

**Office of Enterprise Assessments  
Assessment of the Pantex Plant  
Emergency Management Program**



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## Acronyms

CAP	Corrective Action Plan
CAR	Causal Analysis Report
CAT	Consequence Assessment Team
CNS	Consolidated Nuclear Security, LLC
CRAD	Criteria and Review Approach Document
CRST	Contingency Response Support Team
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EMInS	Emergency Management Information System
EOC	Emergency Operations Center
EPIP	Emergency Plan Implementing Procedure
ERO	Emergency Response Organization
ESTARS	Electronic Suspense Tracking and Routing System
FD	Fire Department
HAZMAT	Hazardous Materials
IC	Incident Commander
ICT	Incident Command Team
MOU	Memorandum of Understanding
NIMS	National Incident Management System
NNSA	National Nuclear Security Administration
NOAA	National Oceanic and Atmospheric Administration
NPO	NNSA Production Office
OWS	Outdoor Warning System
PAR	Protective Action Recommendation
PER	Problem Evaluation Report
PF	Protective Force
RSD	Radiation Safety Department
SECON	Security Conditions
SITREP	Situation Report
TOC	Tactical Operations Center

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**EXECUTIVE SUMMARY**

The U.S. Department of Energy (DOE) Office of Emergency Management Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment at the Pantex Plant in July and August 2018. The purpose was to examine the effectiveness of the Consolidated Nuclear Security, LLC (CNS) corrective actions for seven findings and one deficiency from three previous EA assessments and commitments to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2015-1, *Emergency Preparedness and Response at Pantex*, where common to EA's findings. EA performed this assessment at the request of the National Nuclear Security Administration (NNSA) Production Office (NPO) to provide an independent assessment of CNS's progress in completing the corrective actions.

Overall, CNS has developed a robust issues management program that incorporates a number of important features, such as causal analysis and extent-of-condition reviews, verification of completed actions, and performance-related effectiveness reviews (validation), to test whether the corrective actions were effective in resolving the original finding. Likewise, EA evaluated two sets of corrective actions that CNS implemented to meet commitments for addressing DNFSB 2015-1 and improving the Pantex Plant emergency management program. Significant areas of improvement in response to the DNFSB 2015-1 recommendations include the verification and effectiveness reviews of implemented corrective actions and long-term planning of tests conducted by the exercise program. CNS is effectively implementing the issues management program, with the result that most corrective actions are appropriate, implemented as planned, and tested.

EA reviewed three closed findings and concluded that CNS has fully resolved two and mostly resolved the third. Importantly, two independent verification reviews were effective in improving the corrective action plans by identifying the need for more actions and adding them to the existing corrective action plans. In addition, the CNS effectiveness reviews incorporated valid performance-based techniques, using evaluated drills, to determine the effectiveness of the corrective actions in resolving the original finding. Corrective actions for the four open findings and the deficiency are being implemented as scheduled and are substantially complete with adequate causal analyses and corrective actions in place.

Although most corrective actions are appropriate, CNS did not resolve the finding from the November 2015 EA assessment report concerning the need to validate all elements of the emergency management program over a five-year period; specifically, to establish and exercise the capability to conduct a sitewide evacuation. In scheduling exercises for evaluating the "controlled release of personnel," CNS did not address the need to plan for a sitewide evacuation, which is complicated by such factors as the need for contamination controls for personnel and vehicles, and accountability of personnel leaving the site. Finally, EA proposed improvements for some draft documents to provide clearer or more comprehensive information.

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**1.0 PURPOSE**

The U.S. Department of Energy (DOE) Office of Emergency Management Assessments, within the independent Office of Enterprise Assessments (EA), assessed the emergency management program at the Pantex Plant. The assessment evaluated the effectiveness of the site contractor, Consolidated Nuclear Security, LLC (CNS), in managing the corrective actions for findings and deficiencies from previous EA assessments and commitments to Defense Nuclear Facilities Safety Board (DNFSB) Recommendation 2015-1, *Emergency Preparedness and Response at Pantex*, where common to EA findings. EA performed this assessment during July and August 2018.

**2.0 SCOPE**

EA conducted this assessment in accordance with its *Plan for the Office of Enterprise Assessments Assessment of Emergency Management at the Pantex Site, July – August 2018*. This assessment examined the effectiveness of corrective actions for seven findings and one deficiency from three previous EA assessments: *Office of Enterprise Assessments Review of the Pantex Plant 2014 Full Participation Exercise – April 2015*; *Office of Enterprise Assessments Review of the Pantex Plant Emergency Management Exercise Program – November 2015*; and *Office of Enterprise Assessments Assessment of the Pantex Plant 2017 Full-Scale Exercise – June 2017*. EA findings from the April 2015 and November 2015 reports were added to the scope of EA’s assessment plan, as agreed upon by site personnel, in order to assess examples of closed findings, because all 2017 findings were in an open status.

**3.0 BACKGROUND**

The Pantex Plant, near Amarillo, Texas, has several national security missions that support protection of the U.S. and its allies around the world. Pantex is charged with maintaining the safety, security, and effectiveness of the nation’s nuclear weapons stockpile. Work performed at Pantex includes support of the nuclear weapons life extension programs; nuclear weapons dismantlement; the development, testing, and fabrication of high explosive components; and interim storage and surveillance of plutonium pits. DOE Order 151.1D, *Comprehensive Emergency Management System*, requires CNS to have a hazardous materials (HAZMAT) program at the Pantex Plant because of the radioactive materials, high explosives, and toxic chemicals used and stored on site.

