



**Summary Report:  
Independent Focused Assessment of  
Emergency Management Corrective  
Actions at National Nuclear Security  
Administration and Office of  
Environmental Management Sites**

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Office of Enterprise Assessments  
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## Acronyms

CAP	Corrective Action Plan
CNS	Consolidated Nuclear Security, LLC
CRAD	Criteria and Review Approach Document
DOE	U.S. Department of Energy
DOE-EM	DOE Office of Environmental Management
EA	DOE Office of Enterprise Assessments
EOC	Emergency Operations Center
ERO	Emergency Response Organization
NNSA	National Nuclear Security Administration
OFI	Opportunity for Improvement
OST	Office of Secure Transportation

**SUMMARY REPORT:  
INDEPENDENT FOCUSED ASSESSMENT OF EMERGENCY MANAGEMENT  
CORRECTIVE ACTIONS AT NATIONAL NUCLEAR SECURITY  
ADMINISTRATION AND OFFICE OF ENVIRONMENTAL MANAGEMENT SITES**

**Executive Summary**

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted independent follow-up assessments to evaluate the resolution of emergency management findings that EA previously identified at eight DOE sites. The corrective action follow-up assessments were conducted from October 2020 through September 2021. The purpose of the appraisals was to verify that site personnel properly closed previous findings in order to prevent recurrence. A total of 59 previous findings from EA over the past nine years were reviewed. Five of the assessed sites are under the direction of the National Nuclear Security Administration, and three are under the direction of the Office of Environmental Management.

EA concluded that two of the eight sites assessed, Idaho Site/Idaho Cleanup Project and Hanford Site, effectively resolved all of their findings. While still working on closure packages, some of the remaining sites made significant progress.

To promote organizational learning and improve performance throughout the DOE enterprise, this summary report identifies strengths and weaknesses, best practices, and opportunities for improvement, with a particular focus on issues affecting both Federal field offices and contractors at multiple sites.

EA identified the following significant strengths and best practices:

- Consolidated Nuclear Security, LLC (CNS) at the Pantex Plant (Pantex) demonstrated a mature and highly effective readiness assurance process. EA identified the contractor's robust validation and verification processes as a best practice particularly for the contractor's use of performance tests as a key method of preventing issue recurrence, thereby improving safety and reducing risks. For evaluated drills and exercises, the contractor includes objectives specifically designed to validate corrective actions. The contractor also sometimes uses a series of evaluated drills in addition to annual exercises to ensure that closure actions are effective.
- Savannah River Nuclear Solutions, LLC at the Savannah River Site implemented a number of readiness assurance improvements. EA identified the contractor's implementation of a comprehensive, multi-faceted approach to ensure corrective actions are adequately closed as a best practice. This approach includes: creation of a new Readiness Assurance Manager position; increased emergency management staffing to support readiness assurance; increased involvement of the site facility review board; development of a self-assessment criteria review and approach document; training of emergency management personnel on readiness assurance activities; and implementation of a policy for timely issuance of lessons learned.
- CNS at Pantex implemented several best practices in the process of closing a finding pertaining to emergency communications, including: defining information flow processes within facilities and field response elements for the purpose of enhancing overall communications; developing a project plan for implementation of the information management system; developing emergency response organization (ERO) checklists and procedures to enhance information sharing; and adding checklist tasks to specifically prompt sharing of critical information with both offsite entities and the onsite ERO. In addition, EA identified several significant strengths related to emergency communications, including: implementing a geographic system information tool for use in the EOC; adding a mapper position for the incident command team; developing a project plan for implementation of the information management system; and developing and implementing the logistics team's resource request processes.

