



Department of Energy
National Nuclear Security Administration
Washington, DC 20585



April 11, 2016

DNF SAFETY BOARD
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RECEIVED

The Honorable Joyce L. Connery
Chairman
Defense Nuclear Facilities Safety Board
625 Indiana Avenue NW, Suite 700
Washington, DC 20004

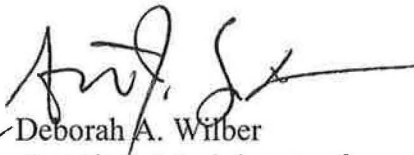
Dear Madam Chairman:

The purpose of this letter is to provide you with a report addressing deliverables 6.2.1 (Determine Reliability and Habitability) and 6.2.2 (Determine Conduct of Operations (Safe Shutdown), and Emergency Management Interface Requirements) outlined in the 2014-1 Implementation Plan, which has been developed. *2014-1 Implementation Plan: 6.2 Analysis and Recommendations*, is a collaborative effort by the Defense Nuclear Facilities Writing Team, responsive to Section 6.2.1 of the Department's Implementation Plan.

A copy of the *2014-1 Implementation Plan: 6.2 Analysis and Recommendations* is enclosed for your information.

If you have any questions, please contact me at (202) 586-9892.

Sincerely,


for Deborah A. Wilber
Associate Administrator for
Emergency Operations

Enclosure



Recommendation 2014-1, *Emergency Preparedness and Response*



2014-1 Implementation Plan: 6.2 Analysis and Recommendations

MARCH 2016

Preface

This paper provides the approach, status, and actions taken to date in response to Section 6.2 of the Implementation Plan for DNFSB Recommendation 2014-1, *Emergency Preparedness and Response* (the IP), titled *Update the DOE Comprehensive Emergency Management Order*. Section 6.2 contains three subsections- Determine Reliability and Habitability Criteria, Determine Conduct of Operations (Safe Shutdown) and Emergency Management Interface Requirements, and Update DOE Order 151.1C. The Defense Nuclear Facilities (DNF) Writing Team was formed to address issues specific to DNFs. The work reflected in this paper is the product of both the DOE O 151.1D Writing Team and the DNF Writing Team.

At the first meeting of the Writing Team, it quickly became apparent to the members present that in order to craft a document that adequately addressed the spectrum of hazards present at their representative sites or activity, a unique approach would be needed. The approach taken was a collaborative one, with representatives from sites and activities as diverse as defense nuclear, national laboratory, and secure transportation having equal voice in the discussion. This approach necessarily resulted in lengthy, sometimes heated discussions on complex emergency management issues that, in some cases, had been “simmering,” unresolved, for many years.

NA-40 feels strongly that this collaborative approach, with open dialogue and collegial interaction from the start, will result in a better quality directive than one that is drafted within the office, and only then sent out for review. A consequence of this approach is that it is deliberative and requires more time- the process is “front-loaded.” As a result of our decision to use this approach, NA-40 has not been able to submit to the Board the related deliverables by the expected deliverable date indicated in the IP. A benefit of this approach is that much of the important discussion, and crucial decisions, occur early in the process. This should preempt similar, but less organized and less integrated comments from being sent in during RevCom.

To properly address the recommendations made by the Defense Nuclear Facilities Safety Board, the Writing Team also realized they would first need to establish the major requirements for the Department of Energy that form the basis, or core, of every emergency management program, regardless of the level of hazards present. Once these requirements were established by the Writing Team, the DNF Writing Team could then address those areas identified in the Recommendation that are specific to defense nuclear facilities. Once the DRAFT Order had gone through two peer reviews, the Defense Nuclear Facilities Writing Team began formally addressing those areas called out by the DNFSB and if they determined an area was not addressed to the level identified, additional requirements were added specifically for defense nuclear facilities.

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 actions of the DOE O 151.1D Writing Team are a testament to the Department's commitment to ensuring the safety of its employees, the public, and the environment.

6.2 Update the DOE Comprehensive Emergency Management Order

2014-1 IP

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

- The inconsistent interpretation 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 151.1 C 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 151.1 C.

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 151.1 C, as part of the response to DNFSB Sub-recommendation 2.