EA performed this assessment at the request of the National Nuclear Security Administration (NNSA) Production Office (NPO) to provide an independent assessment of CNS’s progress in completing corrective actions. CNS manages and operates the Pantex Plant, along with the Y-12 National Security Complex in Tennessee, under a single contract with DOE/NNSA. NPO provides Federal direction and oversight for both sites. Because this assessment focuses on the Pantex Plant, discussions regarding CNS refer to CNS Pantex. Some CNS emergency management program procedures apply to both the Pantex Plant and the Y-12 National Security Complex; EA refers to these as CNS-level procedures.

In addition to EA findings, CNS is implementing corrective actions at the Pantex Plant to address DNFSB recommendations to improve its emergency management program. DNFSB Recommendation 2015-1

identified three emergency management program elements in need of improvement, namely technical planning basis, plans and procedures, and exercises. DOE submitted an approved implementation plan to the DNFSB on June 16, 2016. During its implementation, CNS and NPO have made significant changes to the emergency management program and procedures in conjunction with some actions taken to resolve EA findings.

#### **4.0 METHODOLOGY**

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*. EA implements the independent oversight program through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. Organizations and programs within DOE use varying terms to document specific assessment results. In this report and its 2015 and 2017 reports, EA evaluated conditions using the terms “deficiencies, findings, and opportunities for improvement” as defined in DOE Order 227.1A. In accordance with DOE Order 227.1A, DOE line management and/or contractor organizations must develop and implement corrective action plans (CAPs) for deficiencies identified as findings. Other important deficiencies not meeting the criteria for a finding should be addressed consistent with Pantex Plant issues management procedures. EA also uses the term “observation” in this report to reflect ambiguous or conflicting information EA observed in draft documents that CNS should further assess before issuing the documents.

As identified in the assessment plan, this assessment considered requirements related to DOE Order 151.1C, *Comprehensive Emergency Management System*, and its update, DOE Order 151.1D, in accordance with the Pantex Plant 151.1D implementation plan. EA also considered commitments made in response to DNFSB Recommendation 2015-1 wherever they related to an EA finding. EA reviewed closure of two findings related to the DNFSB implementation plan; one for the exercise program and one for the issues management program.

To guide this assessment, EA used selected objectives and criteria from Section 4.0 of EA Criteria and Review Approach Document (CRAD) 33-03, *2016 Emergency Management Program Review Pantex Plant*, October 2016; Section 4.0 of EA CRAD 33-02, *Technical Planning Basis*, April 2016; Sections RA.1, EX.6, EX.7, EX.8, and EX.11 of EA CRAD 33-05, *Contractor Readiness Assurance and Exercise Program*, March 2017; and Section 4.0 of EA CRAD 33-07, *DOE/NNSA Emergency Management Exercise Review*, October 2017.

EA reviewed the CNS issues management program and available records associated with corrective actions for the seven findings and one deficiency from EA’s previous assessments. Under the revised issues management program, a finding closure package consists of a problem evaluation report (PER), which includes a causal analysis report (CAR) and a CAP, along with the evidence files for completing the corrective actions. EA document reviews included the PER, CAR/CAP, and evidence files supporting issue closure. For open findings, the review included draft documents that are nearly complete. Independent verification and effectiveness reviews (validation) for the draft documents are scheduled later in the process of closing the PER. In addition, EA interviewed individuals with direct knowledge of the corrective actions for the findings and deficiency.

The members of the EA assessment team, the Quality Review Board, and EA management responsible for this assessment are listed in Appendix A. A detailed list of the documents reviewed and personnel interviewed, relevant to the findings and outcomes of this report, is provided in Appendix B.

## 5.0 RESULTS

EA applied the following criterion from DOE Order 151.1D in a manner consistent with the stage of completion of the corrective actions.

**Criterion:** *Defense Nuclear Facilities must perform the following.*

- (1) Conduct causal analysis to determine corrective actions for findings identified as a result of noncompliance for life safety.*
- (2) Develop formal CAPs for identified findings. The CAP must be approved by the Field Element Manager. The Field Element Manager must ensure effective corrective actions are tracked, identified, and implemented.*
- (3) Evaluate the effectiveness of corrective actions through verification and validations conducted by an independent reviewer.*
- (4) Identify compensatory measures for findings until causal analysis is performed and corrective actions are identified and implemented.*

*(DOE Order 151.D, Attachment 4, paragraph 15.j)*

CNS has closed 4 of the 11 findings from EA's April 2015 and November 2015 reports. Since CNS revised and implemented the issues management procedures as part of its improvement initiatives, EA reviewed three of the closed findings to assess CNS's revised closure methods. One open finding from EA's April 2015 report is related to the deficiency identified in EA's June 2017 report, so CNS combined them for resolution. The three findings and one deficiency from the EA June 2017 report are not due for closure until mid-2019; however, CNS has made substantial progress in completing the associated corrective actions. These open findings are in various stages of the CNS issues management process.