EA also identified several areas of continuing weakness. The 59 findings reviewed covered 14 of the 15 DOE emergency management program elements (as established in DOE Order 151.1D, *Comprehensive Emergency Management System*). Only 29 findings were adequately resolved, and four issues related to two of the program elements (i.e., Readiness Assurance, and Notifications and Communication) continue to be problematic at multiple DOE sites:

- Verification and validation processes are weak at several DOE sites. These processes are used to ensure that corrective actions are in place and are tested to measure their effectiveness. Six of the eight sites appraised had issues related to inadequate effectiveness reviews. Specifically, some sites did not perform effectiveness reviews, some sites chose to verify and validate corrective actions through procedure reviews instead of using an evaluated drill or exercise, one site did not implement the requirements for causal analysis, and DOE oversight of readiness assurance processes was lacking at several sites.
- Exercise programs that do not cover the full spectrum of potential events or response capabilities are recurring areas of weakness in the DOE enterprise. EA followed up on five findings related to exercise programs at three different DOE sites, determining that none of these sites have resolved their issues effectively.
- Poor situational awareness among ERO groups and a lack of equipment interoperability are lingering problems at several DOE sites. Only one (CNS at Pantex) of five sites with findings pertaining to inadequate communications and lack of a common operating picture resolved its issues effectively.
- Exercise notification messages at some sites continue to contain inaccurate or incomplete information. Only one (CNS at Pantex) of four sites with notification issues effectively closed its finding.

In summary, the findings follow-up appraisals conducted by EA in fiscal year 2021 identified that two sites implemented best practices and significant strengths in the areas of effectiveness reviews and emergency communications. However, out of the 59 findings reviewed, EA concluded that only 29 were adequately resolved. The 30 issues that remain open pertain to seven program elements, but four trending issues were identified at multiple DOE sites in relation to only two elements, as identified above. Consequently, continuing weaknesses remain across the DOE enterprise, including inadequate verification and validation of corrective actions, lack of a common operating picture, exercise programs that do not cover the full spectrum of potential incidents, and incomplete or inaccurate emergency notifications. EA will continue to follow up on the status of previous findings to ensure that areas of weakness in emergency programs are adequately addressed.

**Summary Report: Independent Focused Assessment of  
Emergency Management Corrective Actions at  
National Nuclear Security Administration and Office of Environmental Management Sites**

## **1.0 INTRODUCTION**

The U.S. Department of Energy (DOE) Office of Environment, Safety and Health Assessments, within the Office of Enterprise Assessments (EA), conducted independent appraisals to evaluate the resolution of emergency management findings previously identified at eight DOE sites. The corrective action follow-up assessments were conducted from October 2020 through September 2021. This report summarizes the collective results in resolving EA findings from previous years. Five of the assessed sites are under the direction of the National Nuclear Security Administration (NNSA), and three are under the direction of the Office of Environmental Management. To promote organizational learning and improve performance throughout the DOE enterprise, this summary report identifies strengths and weaknesses, best practices, and opportunities for improvement, with a particular focus on issues affecting both Federal field offices and contractors at multiple sites.

The scope of the appraisals included the review of closure records for 59 previous findings issued by EA to contractors and their respective Federal field offices over the past nine years. Appraisals were conducted remotely. EA concluded that two of the eight sites assessed, Idaho Site/Idaho Cleanup Project and Hanford Site, effectively resolved all of their findings. While still working on closure packages, some of the remaining sites made significant progress. The sites and the status of their findings, as determined in EA corrective action follow-up assessments, are as follows:

- Lawrence Livermore National Laboratory – one closed, five open
- Los Alamos National Laboratory – four closed, three open
- Waste Isolation Pilot Plant – zero closed, five open
- Pantex Plant (Pantex) – 11 closed, two open
- Sandia National Laboratories/New Mexico – zero closed; 13 open
- Idaho Site/Idaho Cleanup Project – one closed, zero open
- Savannah River Site – seven closed, two open
- Hanford Site – five closed, zero open.

## **2.0 METHODOLOGY**

EA reviewed closure records for each of the findings under review. Records consisted of corrective action plans (CAPs); causal analysis documents; evidence of completed actions; effectiveness reviews using verification and validation processes required by DOE Order 151.1D (or C), *Comprehensive Emergency Management System*, as applicable at the time the findings were made; and the required approval processes used by the responsible contractor(s) and the applicable Federal field office. EA coordinated and discussed its activities with site personnel to ensure that all relevant facts were considered prior to verifying the effectiveness of findings closure. EA documented its observations and conclusions in field notes. Field notes were provided to the applicable site and served as the source documents for this findings follow-up report. The field notes often provided OFIs with multiple suggestions designed to aid in the resolution of weaknesses.

