



# **Independent Assessment of the Emergency Management Program at Sandia National Laboratories – New Mexico**

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## Acronyms

ABW	377 <sup>th</sup> Air Base Wing
ACRR	Annular Core Research Reactor
AHS	All-hazards Survey
ARF	Airborne Release Fraction
BNA	Baseline Needs Assessment
BSA	Base Support Agreement
CAP	Corrective Action Plan
CRAD	Criteria and Review Approach Document
CY	Calendar Year
DNF	Defense Nuclear Facility
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EAL	Emergency Action Level
ED	Emergency Director
EEG	Exercise Evaluation Guide
EMCC	Emergency Management Communications Center
EOC	Emergency Operations Center
EPA	Environmental Protection Agency
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
ERT	Emergency Response Team
FBI	Federal Bureau of Investigation
FY	Fiscal Year
HAZMAT	Hazardous Material
HWHU	Hazardous Waste Handling Unit
IC	Incident Commander
JIC	Joint Information Center
KAFB	Kirtland Air Force Base
KFES	Kirtland Fire and Emergency Services
MOA	Memorandum of Agreement
NFPA	National Fire Protection Association
NMDHSEM	New Mexico Department of Homeland Security and Emergency Management
NNSA	National Nuclear Security Administration
NTESS	National Technology and Engineering Solutions of Sandia, LLC
OFI	Opportunity for Improvement
OST	Office of Secure Transportation
PAC	Protective Action Criteria
PAR	Protective Action Recommendation
RAP	Radiological Assistance Program
REAC/TS	Radiation Emergency Assistance Center/Training Site
SAR	Sandia Agency Representative
SCC	Security Command Center
SFO	Sandia Field Office
SFS	Security Forces Squadron
SNL-NM	Sandia National Laboratories – New Mexico
SPR	Sandia Pulsed Reactor
TA	Technical Area
TEL	Threshold of Early Lethality
USAF	U.S. Air Force

# INDEPENDENT ASSESSMENT OF THE EMERGENCY MANAGEMENT PROGRAM AT SANDIA NATIONAL LABORATORIES – NEW MEXICO

## Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment of the emergency management program at Sandia National Laboratories – New Mexico (SNL-NM) from January to March 2024. This assessment evaluated the effectiveness of both the SNL-NM operating contractor, National Technology and Engineering Solutions of Sandia, LLC (NTESS), and the Sandia Field Office (SFO) in managing and maintaining the SNL-NM emergency management program. Selected elements of the emergency management program were evaluated, including capabilities, plans and procedures, technical planning basis, and exercises and issues management under readiness assurance.

EA identified the following strengths:

- SFO and NTESS have constructed and equipped a new Emergency Operations Center to enhance and enable interoperability and response.
- NTESS staffed an emergency response organization consisting of personnel with the skills and disciplines necessary for mitigating emergency incidents.
- Site issues management procedures require the accountable manager/issue owner to ensure that an effectiveness review is completed for each issue before closure in addition to verification/validation of corrective actions.

EA also identified several weaknesses in the emergency management program. These weaknesses were classified as findings that warrant a high level of attention from SFO and NTESS management. These findings include:

- NTESS has not conducted an exercise to validate critical response capabilities needed for a high consequence scenario that involves multiple response elements and results in offsite impacts during the six-year period evaluated. (Finding)
- NTESS did not validate alternate facility capabilities and offsite interface capabilities needed to respond to the hazards identified in the Emergency Planning Hazards Assessments (EPHAs) during the six-year period evaluated. (Finding)
- NTESS has not updated its emergency plan when significant changes occurred and has not adequately established and enabled an integrated and coordinated comprehensive emergency management system. (Finding)
- NTESS has not adequately identified hazards and the potential consequences from unplanned releases of (or loss of control over) hazardous materials identified in the hazards survey. (Finding)
- NTESS has not fully developed and implemented an exercise program that validates the capability and proficiency of the emergency response organization to respond to the full spectrum of hazardous emergencies identified in the EPHAs. (Finding)
- SFO has not ensured that NTESS maintained a baseline needs assessment (BNA) to accurately define and provide emergency response capabilities, as necessary, to meet site needs as established by the BNA, safety basis requirements, and applicable regulations, codes, and standards. (Finding)
- SFO has not ensured that information has been provided to local and state agencies on EPHA scenario distances at which protective action criteria would be exceeded and plume arrival times at specific offsite receptors; doing so would ensure that offsite organizations would be able to make informed decisions regarding the appropriate level of preparedness and response, including planning for offsite radiological monitoring support to local and state governments for General Emergencies involving radiological material releases. (Finding)
- SFO has not established and maintained a location for the joint information center outside of the emergency planning zone. (Finding)

- SFO has not ensured that appropriate emergency management procedures have been developed and implemented as related to Kirtland Fire and Emergency Services (KFES) response planning and compliance with DOE requirements. (Finding)
- SFO has not ensured the development and implementation of mutual assistance agreements with state, tribal, and local authorities. (Finding)
- SFO does not ensure the development of corrective actions for KFES findings identified during evaluations, assessments, drills, exercises, and actual emergencies for SNL-NM. (Finding)