### 5.1 Pantex Plant Emergency Management Issues Management Program

The issues management program used at the Pantex Plant for resolving emergency management program issues is governed by three key program documents: E-PROC-0006, *CNS Issues Management Process*; E-PROC-3117, *The CNS Enterprise Emergency Services Emergency Management Readiness Assurance Program*; and DESKAID-0688, *PER Modifications, Additions, Cancellations, and Due Date Extensions*. E-PROC-0006 is the CNS-level issues management program that applies to all CNS findings and deficiencies, E-PROC-3117 is the CNS-level readiness assurance program that implements additional DOE Order 151.1D requirements for correcting emergency management findings and deficiencies, and DESKAID-0688 provides supplementary site-specific instructions for implementing the Pantex Plant emergency management issues management program, such as instructions for development and subsequent modification of a PER and the use of the Pantex Plant sitewide tracking database.

In 2016, CNS implemented improvements to address DNFSB implementation plan milestone 6.1.4 for the verification and effectiveness reviews and the lessons-learned process currently in use. CNS includes these reviews and lessons learned as separate actions within each CAP.

The issues management program includes many effective features, such as:

- Identifying issues, performing causal analysis and extent-of-condition reviews, and formulating corrective actions via PERs
- Using an issues management tracking system, locally known as the Electronic Suspense Tracking and Routing System (ESTARS)
- Performing an independent verification review of completed actions to ensure that corrective actions were implemented in accordance with the CAP

- Performing an effectiveness review to test whether the corrective actions were effective in resolving the original finding
- Developing lessons learned
- Submitting CAPs and closure packages for external findings and deficiencies to NPO for approval.

These program documents are sufficiently detailed to provide an effective framework for correcting emergency management program findings and deficiencies.

## **5.2 EA April and November 2015 Closed Findings**

CNS processed the following closed findings in accordance with the issues-management procedures described above. NPO approved the submitted CAPs and closure packages. With the exception of exercising site evacuation, CNS effectively implemented its corrective actions and resolved these EA findings.

**5.2.1 April 2015 EA Finding F-CNS-7:** Contrary to DOE Order 151.1C, CNS did not provide emergency status updates to the next-higher emergency management team on a continuing basis.

During the 2014 full participation exercise, operations center personnel transmitted only one DOE Headquarters situation report (SITREP), and it contained inaccurate and incomplete information. Additionally, CNS had not enabled DOE Headquarters to access the Pantex Plant WebEOC<sup>®</sup> event information, but instead relied on the SITREP as the primary means of transmitting emergency status updates. Consequently, DOE Headquarters could not keep Departmental senior management and other Federal agencies properly updated as events evolved.

CNS addressed this finding via PER-2015-0222, *Closure Package Review & Approval for EA Review of the Pantex Plant 2014 Full Participation Exercise Finding 7*, and closed the finding in May 2018. The corrective actions clarified emergency response organization (ERO) member roles and responsibilities by revising response documents (such as EM-PLN-0019, *Pantex Incident Management Plan*, and PX-5923, *Emergency Communication Team Checklist*), training ERO staff, and implementing technological solutions. The most significant change was replacing WebEOC<sup>®</sup>, used during the 2014 exercise, with the Emergency Management Information System (EMInS<sup>®</sup>), a more effective incident management tool than WebEOC<sup>®</sup>. CNS also replaced WP-EM-0365, *Emergency Response Organization Work Practice*, with MNL-EM-352242, *Emergency Management Emergency Response Organization Manual*. These document revisions are sufficiently detailed to implement EMInS, identify required data for reporting to DOE Headquarters, and establish appropriate timeliness goals for submitting the initial and updated SITREPs to DOE Headquarters.

After completing the verification review, CNS performed a suitable test of the corrective actions via a series of well-documented, evaluated drills. The drills demonstrated that responders could provide timely and accurate SITREP submittals to DOE Headquarters within one hour of an Operational Emergency declaration and submit updates on a continuing basis.

**5.2.2 November 2015 EA Finding F-CNS-1:** Contrary to DOE Order 151.1C, the CNS exercise program does not validate all elements of the emergency management program over a five-year period.

EA's programmatic review of the Pantex Plant exercise program identified that the CNS five-year exercise plan did not include using the alternate command center during an exercise, implementing a site evacuation response, responding to an onsite Office of Secure Transportation incident, or deploying DOE emergency response assets.



CNS addressed this finding via PER 2015-0219, *Closure Packet EA Finding – CNS Does Not Validate All Elements of the Emergency Management Program Over a Five-Year Period*, and closed the finding in July 2017. The most significant corrective action was to revise SS&ES-FY16-1620651-4989-SS&ES, *Pantex Five-Year Drill and Exercise Program*, and add exercises to validate the four elements cited in the 2015 report. However, in the CAP, CNS changed “full-scale plant evacuation” to “controlled release of plant personnel in an emergency situation” and did not update the five-year plan properly. (Section 5.3.1 of this report discusses this issue in more detail.)

DNFSB Recommendation 2015-1 stated, “The Pantex Plant has not consistently exercised all response elements between 2011 and 2015....” It further recommended “Strengthen[ing] the exercise program to provide an adequate number of challenging scenarios per year, including at least one full-scale, site-wide exercise, in order to maintain qualifications and ensure proficiency of the emergency response organization and first responders.” Recommendation 2015-1 noted that only six exercises were conducted from 2011 to 2015 and stated that the scenarios were simplistic in scope and complexity, did not reflect all of the hazards in the emergency planning hazards assessment, and did not provide sufficient opportunities for personnel to develop and demonstrate proficiency in emergency response for all response elements across the spectrum of hazards and facilities.