In conducting the findings follow-up appraisals, EA considered the contractors' procedures that implement DOE Order 151.1D (or C, whichever was in effect at the time a finding was made). EA also

considered the requirements for contractor assurance systems from DOE Order 414.1D, *Quality Assurance*, and DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*. EA used its criteria and review approach documents (CRADs) EA CRAD 33-05, *Contractor Readiness Assurance and Exercise Program*, Rev. 0, March 2017, and EA CRAD 33-09, *DOE O 151.1D Emergency Management Program*, Rev. 0, April 2019, to determine whether the policies, procedures, and operational performance met DOE objectives for effectiveness in the areas examined.

The members of the EA report preparation team, the Quality Review Board, and EA management are listed in appendix A. Appendix B shows the key elements reviewed, associated contractors, DOE field offices, and DOE Headquarters program offices. Appendix C lists source documents.

### **3.0 RESULTS**

The assessed sites generally demonstrated well-developed and effectively implemented issues management processes as part of their emergency management readiness assurance programs with some strengths and certain areas of weakness that are being addressed. One site demonstrated highly effective readiness assurance processes in its closure of 11 out of 13 findings reviewed, providing strong evidence that issues were properly analyzed and addressed, and that plans, procedures, processes, and training are adequate to prevent recurrence, including records of performance demonstrations for corrective action validation.

The appraisals also revealed continuing weaknesses at multiple DOE sites. EA reviewed finding closures covering 14 of the 15 DOE emergency management program elements. Of the 59 findings reviewed, only 29 were adequately resolved, and multiple sites had four recurring issues related to two of the elements, as described below:

#### **Program Element - Readiness Assurance**

##### *Recurring Issues:*

- Verifying and validating corrective actions properly
- Implementing exercise programs that test a full spectrum of potential events and capabilities

#### **Program Element - Notifications and Communications**

##### *Recurring Issues:*

- Ensuring that emergency notifications are complete and accurate
- Improving communications to ensure that all emergency response organization (ERO) personnel have a common operating picture

For these four issues in particular, sites repeatedly experienced challenges closing findings with the level of effectiveness necessary to prevent recurrence. Each is discussed in greater detail in sections 3.1 through 3.4 below.

### **3.1 Verification and Validation of Corrective Actions**

Overall, inadequate effectiveness reviews were determined to be either a primary or contributing problem with the closure packages for 21 of the 30 findings still unresolved. Inadequacy in verification and validation of effectiveness was determined to be a continuing problem at most DOE sites assessed. In many cases, the inadequacy of closure and prevention of recurrence was evident in repeat performance issues during exercises. EA provided seven OFIs in its field notes to the applicable sites for consideration on approaches to improve effectiveness reviews. These OFIs are summarized in section 5.0 of this report.

## **Strengths**

Several sites implemented or are in the process of implementing effective issues management processes as part of readiness assurance programs. The findings follow-up field notes identified strengths and best practices. Consolidated Nuclear Security, LLC (CNS) at Pantex demonstrated a mature and highly effective readiness assurance process, providing strong evidence of effective closure for 11 out of its 13 findings selected for review. The contractor's improvements related to validation and verification of corrective actions are described as best practices in section 4.0 of this report.

In addition, although EA concluded that its processes are not yet fully mature, Savannah River Nuclear Solutions, LLC was commended for implementing a number of improvements to its readiness assurance processes, all of which are described as best practices in section 4.0 of this report.

## **Weaknesses**

Out of the 59 findings reviewed, EA concluded that only 29 were resolved. Sites closed 21 findings without performing proper effectiveness reviews and, for that and other reasons mentioned below, EA concluded that the findings remain unresolved. A summary of associated weaknesses related to readiness assurance is provided below:

- One site improved its effectiveness review processes but relies too heavily on annual site-evaluated exercises to complete verification and validation of corrective actions. This delay results in an excessive amount of time to close a finding (i.e., as much as five years).
- A site did not validate effectiveness of corrective actions for one finding during three years of site-level exercises, leaving the finding open.
- A site chose to verify and validate corrective actions through procedure reviews instead of using an evaluated drill or exercise; those actions did not result in effective change that prevented recurrence.
- To validate closure of findings, a contractor cited a drill for its verification and validation process but kept no records of the results.
- Two sites, including multiple instances at one site, did not obtain site office approval of corrective actions and/or did not request site office approval of changes to the initial CAP.
- Four sites closed findings without verifying and validating the corrective actions implemented. For example, one site created a Drill and Exercise/Readiness Assurance Working Group as one of its corrective actions for a readiness assurance finding but did not validate the effectiveness of the group following an evaluated drill or exercise.
- One contractor transitioned to DOE Order 151.1D without implementing the requirements for causal analysis for emergency management findings or identifying compensatory measures while the causal analysis and corrective actions implementation are pending.
- Several DOE field offices did not provide adequate oversight of readiness assurance requirements to ensure that the closure process is effective in preventing issue recurrence.

### **3.2 Exercise Programs**

Collectively, EA reviewed five findings pertaining to exercise programs at three sites and concluded that none of the findings were adequately resolved. EA cited exercise programs that do not cover the full spectrum of events and inadequate exercise evaluation criteria as continuing problems. Five OFIs were



provided in the field notes for consideration on approaches to improve exercise programs. These OFIs are summarized in section 5.0 of this report.

## Strengths

EA identified no strengths in this area.

## Weaknesses

At the time of EA's findings follow-up appraisal, contractors at three assessed sites still had not addressed findings to develop exercise programs that test the full spectrum of potential incidents and ERO capabilities. A summary of associated weaknesses is provided below:

- At one site, the contractor has not coordinated emergency response plans and procedures with the Office of Secure Transportation (OST) or validated through the exercise program the effectiveness of the ERO to respond to an onsite OST incident. The contractor conducted a discussion-based tabletop with OST seven years ago, which the site improperly credited as a performance exercise. In addition, some of the OST instructions provided in the NNSA Associate Administrator for Emergency Operations memorandum regarding *Guidance for the Integration of Emergency Planning, Preparedness, and Response Activities Between the OST and NNSA Host Sites*, April 19, 2005, as well as in the NNSA Associate Administrator for Emergency Operations guidance memorandum regarding *Forwarding of Concepts of Operation Between NNSA Host Sites and OST*, September 4, 2007, are not incorporated into plans, procedures, training, drill, and exercise documents. Although the contractor made several requests to OST and the NNSA Office of Plans and Policy (NA-41) over the past several years to conduct a joint exercise with OST, the original EA finding has been open for nine years.
- At the second site, both EA and the Defense Nuclear Facilities Safety Board concluded that the contractor's exercise program did not validate all elements of the emergency management program over a five-year period as required by DOE Order 151.1D. Although the site updated its five-year exercise plan as part of the CAP, the plan still did not validate three of the response elements cited in the EA finding within five years, as follows: (1) the capability of the Radiological Safety Department incident commander during a radiation incident; (2) all response interface capabilities; and (3) the capability of the virtual emergency operations center (EOC). After discussing these shortfalls with site personnel, some of these response elements were promptly added as exercise objectives to the 2021 annual exercise and were partially validated.
- At the third site, three emergency management exercise program findings were not properly resolved. The first EA finding, issued in 2015, as well as an additional EA finding issued in 2018, concerned exercise evaluation criteria to objectively assist evaluators in identifying weaknesses. The CAP appropriately included implementation of DOE's Exercise Builder software application to develop and evaluate performance of EROs and first responders. However, the use of Exercise Builder alone was not effective in resolving the underlying problem because the contractor did not fully develop the needed evaluation criteria database and site-specific exercise evaluation guides and did not validate the effectiveness of the corrective action during performance demonstrations. Due to these incomplete actions, these two findings remain unresolved. The third EA finding, related to exercise planning and scheduling inadequacies, remains unresolved largely due to the suspension of exercises because of the COVID-19 pandemic. Progress was made for the third EA finding by revising the five-year exercise schedule to include exercises that evaluate the alternate EOC and the joint information center. However, EA noted that the contractor had not exercised a number of emergency planning hazards assessment scenarios needed to cover the full spectrum of analyzed incidents. Finally, the contractor's exercise program document did not describe the method for determining the

appropriate criteria (e.g., the number of exercises or the rotation of the exercise scenarios necessary) to demonstrate ERO proficiency for all capabilities.