In summary, SFO and NTESS have made progress in self-identifying gaps in their emergency management program. They have also taken steps to make improvements and mitigate known issues, including establishing a base support agreement with Kirtland Air Force Base, a memorandum of understanding with Kirtland Fire and Emergency Services, reorganization and acquisition of personnel and resources, and the construction of a new Emergency Operations Center. However, this assessment identified numerous areas of concern that degrade the capabilities to respond to all hazard emergencies at SNL-NM. Until the weaknesses identified in this report are addressed or effective mitigations are put in place, SFO and NTESS cannot ensure an effective response to all-hazards incidents and events, particularly those that have offsite consequences. As such, EA plans to conduct a follow-up effectiveness-based assessment (programmatic and exercise performance evaluation) during either fiscal year 2025 or 2026.

# INDEPENDENT ASSESSMENT OF THE EMERGENCY MANAGEMENT PROGRAM AT SANDIA NATIONAL LABORATORIES – NEW MEXICO

## 1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Emergency Management Assessments, within the independent Office of Enterprise Assessments (EA), assessed the effectiveness of the Sandia National Laboratories – New Mexico (SNL-NM) emergency management program. This assessment evaluated the effectiveness of both the SNL-NM operating contractor, National Technology and Engineering Solutions of Sandia, LLC (NTESS), and the Sandia Field Office (SFO) in managing and maintaining the SNL-NM emergency management program. Selected elements of the emergency management program were evaluated, including capabilities, plans and procedures, technical planning basis, and exercises and issues management under readiness assurance. This assessment was conducted in accordance with the *Plan for Independent Assessment of the Emergency Management Program at the Sandia National Laboratory, January – March 2024*. The assessment was conducted from January to March 2024.

SFO provides Federal oversight of the SNL-NM emergency management program. NTESS manages and operates the SNL-NM site-level emergency preparedness program in accordance with the hazardous material (HAZMAT) emergency management requirements in DOE Order 151.1D, *Comprehensive Emergency Management System*. In addition, SFO has an interagency agreement with the U.S. Air Force (USAF)/377<sup>th</sup> Air Base Wing (ABW) at Kirtland Air Force Base (KAFB) to provide force protection and mutual assistance for incident, fire, and emergency response.

## 2.0 METHODOLOGY

The DOE independent oversight program is described in and governed by DOE Order 227.1A, *Independent Oversight Program*, which EA implements through a comprehensive set of internal protocols, operating practices, assessment guides, and process guides. This report uses the terms “deficiencies, findings, and opportunities for improvement (OFIs)” as defined in the order.

As identified in the assessment plan, EA used the following sections of criteria and review approach document (CRAD), EA CRAD 33-09, Revision 0, *DOE O 151.1D Emergency Management Program: Program Administration*, 4.1; *All Hazards Planning Basis*, 4.2; *Readiness Assurance*, 4.14; and *Exercises*, 4.15 to guide this assessment.

EA examined key documents, such as site procedures, manuals, analyses, and policies. EA also interviewed key personnel responsible for developing and executing the associated programs and walked down significant portions of selected SNL-NM facilities, focusing on emergency preparedness. The members of the assessment team, the Quality Review Board, and the management responsible for this assessment are listed in appendix A.

EA conducted a previous assessment of SNL-NM’s emergency management exercise program in 2018, as documented in the EA report *Office of Enterprise Assessments Assessment of Sandia National Laboratories/New Mexico Emergency Management Exercise Program, August 2018*. This current assessment examined the completion and effectiveness of corrective actions for the EA findings described in the previous assessment. Results of the corrective action review are included in section 3.6 of this report.

## **3.0 RESULTS**

### **3.1 Response Capabilities**

Response capabilities are an identified resource necessary to effectively respond to a DOE incident, as analyzed during site-specific emergency planning; the resource is required to meet site needs as established by DOE orders, the baseline needs assessment (BNA), safety basis requirements, and applicable regulations, codes, and standards. These capabilities and resources must be readily available so that the emergency management plan can be implemented for initial and ongoing emergency response and must include: (1) a site-level emergency response organization (ERO) structure; (2) as necessary, a facility-level response capability; (3) emergency facilities and systems capabilities to support effective response to the Emergency Planning Hazards Assessment (EPHA) hazards; and (4) resources from local, state, and Federal organizations that are responsible for emergency response, or that may be used to supplement response capabilities based on emergency planning or formal agreements. SNL-NM EPHAs provided the technical basis to identify and define hazards, emergency planning, personnel, resources, facilities, and systems-related capabilities. In addition, for defense nuclear facilities (DNFs), such as the facilities in Technical Area (TA)-V, potential events ranging from low-consequence, high-probability events to high-consequence, low-probability events are included to ensure a comprehensive picture of the types of events and the range of associated consequences that could occur at the facility.