CNS implemented a CAP that adequately addresses the EA finding (with the exception of the site evacuation) and the DNFSB’s exercise program issues. CNS’s current five-year exercise plan lays out the response elements and the year in which they are exercised. CNS conducted a review of the emergency planning hazards assessments, analyzed the hazards, and updated its five-year exercise plan appropriately. Additionally, CNS revised MNL-EM-352240, *Emergency Management Department Exercise Program Manual*, to include developing the exercise plan with respect to all response elements and across the spectrum of hazards and facilities. The current five-year exercise plan identifies 16 exercises from 2017 to 2022, with either a full-scale or full-participation sitewide exercise annually.

**5.2.3 November 2015 EA Finding F-CNS-C1:** CNS’s control at the event/incident scene was not effective or consistent with the National Incident Management System’s (NIMS) Incident Command System (DOE Order 151.1C).

During the 2015 exercise, a multiple incident scene scenario was presented to the ERO that had the potential for a HAZMAT release in conjunction with a security incident. The scenario involved an active shooter who had placed bombs in two vehicles, one where the Pantex Plant receives chemicals on site and one in a vehicle driven onto Pantex Plant property. A bomb detonation occurred at the chemical receiving facility while the shooter was inflicting mass casualties among site personnel. The CNS response lacked clarity in whether the protective force (PF) or the fire department (FD) served as the incident commander (IC) under the NIMS Unified Command structure, contributing to an ineffective response.

CNS addressed this finding via PER-2016-0247, *Closure Package EA Review of the Pantex Plant 2015 Full Participation Exercise Finding F-CNS-C1*, and closed the finding in June 2018. Significant corrective actions included training incident command teams (ICTs) and revising EM-PLN-0088, *Pantex Incident Management Plan*; MNL-EM-352242; PX-5330, *Incident Command Team (ICT) Checklist*; and EM-PLN-0019.

The revised EM-PLN-0088 clearly establishes a single IC from the most appropriate organization – FD, PF, or radiation safety department (RSD) – based on the type of event, and emphasizes early communications between the FD and PF. During CNS’s initial verification review of completed corrective actions, CNS determined that additional corrective actions were necessary and prepared an addendum to the CAP with additional actions. After completing the subsequent verification review, CNS performed a valid test of the corrective actions via a series of well-documented evaluated drills using a

scenario that postulated a General Emergency HAZMAT release from a vehicle wreck.

#### **5.2.4 Summary – Closed Findings**

Overall, CNS effectively implemented its issues management program, fully resolving two of the three EA findings and mostly resolving the third finding. Closure packages provide a detailed record of the issues management process, including lessons learned and independent reviews to meet DNFSB 2015-1 recommendations. The corrective actions appropriately address program and response documents, personnel training, and new technology, where needed. Independent reviews performed during two verification reviews were effective in improving the CAPs by identifying the need for more actions and adding them to the existing CAPs. The effectiveness reviews incorporated valid performance-based techniques, using evaluated drills, in determining the effectiveness of the corrective actions in resolving the original finding. NPO has also been instrumental in the issues management program through its reviews and approvals of CAPs and closure packages. However, in scheduling exercises for evaluating the controlled release of personnel, CNS did not effectively update its five-year plan.

#### **5.3 EA June 2017 Open Findings**

Corrective actions for these findings are in various stages of completion and are not due for closure until mid-2019. In drawing conclusions about actions taken to address these findings, EA primarily reviewed the latest drafts of documents cited in CAP corrective actions.

**5.3.1 2017 EA Finding F-CNS-1:** CNS has not fully developed all of the emergency plan implementing procedures (EIPs) to describe how the emergency plan must be implemented as required by DOE Order 151.1C, Attachment 2, Section 4.d.

During the 2017 full-scale exercise, EA observed a fragmented incident response, inaccurate tracking of injured and contaminated personnel, and difficulty in executing its SSPLN-0048, *Pantex Plant Evacuation Plan*, which was partly attributable to insufficiently detailed procedures for implementing these activities. The 2017 assessment report cited four areas in which EIPs were not fully implemented:

- Patient tracking
- Integrating the responses of the FD, PF, and RSD from the tactical operations center (TOC)
- Integrating the use of EMInS into the EIPs
- Implementing the site evacuation plan.

The patient tracking issue dates back to 2014, and CNS has expended significant effort in the last few years to improve this area. CNS tested the initial set of completed corrective actions during an effectiveness review and identified additional corrective actions when patient tracking issues persisted. CNS then issued an additional CAP to add revisions to the EMInS patient tracking board, emergency management manuals, and checklists; install an EMInS terminal in the TOC; and conduct training on patient tracking procedures. CNS properly closed this issue in August 2018, citing effective patient tracking during exercises in August 2017 and January 2018 and during an evaluated drill in February 2018. CNS successfully demonstrated the new EMInS patient tracking board to EA.

CNS is making progress in integrating the PF, FD, and RSD in the TOC. CNS created two new TOC positions, the incident command coordinator and the incident command communicator, and is revising the appropriate emergency management manuals and checklists accordingly. The IC retains responsibility for the integration of the TOC personnel, but the new positions are designed to significantly improve the integration of the PF, FD, and RSD.