### **3.3 Common Operating Picture**

Collectively, EA reviewed six emergency communication findings pertaining to the lack of a common operating picture at five sites and concluded that only one finding was adequately resolved. EA cited inadequate situational awareness among responders, a lack of equipment interoperability, and inadequate communication protocols as continuing problems. EA wrote one OFI to promote emergency communication improvements and to help ensure a common operating picture. This OFI is summarized in section 5.0 of this report.

#### **Strengths**

At Pantex, CNS effectively resolved a 2014 EA finding stating that the contractor did not provide continuous, effective, and accurate communications among response components. The CAP contained numerous corrective actions to close this finding, all of which are described as best practices in section 4.0 of this report. In 2021, EA noted that numerous plan and procedure revisions have effectively established information sharing to promote overall situational awareness and that CNS validated these protocols through ERO performance objectives during drills and exercises.

#### **Weaknesses**

At the time of the reviews, four sites were still in the process of closing previous findings related to emergency communications and the lack of a common operating picture among response elements. Two sites are implementing corrective actions and/or effectiveness reviews to validate corrective actions, and the other two sites closed their findings improperly. A summary of two associated weaknesses is provided below:

- After observing an exercise in May 2014, EA wrote a finding in January 2015 stating that a contractor did not perform effective communications among onsite response organizations throughout the emergency exercise. The contractor closed the associated 2015 finding with a required reading assignment for all ERO members that focused on the use of human performance improvements tools and three-way communications. Later that year, the field office verified closure, partially based on the results of a January 2015 site-level exercise, which occurred before the required reading assignments were completed. No further demonstration of performance in an evaluated drill or exercise occurred after the required reading assignments were completed to validate the effectiveness of the corrective actions. In 2018, EA observed continued weakness in the contractor's ability to establish situational awareness that results in a common operating picture among the site's command centers and wrote another finding. In response to the 2018 finding, the contractor's CAP included training of ERO members in sharing information within and among response venues, and the field office concurred with the CAP. In 2021, EA concluded that the finding is still unresolved because the CAP does not address procedure and equipment shortfalls identified in the 2018 EA report, particularly for interoperability issues. Interoperability is a significant concern because the contractor does not have a widespread automated emergency management information system or procedural guidance to capture, distribute, and share emergency information among the site's response venues or to share unclassified information with offsite command centers. The site EOC is the only response venue with an automated emergency information system capability.
- At another site in 2015, EA wrote two findings related to the contractor's emergency communications. The first finding stated that the contractor did not provide continuous, effective,

and accurate communications resulting in a common operating picture between the incident commander, the communications center, the EOC, and the DOE Headquarters EOC. Lack of a common operating picture caused different understandings of the incident at the scene and the EOC. The contractor's corrective actions for this issue included revising procedures to clarify expectations for effective communications to ensure a common operating picture among response organizations and conducting additional training for ERO members. In 2018, EA observed similar weaknesses relating to ineffective communications among ERO members and concluded that the contractor's implemented corrective actions were not effective in preventing recurrence. In 2021, EA concluded that the issue remains unresolved because the contractor provided no records indicating that the field office reviewed and approved the CAPs, that the effectiveness reviews occurred, and that evaluated drills or exercise demonstrations were used to validate corrective actions.

### **3.4 Emergency Notifications**

Collectively, EA reviewed four findings pertaining to emergency notifications at four sites and concluded that one finding was adequately resolved. EA cited notification messages containing inaccurate and/or incomplete information related to location, incident description, protective actions, and protective action recommendations, as well as inadequate notification procedures, as continuing problems. One OFI was written to provide suggestions on how to improve emergency notifications. This OFI is summarized in section 5.0 of this report.

#### **Strengths**

EA identified no strengths in this area.