NTESS conducted a combined total of 11 functional and full-scale exercises in the last six-years. Typically, EA reviews five years of exercises for validation of site capabilities, consistent with DOE Order 151.1D scheduling requirements; however, due to the COVID-19 pandemic, NTESS did not conduct exercises in 2020. To adjust for the COVID impact, EA considered exercises conducted from calendar year (CY) 2018 through fiscal year (FY) 2023 to achieve a full five years of exercise results. Additionally, NTESS changed from scheduling exercises on a CY basis to a FY basis starting in 2022. NTESS conducted an annual full-scale exercise each year during the six-year period with the exception of CY 2020. The postulated exercise scenarios involved the spectrum of EPHA HAZMAT present at the site; two of these exercises included participation by local, state, and Federal organizations including a scenario postulating a malevolent act requiring an integrated ERO response with the Federal Bureau of Investigation (FBI). Additionally, during the six-year period, NTESS conducted exercises at each of the DNFs in TA-V. Finally, NTESS evaluated its responses to two actual site incidents that were credited as a validation activity because NTESS categorized them as an operational emergency, implemented the SNL-NM emergency plan, and documented each incident's response and critique in after-action reports, as required by DOE Order 151.1D.

Section 3.1.1 discusses the response capabilities determination while sections 3.1.2 through 3.1.5 discuss response capability validations specific to ERO cadres and teams, response facilities and systems, and offsite response interfaces, respectively. SNL-NM has capabilities for 11 unique site teams, 3 DNF or EPHA facility emergency response teams (ERTs), 11 primary or alternate response facilities and systems, and 14 offsite response interfaces.

#### **3.1.1 Response Capabilities Determination**

This portion of the assessment evaluated whether SFO and NTESS defined, established, and then validated the SNL-NM emergency response capabilities using scripted, scenario-driven, operations-based operational emergency exercises designed to assess, evaluate, and improve performance in prevention, protection, mitigation, response, and recovery capabilities in a risk-free environment, consistent with DOE requirements.

SFO and NTESS have developed EM-EPHA-1, *Technical Area-V Facility Emergency Planning Hazard Assessment*; EM-TO-001, *Sandia National Laboratories, New Mexico, Technical Area-V Facility Emergency Planning Hazards Assessment Temporary Order*; EM-EPHA-2, *858 Complex Emergency Planning Hazard Assessment*; and EM-EPHA-3, *Hazardous Waste Handling Unit/Transportation Emergency Planning Hazards Assessment*, which provide the technical basis for emergency planning and preparedness. SFO and NTESS used EPHA results to establish emergency response capabilities in EM-PLAN-001, *Sandia National Laboratories, New Mexico Emergency Management Plan*, and the *Sandia National Laboratories, New Mexico Emergency Response Baseline Needs Assessment*, in accordance with safety basis requirements and applicable regulations, codes, and standards. SNL-NM emergency response capabilities consist of an ERO that is a composite structure consisting of an integrated line and staff organization that responds to emergency incidents within the SNL-NM site boundary. In addition, the roles of local, state, and Federal agencies and organizations responsible for supplementing onsite response capabilities are documented in formal assistance agreements with individual external response organizations and agencies.

The TA-V EPHA identified radiological material as the primary emergency planning concern. The EPHA's unmitigated bounding incident documents a potential for radiological consequences above protective action criteria (PAC) for 6.3 miles from the release point. In addition, Environmental Protection Agency (EPA) ingestion pathway deposition criteria could be exceeded for 25 miles. SFO and NTESS identified response capabilities in the SNL-NM emergency plan to address the bounding incident and other less consequential incidents. Nevertheless, contrary to DOE Order 151.1D, attachment 4, paragraph 15.b, during the six-year period NTESS did not conduct an exercise to validate some response capabilities needed for a high-consequence scenario that involved multiple response elements and resulted in offsite impacts. (See **Finding F-NTESS-1**.) Consequently, SFO and NTESS did not validate if some response capabilities can be effectively implemented to respond to unmitigated bounding incidents safely and effectively, such as:

- Planning and coordinating with the City of Albuquerque emergency management, Bernalillo County emergency management, and the New Mexico Department of Homeland Security and Emergency Management (NMDHSEM) for high-consequence scenarios
- Radiological monitoring for offsite areas beyond the SNL-NM site boundary using the Radiological Assistance Program (RAP) as the primary capability
- Coordinating with the Radiation Emergency Assistance Center/Training Site (REAC/TS) for potential onsite and offsite plutonium uptakes
- Implementing the emergency public information (EPI) process for bounding incidents.

Importantly, in 2020 SFO changed the provider of many field response capabilities from NTESS to the USAF; SFO established a formal interagency agreement with the USAF/ABW for force protection and mutual assistance for incident, fire, and emergency response at SNL-NM, in accordance with interagency base support agreement (BSA) FB4469-610, 2020, *United States Air Force (USAF)/377<sup>th</sup> Air Base Wing (ABW) and the United States Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Sandia Field Office (SFO): Force Protection and Mutual Assistance for Incident, Fire and Emergency Response*, dated September 24, 2020. USAF response capabilities are provided to SNL-NM as identified in the BSA and *DOE/NNSA Memorandum of Agreement (MOA) FB4469-20310-578, Force Protection and Mutual Assistance for Incident, Fire and Emergency Response*, dated September 24, 2020 (further discussed in section 3.2). DOE Order 151.1D requires SFO and NTESS to establish and maintain effective first responder capabilities to mitigate all hazard emergencies, including emergency medical, fire, HAZMAT, and applicable rescue emergencies as derived from the BNA.