PLAN OF ACTION

- Address habitability and survivability of emergency response facilities to include maintenance.
- Identify safe shutdown procedures and integration for conduct of operations.
- Identify a working group to address Recommendations 2014-1
- Review Recommendation 2014-1
- Review 2014-1 Implementation Plan
- Review Past DNFSB Recommendations & Reports
- Assess the best sections of the current revision of 151 to incorporate changes
- Coordinate with Office of Counterterrorism & Counterproliferation, NA-80, for Exercise Support

WORKING TEAM MEMBERS

DNF WRITING TEAM

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 Bill Froh, HQ
 Frank Moussa, EM

Chudi Onowu, NA/FMC
 Brian Sherin, NLDC
 Anthony Lucas, OE
 Tonya Petty, LBNL
 John Richards, LLNL

MEETING SCHEDULE

July 27-30, 2015, DOE HQ, Initial Design & Planning Meeting
 Aug 13, 2015, VTC/Telecon
 Aug 27, 2015, VTC/Telecon
 Sep 10, 2015, VTC/Telecon
 Sep 22-24, 2015, PNNL, Core Resolution Meeting
 Oct 8, 2015, VTC/Telecon
 Oct 22, 2015 VTC/Telecon
 Nov 4-6, 2015, NSO, Core Peer Review Resolution & Attachment Development Meeting
 Nov 19, 2015, VTC/Telecon
 Dec 8-10, 2015, DOE HQ, Document Review & Planning Meeting
 March 25, 2015, VTC/Telecon
 March 29-April 1, 2016, SNL/OST, Peer Review Resolution Meeting

PEER REVIEWS & REVIEWING SITES

1st Document Peer Review (Core)

September 30-October 14, 2015

2nd Document Peer Review (Core & Attachments)

March 4-23, 2016

SRS	PANTEX	LANL	LLNL	SNL
HANFORD	NNSS	Y-12	INL	WIPP

COORDINATION POC’S

Jay Tilden, Acting Associate Administrator for Counterterrorism & Counterproliferation March 1, 2016

6.2.1 Determine Reliability and Habitability Criteria

2014-1 IP

DOE Order 151.1 C 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 151.1 C addresses reliability and habitability by requiring compliance with applicable Federal, State, and local laws/regulations/ordinances for 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 I 5 l. I-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.

ASSUMPTIONS

- Focus on defense nuclear emergency response facilities.
- Focus on baseline requirements.
- Focus on criteria for critical standards.
- Focus on criteria for critical support equipment (i.e., communications/notification, and safety equipment).
- Additional requirements for DNF will be explicitly identified in the revised order

DISCUSSION

Identify emergency response facilities for Defense Nuclear Facilities (DNF) to include:

- Emergency Operations Centers (EOCs)
- Fire Stations
- Medical Facilities
- Security Guard Stations/Posts
- Tactical Operations Centers
- Central Alarm Stations/Central Monitoring Room
- Control Rooms/Control Centers
- Technical Support Centers
- Operations/Command Centers

The emergency response equipment and systems include:

- Communications/notification equipment
- Filtered air systems
- Backup power/fuel tanks
- Surveying/monitoring equipment

These facilities must be survivable and habitable throughout the emergency.

- Compensatory measures must be developed for emergency response facilities that are not survivable and habitable.
- The emergency response equipment and support systems must be tested and maintained to function as designed.

6.2.2 Determine Conduct of Operations (Safe Shutdown) and Emergency Management Interface Requirements

2014-1 IP

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

ASSUMPTIONS

- Focus on criteria for conduct of operations principles (i.e., formal procedure use, log-keeping, three-way communications, records) during an abnormal event or emergency response.
- Abnormal conditions and safe shutdown are Facilities responsibilities.
- Hand off occurs from normal operations to abnormal events to emergency response.
- Transition from conduct of operations procedures to emergency plans occurs.
- Focus on integrated notifications and response protocol.
- Additional requirements for DNF will be explicitly identified in the revised order

DISCUSSION

Identify the following for Defense Nuclear Facilities (DNF):

- Safe shutdown of equipment and facilities during abnormal events and emergencies.
- Seamless operations from daily operations to an abnormal event to an emergency.
- A graded approach for drills with lower-level emergencies (conduct of operations) involving the Operations staff, Emergency Management staff and Incident Command staff.
- Incorporate elements of the Emergency Operations Center (EOC) staff for Operational Emergencies.
- Regardless of the scope or mechanism (drill or exercise), responders (Operations staff, Emergency Management staff, Incident Command staff, EOC staff) must be evaluated and critiqued for continuous improvement.

6.2.3 Update DOE O 151.1C

2012-1 IP

DOE will evaluate and update DOE Order 151.1 C, 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 I to the OE-I, 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 151.1 C 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 Order will also include a requirement specifying the frequency of challenging exercises to ensure proficiency.

The Office of Emergency Operations will submit the DOE Order 251.1 C required Justification Memorandum for the revision of DOE Order 151.1 C by June 25, 2015. This will allow Departmental offices to begin to work jointly on the development of revised requirements for Defense Nuclear Facilities. The Office of Emergency Operations will develop a draft revision to the Order and begin informal coordination by January 4, 2016. The Office of Emergency Operations will submit the final draft of the Order revision for formal coordination by May 2, 2016. Publication of the final revision in the Directives systems would be anticipated by November 1, 2016.