CNS is effectively integrating the use of EMIInS into the EIPs; referencing its use in appropriate places throughout the EIPs.

CNS developed corrective actions to address site evacuation and added them to the open CAP in PER-2015-0219. Significant actions from this CAP include revising a number of manuals and checklists; developing an RSD plan for route decontamination and personnel monitoring and data collection; revising EM-PLN-0019 to include evacuation concepts, descriptions, roles, and responsibilities; and conducting training for the executive team, the consequence assessment team (CAT), and the operations group. Nonetheless, the CAP did not require any revisions to SSPLN-0048, even though SSPLN-0048 contradicts the EIPs and contains insufficient information, as outlined below.

CNS is addressing this finding via PER-2015-0219. Significant actions of this effort include establishing emergency management manuals as EIPs, and providing position-specific checklists for every ERO position during an incident, as reflected in EM-PLN-0019. The manuals appropriately implement the programmatic and response elements of the emergency management plan. The checklists provide guides for implementing the manuals expeditiously during an emergency response. In three of the four areas cited in the 2017 report, CNS has effective resolutions in progress; the exception is the site evacuation procedure.

**Observation 5.3.1.1. CNS’s current CAP and the actions taken to date will not result in a complete site evacuation procedure.**

The Emergency Management Department recently took ownership and responsibility for the *Pantex Site Evacuation Plan* from the security department and submitted an updated draft to the site publishing organization. However, the draft document does not address all of the issues concerning a site evacuation process, and the current CAP and the actions taken to date will not result in a complete site evacuation procedure. For example:

- For controlled personnel release/emergency evacuation, SSPLN-0048 specifies consideration of the need for route decontamination, accountability, onsite and offsite reception centers, mass transportation, and post-evacuation personnel monitoring but does not provide or reference the detailed information necessary for implementation. Except for accountability, the CAP for revising SSPLN-0048 does not address these necessary implementing instructions.
- SSPLN-0048 states that “controlled release of personnel” is not an emergency protective action, whereas EIPs, such as MNL-352189, *General Employee Response Manual*, and MNL-EM-352248, *Protective Actions and Re-Entry*, do list it as a protective action.
- EM-PLN-0019 does not reflect the “controlled release of personnel” and does not identify SSPLN-0048 as an EIP.
- CNS changed the recommendation for exercising a site evacuation to exercising a “controlled release of personnel” that does not require accountability. More notably, CNS updated the five-year exercise plan but did not include the “controlled release of plant personnel” within the plan, and the verification process did not identify the omission.
- Procedures and processes exist for accountability of personnel evacuated from affected areas to unaffected areas of the plant, but there are no procedures or written plans to account for personnel evacuated off site.
- PER-2018-0378, *Enterprise Emergency Services Causal Analysis Report I Corrective Action Plan for Accountability Process*, addresses many issues associated with accountability and, if properly implemented, should improve the accountability process, including offsite positive accountability.
- CNS stated there is no CAP to create a memorandum of understanding (MOU) for mass transportation.

Although RSD revised RSD-TBD-120, *RSD Emergency Action Guidance*, per the CAP, the revisions did not address route decontamination, personnel monitoring, and data collection. (Note: CNS's verification for this action is not yet complete.) Additionally, RSD-TBD-120 is not integrated with the other relevant EIPs. For example, the revised RSD-TBD-120 contains no information on route decontamination and limited information on personnel monitoring and data collection. It states that internal dose monitoring from inhaling weapons grade plutonium is needed (including personnel contamination surveys at the hotline, nasal swabs, wound monitoring and bioassays), but provides no implementation details.

Furthermore, RSD-TBD-120 uses 100 millirem as a value for helping make decisions during an emergency incident concerning shelter-in-place versus evacuation, but no EIPs or checklists use a 100 millirem limit. For example, CNS revised the CAT checklist to include a section on questions to answer when considering when to transition from shelter-in-place to evacuation. One question asks whether or not shelter-in-place is safe beyond the short term, but the EIPs do not define "safe," nor do they refer to RSD-TBD-120, which contains this pre-determined information. Furthermore, 100 millirem is inconsistent with, and only 10% of, the 1 rem protective action criteria recommended in the Environmental Protection Agency's *PAG Manual: Protective Actions Guides and Planning Guidance for Radiological Incidents*. Although RSD-TBD-120 contains vital information for determining when to evacuate, no EIPs or checklists refer to it.

**Suggested Improvement 5.3.1.1.** Improve the detail in the planning for a site evacuation and document the results in a site evacuation procedure by:

- Converting SSPLN-0048 into an emergency management manual with detailed implementing steps for route decontamination, on and off-site reception centers, mass transportation, and personnel monitoring
- Determining whether or not "controlled release of personnel" is a protective action and revising appropriate procedures so they are consistent
- Conducting additional planning and providing instructions for off-site route decontamination, use of mass transportation, off-site accountability, and off-site personnel monitoring and decontamination
- Revising the five-year exercise plan to include an exercise to periodically validate the EIPs for a site evacuation
- Revising RSD-TBD-120 to be consistent with the PAG Manual when determining emergency actions concerning sheltering-in-place versus evacuations and revising other relevant EIPs to refer to RSD-TBD-120.