NTESS issued a new BNA on August 31, 2020. SFO approved the new BNA on January 5, 2021, without requiring NTESS to assess the revised capabilities established through the BSA and MOA, or to issue a new BNA. DOE Order 420.1C, *Facility Safety*, requires a BNA, based upon DOE-STD-1066-2016, *Fire Protection*, which indicates the site should prepare a “gap analysis” document that describes the site services required and the basis for the required services such as facility construction and hazards, special hazards or other special needs, expected frequency of required need, remoteness of facility, availability of aid from other jurisdictions, and code requirements. DOE-STD-1066-2016 emphasizes that consideration of two National Fire Protection Association (NFPA) standards, (NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, and NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*) is important because focusing on DOE’s relationship with local emergency service providers could lead to the standards’ exclusion under the assertion that the offsite emergency response groups have either already met the provisions of those standards or, as is in this case, that the USAF technical implementation guides are equivalent to those standards.

Contrary to DOE Order 151.1D, attachment 3, paragraph 3.e, and DOE Order 420.1C, attachment 2, chapter II, paragraph 3.e, SFO has not ensured that NTESS maintained a BNA to accurately define and provide emergency response capabilities, identified by the BNA, safety basis requirements, and applicable regulations, codes, and standards. (See **Finding F-SFO-1**.) Consequently, because NTESS has not updated the BNA to reflect current emergency response capabilities, the site emergency plans, fire hazard analyses, and safety basis documentation are potentially adversely affected. Similarly, NTESS has not defined and integrated some facility response capabilities into the site emergency plan and the BNA, which are identified in EM-PLAN-016, *SNL Incident Management and Coordination Plan*. Also, DOE-STD-1066-2016, sections 6.1.3 through 6.1.5, infers that SFO and NTESS need to evaluate the response service, whether the resources are provided by onsite or offsite forces (or a combination thereof) and identify the differential between the NFPA 1710 and 1720 requirements and the actual capabilities. DOE Order 151.1D also requires sites with an emergency management HAZMAT program to coordinate with local, state, tribal, and Federal organizations and to ensure that information from EPHA analyses is provided to the appropriate local and state agencies on EPHA scenario distances at which PAC would be exceeded and plume arrival times at specific offsite receptors. This ensures that offsite organizations are able to make informed decisions regarding the appropriate level of preparedness and response. However, contrary to DOE Order 151.1D, attachment 4, paragraphs 7.c and 7.d, SFO has not provided this information to local and state agencies and has not enabled adequate planning for offsite radiological monitoring support to local and state governments for General Emergencies involving radiological material releases. (See **Finding F-SFO-2**.) Consequently, SFO and NTESS have not validated adequate planning and capabilities to establish and maintain effective interfaces with offsite officials for a significant radiological emergency.

### **Response Capabilities Determination Conclusions**

SFO and NTESS appropriately used EPHAs to identify personnel, resources, facilities, and systems-related capabilities in the SNL-NM emergency plan and the BNA for responding to SNL-NM HAZMAT incidents. However, none of the 11 NTESS exercises used for validating capabilities during the assessed six-year period confirmed the adequacy of response to a postulated high-consequence incident that involved multiple response elements, and resulted in offsite effects, as required. In addition, SFO has not ensured NTESS maintained an updated BNA that reflects emergency response capabilities established through the new interagency agreement with the USAF/ABW, which are needed for emergency planning, fire hazard analyses, and safety basis documentation. Furthermore, SFO and NTESS did not provide EPHA information to local and state agencies that is necessary for offsite preparedness and response

planning. Consequently, SFO and NTESS have not validated some critical response capabilities required for a safe and effective response to an unmitigated bounding incident.

### **3.1.2 Emergency Response Organization**

This portion of the assessment evaluated whether SFO and NTESS have established and validated the ERO structure and its emergency response capabilities, as required by DOE Order 151.1D. In accordance with the order, an ERO is required to consist of personnel with capabilities and resources based on the all-hazards planning basis. These capabilities and resources must be readily available so that the emergency management plan can be implemented for initial and ongoing emergency response. The site is required to designate and train a primary and at least one alternate for each ERO position, excluding first responders in the field. A site must also establish an effective first responder capability to mitigate all emergencies, including emergency medical, fire, HAZMAT, and applicable rescue emergencies as derived through the BNA, all-hazards survey (AHS), and threat and hazard identification risk assessment. Currently, trained and qualified SFO and NTESS personnel fill staff positions within the ERO.