ASSUMPTION

- Key assets are maintained and authorized to conduct responsibilities within the DOE complex
- All requirements for a base program are identified
- A mature emergency management program exists at all sites, activities
- Many of the crucial decision will be made in the Peer Review Process

DISCUSSION

Numerous changes were made throughout the draft revision to DOE O 151.1C to address DNFSB Recommendation 2014-1 concerns. In accordance with the IP, the draft order:

- Adopts the approach used in the National Incident Management System (NIMS) and the National Response Framework (NRF), when practical.
- Follows Directive Review Board requirements based in DOE Order 251.
- Is scalable, flexible, and adaptable for all facilities,
- Aligns key roles and responsibilities across the DOE Defense Nuclear Facility Complex
- Links oversight at all levels
- Includes defense nuclear facility contractors in the revision process
- Formalizes the severe event approach that served as the basis for OE-1, Improving Department of Energy Capabilities for Mitigating Beyond Design Basis Events
- Incorporates as requirements, selected previous guidance contained in the DOE Guide 151.1-series
- Incorporates 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
- Ensures 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
- Requires challenging exercises be performed at DOE defense nuclear facilities at a required frequency.

RECOMMENDATIONS¹

6.2.1 EMERGENCY RESPONSE FACILITIES

- Implement the following requirements:
- Grandfather current EOCs and those in construction.
- Perform cost/benefit analysis for habitability and survivability implementation.
- Insert into Draft DOE O 151.1D:

<p>Identify emergency response facilities (i.e., EOCs, control rooms, operation centers, medical facilities, and fire departments) for Defense Nuclear Facilities (DNFs).</p> <p>These facilities must be survivable and habitable throughout the emergency.</p> <ul style="list-style-type: none">• Compensatory measures must be developed for emergency response facilities that are not survivable and habitable.• Safety functions must be tested and maintained to ensure they function as designed	<p>Add to Attachment 4, Section 8</p>
<p>Identify emergency response equipment and systems (i.e., communications/notification systems, backup power, fuel tanks, filtered air systems, surveying and monitoring equipment).</p> <p>The emergency response equipment and support systems must be tested and maintained to ensure they function as designed.</p>	<p>Add to Attachment 4, Section 8</p>

¹ Recommendations made are the result of the members of the Defense Nuclear Facilities Writing Team’s collective discussions and peer reviews input. The Defense Nuclear Facilities Writing Team will incorporate these recommendations into the Draft DOE O 151.1D. Subsequent approval is subject to the DOE Directives Review Board process and final approval.

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

- Implement the following requirements into Draft DOE O 151.1D:

<p>Defense Nuclear Facilities must:</p> <ul style="list-style-type: none"> • Develop requirements for safe shutdown of equipment and facilities during abnormal events and emergencies. • Ensure seamless operations when transitioning from daily operations to an abnormal event to an emergency. • Conduct drills that use a graded approach for lower-level emergencies (conduct of operations) involving the Operations staff, Emergency Management staff and Incident Command staff that include: <ul style="list-style-type: none"> ○ Elements of the Emergency Operations Center (EOC) staff for Operational Emergencies. ○ An evaluation and a critique, regardless of the scope or mechanism (drill or exercise), responders (Operations staff, Emergency Management staff, Incident Command staff, EOC staff) 	<p>Add to Attachment 4, Section 3</p>
<p>DNF facilities must conduct drills annually integrating the ERO with conduct of operations drills.</p>	<p>Add to Attachment 4, Section 3.a.(6)</p>
<p>Regardless of the scope or mechanism (drill or exercise), responders (Operations staff, Emergency Management staff, Incident Command staff, EOC staff) must be evaluated and critiqued for continuous improvement.</p>	<p>Add to Attachment 4, Section 10</p>

6.2.3. UPDATE DOE ORDER 151.1C

Numerous changes were made throughout the draft revision to DOE O 151.1C to address DNFSB Recommendation 2014-1 concerns. We believe the approach taken to revise the order, the content of the current draft, and the actions planned as we progress from informal review to formal review, are appropriate for implementing the overall intent of the DNFSB Recommendation 2014-1 in a measured and prudent fashion, and recommend proceeding along the same path. We will adapt to whatever time schedule is agreed to, using the valuable resources available through the Writing Team and the DNF Writing Team to meet the schedule. The resulting DOE O 151.1D will further strengthen the Emergency Preparedness and Response Program and help protect the public and workers at DOE’s defense nuclear facilities, as well as the rest of the DOE complex.

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