-11-07
DOE Order 251.1C, *Departmental Directives Program*, dated 1-15-2009
Operating Experience Level 1 (OE-1) 2013-01, *Improving Department of Energy Capabilities for Mitigating Beyond Design Basis Events*, dated April 2013.