Overall, CNS is effectively developing and implementing EIPs and checklists to enhance the consistency of ERO performance, with the exception of the site evacuation procedure. CNS simplified the procedure structure by implementing emergency management manuals as the EIPs and adding position-specific checklists as the instruments to execute EIP requirements. Significant efforts in the area of patient tracking are well-designed for effective execution of this task and the addition of two new positions in the TOC is an important step to attain an effective unified command. Finally, CNS incorporated EMInS use into the appropriate emergency management manuals. However, the current CAP for the site evacuation procedure will not achieve a complete site evacuation procedure.

**5.3.2 2017 Finding F-CNS-2:** The CNS emergency plan does not fully document an integrated emergency management program that describes the provisions for a response to an Operational Emergency, as required by DOE Order 151.1C, Attachment 2, Section 3.b.(3).

During the 2017 exercise, a multiple incident scene scenario was presented to the ERO that postulated a radioactive material release dispersed by an explosion in conjunction with an active shooter and a vehicle

crash with injuries. The scenario reflected a General Emergency and a mass casualty incident. EA observed that responders performed activities not described in the emergency plan and that the emergency plan was inconsistent with other response plans, such as the security plan or evacuation plan. While some of EA's observations were addressed by other similar CAPs, the CAP for this finding includes:

- Integrating the PF, FD, RSD, and facility operations into the ICT using NIMS concepts and terminology
- Fully integrating EMInS into the response to improve situational awareness
- Integrating local Security Conditions (SECON) changes into a security response
- Completing the integration of the emerging offsite monitoring capability.

Significant actions to complete the CAP include revising EM-PLN-0019, MNL-EM-352242, and SSPLN-0047, *SECON Response Plan*, and training ERO members on the changes. CNS has also revised WP-0119, *Radiological Contingency*, separately from the CAP, to further develop field monitoring team response instructions and PX-OG-006, *Incident Management System*, to incorporate facility operations into the ICT.

CNS is addressing this finding via PER-2015-0608, *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding #2*, and has made significant progress in resolving this finding. CNS submitted drafts of the revised EM-PLN-0019 and ERO training manual to the site publishing organization. The drafts adequately clarify that a single member is established as the IC based on the type of incident, that CNS uses EMInS during a response, that designated CNS positions have the authority to make SECON level changes for site incidents, and that a contingency response support team (CRST) is the CNS team that performs offsite monitoring until State of Texas personnel take over the offsite field monitoring activities. A field monitoring team coordinator (formerly the RSD CAT liaison position during the 2017 exercise) is identified as the CRST leader. These draft documents, in addition to revisions of WP-0119 and PX-OG-006, provide the framework for these concepts, but do not include the implementing details. PX-OG-006 instructs the IC to ask the facility manager or responsible person to come to the command post to communicate current facility conditions and activities. Also, CNS identified a lesson learned during its evaluation of this finding, namely that the common use of NIMS terminology is an important attribute for a more effective response.

**Observation 5.3.2.1. CNS implementing procedures are not sufficiently detailed to describe how the CRST plans to interface with the State of Texas field monitoring team.**

**Suggested Improvement 5.3.2.1.** Improve the effectiveness of the CRST by developing the appropriate command media, including procedure steps, forms, and templates, to establish how data is transferred to State of Texas field monitoring personnel.

**5.3.3 2017 EA Finding F-CNS-3:** CNS has not fully integrated local requirements into an emergency management system as required by DOE Order 151.1C, Attachment 2, Section 2.c.(2).

During the 2017 exercise, CNS classified the postulated incident as a General Emergency, sounded the offsite outdoor warning system (OWS) sirens, and directly sent messages for public broadcasting through National Oceanic and Atmospheric Administration (NOAA) weather stations; inappropriately providing protective action recommendations (PARs) to the public and activating offsite sirens without following the MOUs established with NPO and Armstrong and Carson counties and the City of Amarillo.

CNS's most significant corrective actions for this finding include revising:

- MOUs with Carson and Armstrong counties and the City of Amarillo to attain a consistent approach for using the offsite OWS and the NOAA radio stations
- EM-PLN-0019, *Pantex Incident Management Plan*
- MNL-EM-352244, *Emergency Facilities and Equipment Program Manual*
- EM-MNL-352190, *Operations Center Manual*
- MNL-EM-352247, *Emergency Management CAT Manual*
- ERO checklists to reflect the revised MOUs, identify receptors of interest, and transmit exposure data to offsite authorities
- Scripted PAR messages in EMInS for initial news releases
- The emergency planning zone and implementing documents
- The emergency planning hazards assessment with the new emergency planning zone.

CNS is addressing this finding in accordance with its issues management procedures via PER-2015-0609, *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding #3*, and has made significant progress in resolving this finding. CNS has updated MOUs with Carson and Armstrong counties and the City of Amarillo that provide consistent protocols for CNS's direct activation of the offsite OWS sirens and requests for NOAA activation of broadcast messages via its weather stations. The agreements allow CNS to take direct actions through these systems, without consultation with offsite authorities for radioactive material releases resulting in a General Emergency. CNS has determined that chemical releases no longer exceed protective action criteria off site except at the chemical receiving building, and in that case, CNS credits its ability to secure the highway and remove personnel in the area within an hour. This capability allows CNS to eliminate a General Emergency declaration for these chemical releases per DOE Emergency Management Guide 151.1-4, *Response Elements*. CNS has updated EMInS and drafted document revisions that are mostly consistent with the agreements.