#### **Protective Force**

NTESS provides facility access control and protection of site assets. Agreements are in place with Federal and state authorities to provide additional personnel, equipment, and capabilities, if needed. NTESS validated the protective force response capabilities in 11 exercises and 2 actual incidents during the six-year period.

#### **Incident Commanders**

Kirtland Fire and Emergency Services (KFES) and the 377<sup>th</sup> Security Forces Squadron (SFS) provide command and control for most onsite incidents, consistent with the National Incident Management System incident command system. Except for some types of security incidents, this response capability is provided in accordance with the interagency BSA FB4469-610, 2020. The initial assignment of the incident commander (IC) role depends on the nature of the incident. For medical, fire, wildland fire, and HAZMAT incidents, KFES becomes the IC. For most security incidents, the 377<sup>th</sup> SFS becomes the IC. However, where NTESS has initiated a response to an SNL-NM facility security-related incident, SFO and NTESS will maintain responsibilities as the lead organizations for hostile adversary situations involving SFO, or SNL-NM national security interests within the confines of the SFO or SNL-NM property and/or areas. NTESS adequately validated the IC response capabilities in 11 exercises and 2 actual incidents during the six-year period.

#### **Emergency Management Communications Center Staff**

NTESS has adequately established and maintains SNL-NM emergency management communications center (EMCC) staff to receive reports of potential emergency conditions from the field, and provide emergency notifications, emergency dispatches, and coordination. In addition, EMCC responsibilities include notifying the protective force, KFES, and the 377<sup>th</sup> SFS; providing protective action notification to onsite personnel; categorizing and classifying emergencies; performing offsite notifications and issuing protective action recommendations (PARs); activating the ERO; and providing overall direction and coordination of the emergency response. NTESS has stationed a duty officer in the EMCC to manage and coordinate initial site response actions. Except for the downgrade or termination of incidents that cause activation of the ERO, the duty officer has the authority of the Emergency Operations Center (EOC) emergency director (ED) and SFO Senior Federal Official, as appropriate, until ERO members staff these positions. NTESS validated the EMCC staff response capabilities in 11 exercises and 2 actual incidents during the six-year period.

## **Security Command Center Staff**

NTESS has established and maintains a security command center (SCC) staff that provides direct support to protective force members in the field when they are responding to a security-related or law enforcement incident and supports the KAFB ICs for non-protective force related incidents. NTESS validated the SCC staff response capabilities in two exercises and one actual incident during the six-year period.

## **Sandia Agency Representative**

NTESS has adequately established and maintains a Sandia Agency Representative (SAR) who is assigned to the SNL-NM incident command post to assist with coordination of NTESS resources during the emergency response. The SAR has the authority to make decisions on matters affecting SNL-NM's participation in the incident. During an incident, the SAR reports directly to the IC in accordance with MOA FB4469-20310-578. NTESS defines the SAR's role as support to KFES that provides coordination and subject matter expertise as requested by KFES. In addition, the SAR serves as the primary coordination and communications point with the SNL-NM EMCC and EOC, assisted by the SAR support officer who provides communications support to the SAR at the incident command post. In addition, the SAR has access to a site-level ERO that consists of the following:

- Radiological response coordinator and support staff
- Nuclear Safety Technologies organization that includes seven nuclear criticality safety engineers
- Environment, Safety, and Health environmental compliance and permitting organization that consists of a 10-member environmental release, response, and reporting team and 2-member Resource Conservation and Recovery Act team
- Thirty industrial hygienists
- Sixty Environment, Safety, and Health coordinators.

SAR support is provided from the 858-HAZMAT ERT, which includes up to 20 ERT members during day shifts, 2 people on the second shift, and 1 person on third shift. The 858-HAZMAT ERT is separate from the 858 Complex facility-level response, which is discussed in section 3.1.3. NTESS validated the SAR response capabilities in seven exercises and two actual incidents during the six-year period. Additionally, NTESS validated the 858-HAZMAT ERT in three exercises during the six-year period, and three of the other five SAR support teams in exercises from 2021 through 2023.

## **Emergency Operations Center Staff**

SFO and NTESS have adequately established and maintain an EOC staff organization that provides emergency management coordination, consequence assessment, field response operations coordination, notification and reporting, recovery planning, field monitoring operations, external coordination, offsite liaison capabilities, and EPI. SFO and NTESS collect, analyze, and share information; determine incident priority; support incident resource needs and requests; develop incident and EOC planning; support relevant incident management policies and interagency activities; coordinate with other operations centers and multiagency coordination groups; and coordinate with NTESS leadership, SFO, KAFB, and elected and appointed officials. The EOC staff operates from Building 801 or Building 6650. NTESS validated the EOC staff response capabilities in 11 exercises and 2 actual incidents during the six-year period.

## **Sandia Field Office Emergency Oversight**

SFO is included as part of the ERO and provides the final authorization to commit DOE and NNSA resources. The SFO Senior Federal Official provides guidance, approves releases of EPI and official situation reports, and concurs on incident termination. In addition, the Senior Federal Official approves the declaration of continuity of operations, if applicable, and approves requests for offsite support not covered by pre-existing agreements. NTESS validated the SFO emergency oversight staff response capabilities in one exercise during the six-year period.