#### **Weaknesses**

At the time of the review, three sites had not yet closed previous findings related to emergency notifications. One of these sites submitted incomplete closure documentation to the field office and implemented corrective actions that would not prevent recurrence. Another site provided no relevant documentation indicating that the field office reviewed and approved the CAPs and no evidence that verification and validation activities for determining effectiveness of the corrective actions occurred. EA concluded that effectiveness reviews were not adequate at the third site. Summaries of two associated weaknesses are provided below:

- In 2015, EA wrote a finding because a contractor did not effectively provide emergency notifications to all appropriate personnel, notifications sent to designated offsite authorities were not fully complete and accurate, and these issues were not included in the exercise after-action report. To address this finding, the contractor developed corrective actions that included implementation of a new mass notification system, revision of checklists and job aids for radio room personnel, institutional training for employees on protective actions, and coordination with offsite agencies to confirm receipt of emergency notification forms and protective action recommendations. The contractor approved closure of the finding in 2015 but did not conduct an effectiveness review as required. Following a 2020 exercise, EA wrote another finding related to emergency notifications because of recurring performance weaknesses observed during the exercise. In 2020, although the emergency director verified that initial verbal notifications were completed to all stakeholders, the notifications were ineffective because the content of the messages contained inaccurate and/or incomplete information related to location, incident description, protective actions, and protective action recommendations. In addition, EA concluded that emergency procedures did not make the incident commander (or similar authority) responsible for ensuring that key information is complete and accurate prior to distribution.

- In 2015, EA wrote a finding because a contractor did not provide accurate and timely follow-up notifications to offsite officials when conditions changed during an exercise. To address this issue, the contractor revised procedures and trained appropriate personnel on the changes. However, in the 2021 appraisal, EA noted that the effectiveness reviews supporting finding closure were either not performed or did not effectively test the changes for recurrence prevention, and therefore concluded that the issue is unresolved.

#### **4.0 BEST PRACTICES**

Best practices are safety-related practices, techniques, processes, or program attributes observed during an assessment that may merit consideration by other DOE and contractor organizations for implementation. The following best practices were identified as part of this assessment.

##### **Readiness Assurance**

Savannah River Nuclear Solutions, LLC at the Savannah River Site implemented a comprehensive, multi-faceted approach to ensure corrective actions are adequately closed. This process is considered a best practice in the DOE complex because it will enhance safety and reduce risk. This approach includes: comprehensive revision of self-assessment and corrective action program procedures; revision of review board charters; creation of a new readiness assurance manager position; increased emergency management staffing to support readiness assurance; increased involvement of its facility review board; development of a CRAD for use in self-assessments; training of emergency management personnel on readiness assurance activities; and implementation of a policy for timely issuance of lessons learned.

##### **Verification and Validation**

CNS at Pantex demonstrated a mature and highly effective readiness assurance process, providing strong evidence of effective closure for 11 out of 13 findings chosen by EA for review. Contractor records showed that issues were properly analyzed and addressed, and that plans, procedures, processes, and training are adequate to prevent recurrence. Most notably, as a best practice, the contractor's verification and validation processes are robust and key to preventing issue recurrence. Multiple times during the validation process, the contractor identified additional corrective actions needed for effective closure of findings. These additional corrective actions would not have been discovered without robust verification and validation reviews. For evaluated drills and exercises, the contractor includes objectives specifically designed to validate corrective actions. The contractor also sometimes uses a series of evaluated drills to ensure that closure actions are adequate to prevent recurrence.

##### **Common Operating Picture**

CNS at Pantex implemented several best practices in the process of closing a finding pertaining to emergency communications, including: defining information flow processes within facilities and field response elements for the purpose of enhancing overall communications; developing a project plan for implementation of the information management system; developing emergency response organization (ERO) checklists and procedures to enhance information sharing; and adding checklist tasks to specifically prompt sharing of critical information with both offsite entities and the onsite ERO. In addition, EA identified several significant strengths related to emergency communications, including: implementing a geographic system information tool for use in the EOC; adding a mapper position for the incident command team; developing a project plan for implementation of the information management system; and developing and implementing the logistics team's resource request processes.

## 5.0 OPPORTUNITIES FOR IMPROVEMENT

During the findings follow-up appraisals, EA identified OFIs to assist cognizant managers in improving programs and operations. A summary of these OFIs is provided below. These OFIs are intended to provide insights for potential improvements at all DOE sites; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Consequently, contractors and DOE organizations should evaluate the applicability of the following OFIs to their respective facilities and/or organizations and consider them as suggestions for improving the effectiveness of their emergency management programs.