Although most updated documents reflect the conditions in the agreements, legacy verbiage remaining in parts of some documents does not restrict CNS's direct use of offsite OWS and NOAA radio station messages only to radioactive releases for General Emergency conditions.

**Observation 5.3.3.1. CNS's latest draft revisions to emergency management program documents are not fully in agreement with MOUs established with Armstrong and Carson counties and the City of Amarillo.**

EM-PLN-0019 draft 11 states, "The PSS [plant shift superintendent] activates the appropriate notification systems and the Pantex OWS to advise off-site personnel/agencies of emergency conditions and PARs for an Operational Emergency classified as a General Emergency or Site Area Emergency."

MNL-EM-352244, Issue 003 states, "Off-site OWS sirens may be activated for emergencies involving: shelter for HAZMAT release with potential-off-site consequences, or shelter for HAZMAT release for an off-site chemical/radiological release with the potential to impact people near Pantex Plant." MNL-352190, Issue 006 states: "Operations Center personnel activate the OWS: (a) Use the OWS computer, (b) Select the "Activate" screen on the computer, and (c) "Click" on the desired activation function: • GE [General Emergency] (all sirens activated)." These instructions and descriptions are not restricted to the conditions set forth in the MOUs, which allow Pantex Plant personnel to directly activate the offsite sirens only for radiological releases classified as General Emergencies.

**Suggested Improvement 5.3.3.1.** Update EM-PLN-0019, MNL-352244, and MNL-352190 to restrict direct use of the offsite OWS to a radioactive release General Emergencies.

Other actions associated with this CAP, such as training activities, emergency planning zone revisions, and emergency planning hazards assessments revisions, are due after EA's data collection period and were not sufficiently developed for EA to assess.

**5.3.4 2015 EA Finding F-CNS-3 and 2017 EA Report – Deficiency:** CNS did not provide continuous, effective, and accurate communication among response organizations as required by DOE Order 151.1C, Attachment 2, Section 12.

This is a continuation of the EA 2015 exercise assessment finding, so CNS added corrective actions to an open PER, PER-2015-0218, *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding & NA-SH Report Finding Deficiency*, to address the deficiency cited in EA's 2017 report. During the 2017 exercise, the response was diminished due to incomplete communications and situational awareness. Significant contributors to this condition were the lack of full participation of key personnel on bridgeline calls, preparation of a consolidated incident action plan, and periodic updates from the emergency operations center (EOC) to the IC; as well as minimal information provided to EMInS, and problematic patient tracking mechanisms.

CNS is addressing this finding and deficiency in a manner consistent with its issues management procedures, principally via PER 2015-0218 although other related PERs from 2015 and 2017 were used.

The significant corrective actions in this PER include:

- Developing checklists for each ERO position
- Implementing EMInS
- Revising the relevant procedures, such as PX-5351, *Consequence Assessment Team Checklist*; PX-5349, *Recovery Manager Checklist*; PX-5625, *EOC Coordinator Checklist*; WP-EM-0374, *Terminating and Recovery*; and PX-6041, *Operational Emergency Termination Worksheet*
- Training ERO members on procedural changes
- Conducting drills to reinforce knowledge.

CNS has made significant progress in resolving this finding. Draft revisions of procedures are mostly appropriate and CNS conducted training and drills to improve information flow. CNS has also leveraged technological solutions, via further additions to EMInS. The corrective actions that are completed and in progress are well-designed to improve CNS's ability to provide continuous, effective, and accurate communications among response venues.

### **5.3.5 Summary – Open Findings**

CNS is effectively implementing its issues management program to resolve the findings, but CAPs remain a work in progress. Adequate CARs and CAPs are in place and approved by NPO, lessons learned are developed, and corrective actions are being implemented as scheduled. Although EA observed that some draft documents need further attention before finalization, the ongoing activities are appropriate. Establishing a capability to conduct a sitewide evacuation is the most significant challenge for CNS in resolving these past findings.

## **5.4 Conclusion**

Overall, CNS is effectively implementing a robust process for making emergency management program improvements. With the exception of sitewide evacuation, CNS has adequately closed three of the previous findings that EA reviewed and implemented related DNFSB commitments. CNS independent verification reviews are significantly improved, and records indicate that these reviews have identified additional corrective actions to further improve the Pantex Plant emergency management program. Likewise, the CNS effectiveness reviews are more rigorous, and completed corrective actions have been tested using performance-based techniques. NPO has also been instrumental in successfully closing these findings via its review and approval of CAPs and closure packages. EA observed some instances where draft documents need minor corrections or additions to address the findings. Although these are items that CNS might be expected to identify via its verification and effectiveness reviews when these ongoing activities are complete, EA provided suggested improvements. With the exception of the development of an effective sitewide evacuation capability, CNS actions for the open 2017 findings are on track.

## **6.0 FINDINGS**

EA did not identify any findings during this assessment.

## **7.0 OPPORTUNITIES FOR IMPROVEMENT**

EA did not identify any opportunities for improvement during this assessment.