## **Emergency Public Information Staff**

SFO and NTESS have adequately established and maintain an EPI staff that includes joint information center (JIC) staffing to disseminate information to the public during an emergency. The EPI staff provide resources for SFO, contractors, and other stakeholders to coordinate the timely exchange of information among internal representatives and other external organizations involved in a response. In addition, the EPI staff advises and counsels the SFO Senior Federal Official and EOC ED; drafts, secures approval for, and distributes incident messages; responds to media and public inquiries; monitors and disseminates information through social media; and coordinates media interviews and briefings. NTESS validated the EPI staff response capabilities in three exercises during the six-year period.

## **Employee Health Services**

NTESS has adequately established and maintains an onsite Employee Health Services team to staff the SNL-NM medical facility. The medical facility is located at Building 831 within TA-I and is equipped to handle personnel with non-life-threatening injuries, illnesses, or exposures, with or without contamination. Employee Health Services personnel provide primary emergency medical support response, and KFES provides secondary emergency medical support in accordance with MOA FB4469-20310-578. Emergency medical support is provided for basic, intermediate, and advanced life support, including triage, treatment, and transport to the appropriate healthcare facility. KFES is the primary service for coordinating, delivering, and landing emergency medical air assets, if requested. NTESS validated the Employee Health Services response capabilities in five exercises during the six-year period.

## **Radiation Protection Program Monitoring**

NTESS has adequately established and maintains radiological ERTs that provide 24/7 support to the IC (radiological contamination control, on-scene monitoring, and patient contamination monitoring) and onsite field monitoring. The response teams draw members from the radiological protection department. NTESS dispatches response teams to perform monitoring to determine safe evacuation routes and conduct onsite field monitoring within the SNL-NM site. In addition, response teams maintain close coordination with the EOC consequence assessment team to assess the immediate consequences of a radiological material release. NTESS validated the radiation protection program monitoring response capabilities in four exercises during the six-year period.

## **Industrial Hygiene Monitoring**

NTESS has adequately established and maintains chemical monitoring ERTs that provide 24/7 support to the IC (on-scene monitoring and patient contamination monitoring) and onsite field monitoring. The response teams draw members from the industrial hygiene department. NTESS dispatches response teams to perform monitoring to determine safe evacuation routes and conduct onsite field monitoring within the SNL-NM site. In addition, response teams maintain close coordination with the EOC consequence

assessment team to assess the immediate consequences of a HAZMAT release. NTESS validated the industrial hygiene monitoring response capabilities in four exercises during the six-year period.

### **Emergency Response Organization Conclusions**

SFO and NTESS utilize EPHAs to determine the required skillsets the SNL-NM ERO needs to mitigate emergencies at EPHA facilities. Additionally, NTESS tested the capabilities required by DOE Order 151.1D during the six-year period.

#### **3.1.3 EPHA Facility-Level Emergency Response**

This portion of the assessment evaluated whether NTESS has established and validated its facility-level emergency response structure and emergency response capabilities, as required by DOE Order 151.1D. In accordance with the order and as previously stated, a structure is required to consist of personnel with capabilities and resources based on the all-hazards planning basis. These capabilities and resources must be readily available so that the emergency management plan can be implemented for initial and ongoing emergency response. EPHA facilities that have facility-level response capabilities are required to evaluate facility-level emergency response capability and proficiency annually by initiating responses to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual incident. In addition, DNFs are required to annually conduct an exercise involving and evaluating the operations, emergency management, incident command, and EOC staff.

#### **Technical Area-V Facility**

SFO and NTESS have appropriately prepared, maintained, and used the TA-V EPHA for emergency planning purposes in accordance with DOE Order 151.1D. The EPHA includes the identification and characterization of HAZMAT specific to buildings, the analyses of potential accidents or incidents, and the evaluation of potential consequences. TA-V is made up of three nuclear and radiological buildings that includes the Annular Core Research Reactor (ACRR), Building 6588; Sandia Pulsed Reactor (SPR), Buildings 6590, 6592, 6593; and Auxiliary Hot Cell (AHC), Building 6597. The ACRR and SPR are hazard category 2 nuclear facilities, and AHC is a hazard category 3 nuclear facility. SNL-NM DNFs are in TA-V and consist of the ACRR, the AHC facility, and the SPR facility. The SPR is no longer in operation. The TA-V facility manager leads the facility-level response to abnormal operating conditions and implements abnormal event operating procedures, emergency operating procedures, and integrates an emergency response from outside the facility. The facility-level response supports the KFES IC, who has responsibility for emergency incident activities, strategies, objectives, and tactics, including overall authority for conducting incident operations. NTESS validated its TA-V facility-level response capability annually during the six-year period.