To improve readiness assurance processes related to verification and validation of corrective actions, **site contractors** should consider:

- Revising procedures to include actions to: (1) ensure that CAPs for emergency management external findings and findings at Defense Nuclear Facilities are approved by the field office; (2) evaluate the effectiveness of corrective actions through verification and validations conducted by an independent reviewer; (3) prior to closing a finding, ensure completion of corrective actions through a verification and validation process that ensures implementation and validates effective resolution of the original finding.
- Revising emergency management and/or corporate procedures dealing with corrective actions to ensure that DOE Order 151.1D requirements, particularly the requirements for causal analysis for emergency management findings as well as the requirements for the identification of compensatory measures while the causal analysis and corrective actions implementation are pending, are included in the corrective action process.
- Determining the effectiveness of corrective actions using means and methods other than annual exercises, such as evaluated drills.
- Revising the emergency management corrective action implementing procedure and exercise development procedures to incorporate verification and validation steps for all drill and exercise performance findings and externally identified programmatic findings. In addition, as part of the readiness assurance process for validation, include objectives in the site annual evaluated exercise package that are designed to validate corrective actions that were implemented for deficiencies, findings, or trends from previous site exercises.
- Conducting evaluated ERO drills to verify and validate the effectiveness of ERO training and performance related to determination, implementation, and updating of protective actions during an emergency.
- Incorporating a summary of finding corrective action validations into drill and exercise after-action reports.

To implement exercise programs that test a full spectrum of potential events and capabilities, **site contractors** should consider:

- Revising procedures governing drill and exercise programs so that they identify all capabilities and elements required by DOE Order 151.1D, including the full spectrum of emergency planning hazards assessment hazards.
- Revising the five-year drill and exercise plan to account for all scenarios in the drill and exercise program procedure.
- Revising procedures to identify the actions required when scenarios are not exercised as scheduled.

- Enhancing OST-related activities by: (1) creating an overall plan and schedule for developing emergency plans and procedures, training and drills, annual coordination meetings, and site OST exercise requirements; (2) ensuring that an onsite OST exercise is included on the five-year exercise plan and adjust the exercise schedule as necessary (i.e., placeholder); (3) maintaining all documentation of communications with OST to verify and validate coordination and planning of training/drills and exercises; (4) ensuring that required notifications and communications are conducted in accordance with established emergency plans and procedures, including the Transportation Emergency Communications Center and the NNSA headquarters EOC and Watch Office; and (5) applying additional attention at senior management levels for scheduling a joint exercise and establishing and fostering a good working relationship between the site and OST.

To improve notifications and communications processes, **site contractors** should consider:

- Conducting evaluated ERO drills and exercises with a specific focus on improving situational awareness among ERO groups, to include unified command participants. These drills should specifically focus on improving equipment interoperability so that a common operating picture is shared among onsite and offsite ERO members in emergency response facilities and developing a communications protocol with offsite command centers to enable better sharing of unclassified information.
- Improving emergency management information systems to promote the sharing of information necessary for decision-making with all response facilities. Sites should ensure the information management systems used by response organizations are interoperable so that a common operating picture is available and shared among onsite and offsite ERO members and develop communication protocols with offsite command centers to enable better sharing of unclassified information.

To improve readiness assurance processes, **DOE field offices** should consider:

- Increasing oversight to ensure readiness assurance requirements reduce recurrence of issues, continued rigorous implementation of readiness assurance requirements by the contractor, and increased observation of performance evolutions (e.g., exercises and drills) for validation and verification of the effectiveness of corrective actions.
- Revising protocols and procedures to include actions to: (1) review and approve site, facility, and activity CAPs for external findings identified during evaluations, assessments, drills, exercises, actual emergencies, and findings at Defense Nuclear Facilities; (2) based on site, facility, and activity performance, periodically review corrective action programs for internal findings to ensure programmatic effectiveness; (3) ensure that completion of corrective actions includes a verification and validation process, independent of those who performed the corrective action, that verifies that the corrective action has been put in place and validates that the corrective action has been effective in resolving the original finding; and (4) ensure that effective corrective actions are tracked, identified, implemented, and effectiveness reviews are conducted after finding actions are closed.
- For readiness assurance pertaining to OST-related activities, reviewing and updating emergency plans, procedures, and agreements to ensure adequate coordination and integration between NNSA and the field office per Headquarters directives and memorandums of guidance, for the integration of OST emergencies for host sites and safe haven sites.