## **Appendix A Supplemental Information**

### **Dates of Assessment**

Onsite Assessment: July 24-26, 2018, and August 28-30, 2018

### **Office of Enterprise Assessments (EA) Management**

William A. Eckroade, Acting Director, Office of Enterprise Assessments  
Thomas R. Staker, Director, Office of Environment, Safety and Health Assessments  
William E. Miller, Deputy Director, Office of Environment, Safety and Health Assessments  
C.E. (Gene) Carpenter, Jr., Director, Office of Nuclear Safety and Environmental Assessments  
Kevin G. Kilp, Director, Office of Worker Safety and Health Assessments  
Gerald M. McAteer, Director, Office of Emergency Management Assessments

### **Quality Review Board**

Steven C. Simonson  
John S. Boulden III  
Michael A. Kilpatrick  
Kevin L. Nowak

### **EA Site Lead for Pantex Site**

Jimmy Dyke

### **EA Assessors**

Gerald McAteer – Lead  
Anthony Parsons  
James Colson  
Dirk Foster  
Thomas Rogers

## Appendix B Key Documents Reviewed and Interviews

### Documents Reviewed

- DESKAID-0688, *PER Modifications, Additions, Cancellations, and Due Date Extensions*, Issue 8, undated
- DNFSB Implementation Plan Milestone 6.1.4, 11/10/2016
- E-PROC-0006, *CNS Issues Management Process*, Rev. 2, 3/19/2018
- E-PROC-3117, *The CNS Enterprise Emergency Services Emergency Management Readiness Assurance Program*, Issue 1, draft
- EM-PLN-0019, *Pantex Plant Comprehensive Emergency Management Plan*, Issue 11, draft
- EM-PLN-0088, *Pantex Incident Management Plan*, Rev. 2, 3/19/2018; Archived
- JOBAID, *Incident Command/Emergency Operations Center Briefing Job Aid*, Issue 1, undated
- MNL-352189, *General Employee Response Manual*, Issue No. 8, draft
- MNL-EM-352190, *Operations Center Manual*, Issue 6, undated
- MNL-EM-352242 *Emergency Management Emergency Response Organization Manual*, Issue 4, draft
- MNL-EM-352244, *Emergency Facilities and Equipment Program Manual*, Issue 3, 4/5/2018
- MNL-EM-352247, *Emergency Management CAT Manual*, Issue 3, draft
- MNL-EM-352248, *Protective Actions and Re-Entry*, Issue 3, draft
- MNL-EM-352272, *Pantex Emergency Services Conduct of Operations Manual*, Issue 2, draft
- MOU Between Carson County, Texas and the U.S. DOE, 4/11/2018
- MOU Between Armstrong County, Texas and the U.S. DOE, 6/6/2018
- MOU Between City of Amarillo, Texas and the U.S. DOE, 9/12/2017
- PER-2015-0218 *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding & NA-SH Report Finding*, 10/10/2017
- PER-2015-0222 *Closure Package Review & Approval for EA Review of the Pantex Plant 2014 Full Participation Exercise Finding 7*, 1/23/2018
- PER-2016-0219, *Closure Packet EA Finding – CNS Does Not Validate All Elements of the Emergency Management Program Over a Five-Year Period*, 4/25/2017
- PER-2016-0247, 6/19/2018 *Closure Package EA Review of the Pantex Plant 2015 Full Participation Exercise Finding F-CNS-C1*, 1/8/2018
- PER-2015-0608, 10/24/2017 *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding #2*, 10/24/2017
- PER-2015-0609, 10/10/2017 *CAR/CAP for EA Assessment of the Pantex Plant's 2017 Full-Scale Exercise – June 2017 Finding #3*, 10/10/2017
- PX-OG-006, *Incident Management System*, Issue 008, 4/26/2017
- PX-5527, *Initial News Release*, Issue 11, draft
- PX-5330, *ICT Checklist*, Issue 12, undated
- PX-5349, *Recovery Manager Checklist*, Issue 9, undated
- PX-5351, *CAT Checklist*, Issue 10, draft
- PX-5625, *EOC Coordinator Checklist*, Issue 8, undated
- PX-5921, *Executive Team Checklist*, Issue 8, undated
- PX-5923, *Emergency Communication Team Checklist*, Issue 9, undated
- PX-6041, *Operational Emergency Termination Worksheet*, Issue 3, undated
- RSD-TSD-120, *RSD Emergency Action Guidance*, Issue No. 3, 02/07/2017
- SS&ES-FY16-1620651-4989-SS&ES, *Pantex Plant Five-Year Drill and Exercise Plan*, Rev. No. 1, 02/01/2017
- SSPLN-0047, *SECON Response Plan*, Rev. 4, 6/27/2018

- SSPLN-0048, *Pantex Plant Evacuation Plan*, Issue No. 4, draft
- WP-0119, *Radiological Contingency*, Issue 5, undated
- WP-EM-0365, *Emergency Response Organization Work Practice*, Issue 1, archived
- WP-EM-0374, *Terminating and Recovery*, Issue 1, 12/21/2016

#### **Interviews**

- Pantex Emergency Services, Director
- Pantex Emergency Management, Manager
- Pantex Emergency Management Program/Operations, Section Manager
- Pantex Emergency Services Support, Manager
- Pantex Emergency Management Readiness Assurance Specialist
- Pantex Radiation Safety Department Scientist
- Pantex Technical Planner