#### **858 Complex**

SFO and NTESS have appropriately prepared, maintained, and used the 858 Complex facility-specific EPHA for emergency planning purposes in accordance with DOE Order 151.1D. The EPHA includes the identification and characterization of HAZMAT specific to buildings, analyses of potential accidents or incidents, and the evaluation of potential consequences. The 858 Complex is made up of Buildings 858N/858H, the Silicon Fabrication Facility, and Building 858EF, the Microsystems Fabrication Facility. The 858 Complex facility manager leads the facility-level response to abnormal operating conditions and implements abnormal event operating procedures, emergency operating procedures, and integrates an emergency response from outside the facility. A facility emergency response supports the KFES IC, who

has responsibility for emergency incident activities, strategies, objectives, and tactics, including overall authority for conducting incident operations.

During the six-year period, NTESS validated its 858 Complex facility-level response capability during CY 2018, CY 2021, FY 2022, and FY 2023. However, in CY 2019, NTESS did not validate its 858 Complex facility-level response capability in an exercise by initiating response to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response or to an actual incident. Contrary to DOE Order 151.1D, attachment 4, paragraph 15.e, NTESS did not annually validate all 858 Complex facility-level emergency response capabilities during the six-year period. (See **Finding F-NTESS-2.**) Consequently, NTESS did not ensure the readiness annually of the facility-level capabilities in CY 2019.

### **Hazardous Waste Handling Unit/Transportation Emergency Planning Hazards Assessment**

SFO and NTESS have appropriately prepared, maintained, and used the Hazardous Waste Handling Unit (HWHU)/Transportation EPHA for emergency planning purposes in accordance with DOE Order 151.1D. The EPHA includes the identification and characterization of HAZMAT specific to buildings, analyses of potential accidents or incidents, and evaluation of potential consequences. The HWHU is made up of Buildings 958 and 959. The HWHU facility manager leads the facility emergency response to abnormal operating conditions and implements abnormal event operating procedures, emergency operating procedures, and integrates an emergency response from outside the facility. The facility-level response supports the KFES IC, who has responsibility for emergency incident activities, strategies, objectives, and tactics, including overall authority for conducting incident operations.

During the six-year period, NTESS validated its HWHU facility-level response capability during FY 2022. However, NTESS did not validate its HWHU facility-level response capability in an exercise by initiating response to simulated, realistic emergency situations/conditions in a manner that, as nearly as possible, replicates an integrated emergency response to an actual incident during CY 2018, CY 2019, CY 2021, and FY 2023. Contrary to DOE Order 151.1D, attachment 4, paragraph 15.e, NTESS did not annually validate its HWHU facility-level emergency response capabilities during the six-year period. (See **Finding F-NTESS-2.**) Consequently, NTESS did not ensure the readiness annually of the facility-level capabilities in CY 2018, CY 2019, CY 2021, or FY 2023.

### **EPHA Facility Emergency Response Conclusions**

NTESS has adequately established and maintains EPHA facility-level response capabilities, as required by DOE Order 151.1D. NTESS validated the TA-V facility-level response capability annually during the six-year period. However, NTESS did not validate the 858 Complex and HWHU facility-level response capabilities annually to ensure the annual readiness for responding to the hazards identified in these two facilities.

#### **3.1.4 Response Facilities and Systems**

This portion of the assessment evaluated whether SFO and NTESS have established, maintained, and validated emergency facilities and systems capabilities commensurate with the associated hazards and threats identified in the all-hazards planning basis. Also assessed were other important emergency response facilities and systems identified by SFO and NTESS in emergency plans and procedures.

## **Emergency Operations Center**

NTESS adequately maintains an EOC located in Building 801 within TA-I. Accessible on a 24-hour basis, the EOC is the primary facility for coordinating emergency response and mitigation activities with offsite state, local, and Federal agencies and organizations. The EOC is a dedicated facility with a command room and team rooms that are equipped with communications systems for connecting with fire, medical, and other response teams. The EOC has equipment and systems that allow the use of onsite and offsite meteorological data for consequence assessment of incidents with potential or actual HAZMAT involvement. Basic functions performed in the EOC include conducting incident assessments, supporting field response, reviewing protective actions, and coordinating offsite interfaces. Throughout the EOC, NTESS maintains systems and equipment needed to support EOC activities, including an information management system for collecting and disseminating incident information; non-secure and secure communication equipment with multiple primary and backup communications capabilities; and mapping capabilities. If the EOC is unavailable for use during an SNL-NM emergency incident, the ERO is prepared to respond to the alternate EOC, virtually, or a combination of in-person and virtual response, enabled by remote access to the web-based Emergency Operations Center Software (WebEOC®). Uninterruptible power supply backup power is available for various communication systems at this location. NTESS validated the EOC response capabilities in 11 exercises and 2 actual incidents during the six-year period. SFO and NTESS have recently constructed and equipped a new EOC to enhance interoperability and response posture once fully operational.