To improve facilities and equipment/systems, **DOE field offices** that lease space for ERO facilities from other Federal agencies (e.g., General Services Administration buildings) should consider:

- Coordinating periodically with leasing agencies to determine the status of battery-operated emergency lighting testing and maintenance, and other emergency equipment, to ensure that DOE Federal employees and contractors who occupy the building can safely navigate to exits, and that ERO personnel can safely access the building during any interruption of normal lighting.

## **6.0 ITEMS FOR FOLLOW-UP**

It is standard practice for EA to follow up on unresolved findings during future appraisals. While all open findings will be reviewed, EA will closely monitor for trends related to readiness assurance processes, particularly those for verifying and validating effectiveness of corrective actions to prevent recurrence, as well as trends related to notifications and communications, based on the conclusions of this report.

## **Appendix A Supplemental Information**

### **Office of Enterprise Assessments Management**

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Site	Key Elements Assessed	Contractor	Field Office	DOE Headquarters Program Office
Pantex Plant	<ul style="list-style-type: none"> <li>• Emergency Response Organization</li> <li>• Protective Actions</li> <li>• Readiness Assurance</li> <li>• Notifications and Communications</li> <li>• Exercises</li> <li>• Emergency Public Information</li> <li>• Emergency Medical</li> <li>• Offsite Interactions</li> </ul>	Consolidated Nuclear Security, LLC	NNSA Production Office	NNSA
Savannah River Site	<ul style="list-style-type: none"> <li>• Notifications and Communications</li> <li>• Readiness Assurance</li> <li>• Exercises</li> </ul>	Savannah River Nuclear Solutions, LLC	Savannah River Field Office  Savannah River Operations Office	NNSA  DOE-EM
Sandia National Laboratories/New Mexico	<ul style="list-style-type: none"> <li>• Notifications and Communications</li> <li>• Readiness Assurance</li> <li>• Emergency Categorization</li> <li>• Protective Actions</li> <li>• Exercises</li> </ul>	National Technology and Engineering Solutions of Sandia, LLC	Sandia Field Office	NNSA
Idaho Site/Idaho Cleanup Project	Readiness Assurance	Fluor Idaho, LLC	Idaho Operations Office	DOE-EM
Hanford Site	<ul style="list-style-type: none"> <li>• All-Hazards Planning Basis</li> <li>• Emergency Facilities and Equipment/Systems</li> </ul>	Mission Support Alliance  CH2M Hill Plateau Remediation Company  Washington River Protection Solutions, LLC	Richland Operations Office  Office of River Protection	DOE-EM

## **Appendix C**

### **Source Documents**

- FN-EA-33-ICP-10-12-2020, *Follow-up Assessment of Emergency Management Finding Status*, October 12 – November 18, 2020
- FN-EA-33-LLNL-10-12-2020, *Emergency Management Finding Follow-up Assessment*, October 12 – November 20, 2020
- FN-EA-33-SRS-01-25-2021, *Emergency Management Finding Follow-up Assessment*, January 25 – March 12, 2021
- FN-EA-33-Pantex-2021-03-08, *Emergency Management Finding Follow-up Appraisal*, March 8 – April 16, 2021
- FN-EA-33-LANL-03-15-2021, *Emergency Management Finding Follow-up Assessment*, March 15 – May 7, 2021
- FN-EA-33-WIPP-2021-05-28, *Emergency Management Findings Follow-up Assessment*, April 19 – May 28, 2021
- FN-EA-33-SANDIA-04-19-2021, *Emergency Management Finding Follow-up Assessment*, April 19 – June 4, 2021
- FN-EA-33-HAN-06-01-2021, *Emergency Management Findings Follow-up Assessment*, June 1 – August 3, 2021