## **Alternate Emergency Operations Center**

NTESS maintains an alternate EOC located in Building 6650 within TA-III with controlled access and secure communication channels, including information processing systems and backup communication hardware. Uninterruptible power supply backup power is also available for various communication systems at this location. However, contrary to DOE Order 151.1D, attachment 4, paragraph 15.a, NTESS did not validate its alternate EOC response capabilities during the six-year period. (See **Finding F-NTESS-2.**) Consequently, NTESS did not ensure the readiness of vital monitoring and communication systems required to protect the health and safety of personnel during an emergency incident that requires the use of the alternate EOC.

## **Emergency Management Communications Center**

NTESS adequately maintains an EMCC that provides a dedicated facility located in Building 801 within TA-I that serves as the coordination point for site activities and communications. NTESS continuously staffs the EMCC to provide monitoring, emergency, and dispatch functions. Notifications to workers and onsite and offsite responders are made from the EMCC. Numerous systems provide access to site meteorological data, multiple communications capabilities, and geographical information system computers. NTESS validated the EMCC response capabilities in 11 exercises and 2 actual incidents during the six-year period.

## **Alternate Emergency Management Communications Center**

NTESS maintains an alternate EMCC that provides a dedicated facility located in Building 6650 within TA-III that serves as the alternate coordination point for site activities and communications. NTESS does not continuously staff the alternate EMCC. Accessibility, controlled access, secure communications, and information processing systems are provided. The building is also equipped with backup communications using two radio consoles, landline phones with 911 capabilities, and a facsimile machine. Fire and facility control system alarms are installed for timely reporting of alarms. However, contrary to DOE Order 151.1D, attachment 4, paragraph 15.a, NTESS did not validate its alternate EMCC

response capability during the six-year period. (See **Finding F-NTESS-2.**) Consequently, NTESS did not ensure the readiness of vital monitoring and communication systems required to protect the health and safety of personnel during an emergency incident that requires the use of the alternate EMCC.

### **Joint Information Center**

SFO has not maintained the capability for a JIC located outside the SNL-NM emergency planning zone (EPZ). While SFO previously relied on the City of Albuquerque to maintain a JIC outside of the SNL-NM EPZ, the memorandum of understanding expired in 2016 (see section 3.2) and the physical space was repurposed by the City of Albuquerque. Contrary to DOE Order 151.1D, attachment 4, paragraph 11.d, SFO has not established and maintained a location for the JIC outside the EPZ where multiple jurisdictions can gather, process, and disseminate EPI during an emergency. (See **Finding F-SFO-3.**)

### **Alternate Joint Information Center**

SFO and NTESS adequately maintain a capability for an alternate JIC that uses the Media Relations and Communications offices at the Innovation Parkway Office Center (IPOC) at 1611 Innovation Parkway SE, Albuquerque, NM, east of the SNL-NM contractor gate on Eubank Boulevard SE. The IPOC is located within the SNL-NM EPZ. If access to IPOC is not feasible, NTESS may use its joint information system capability to provide limited EPI by connecting public information officers from participating agencies and media through email, cellular and landline telephones, faxes, video teleconferencing, web-based information systems, etc. NTESS validated the alternate JIC response capabilities in three exercises during the six-year period.

### **Sandia Medical Facility**

NTESS adequately maintains a medical facility at Building 831 within TA-I. The Sandia Employee Health Services Clinic is an ambulatory care clinic that provides treatment for a broad spectrum of illnesses and injuries, including care for minor medical procedures. The clinic contains treatment rooms, X-ray facilities, cardiac monitoring equipment, allergy shot services, and a clinical laboratory that is staffed by the occupational health services team. Chelation therapy treatment for personnel who are determined to have radiological material uptake can be performed at the onsite medical facility. The occupational medical director is responsible for the medical protocols used at SNL-NM. NTESS validated the Sandia medical facility response capabilities in five exercises during the six-year period.

### **Security Command Centers**

NTESS maintains SCCs which are staffed 24 hours a day. The primary command center is in Building 802 within TA-I. The alternate command center is in Building 6581 in TA-V. NTESS adequately validated the SCC response capabilities in two exercises during the six-year period. However, contrary to DOE Order 151.1D, attachment 4, paragraph 15.a, NTESS did not validate its alternate SCC response capability during the six-year period. (See **Finding F-NTESS-2.**) Consequently, NTESS did not ensure the readiness of vital monitoring and communication systems required to protect the health and safety of personnel during an emergency incident that requires the use of the alternate SCC.

### **Personnel Decontamination**

NTESS maintains an adequate personnel decontamination capability at Building 831 within TA-I. Employee Health Services personnel maintain a decontamination facility as part of the Employee Health Services Clinic. The clinic can treat grossly contaminated patients if the decontamination process is



manageable. NTESS validated the personnel decontamination response capabilities in three exercises during the six-year period.

### **Emergency Information System**

NTESS adequately maintains WebEOC as the primary information management system to collect and disseminate information during an emergency. WebEOC is a web-based emergency management system that provides access to real-time emergency incident information shared simultaneously throughout the ERO during the response and recovery phases of an emergency to ensure a common operating picture. NTESS has connected workstations in the EOC, EMCC, SCC, and other external agencies, using previously established and approved information technology protocols, as needed and with permission granted by SFO during an emergency. NTESS validated the emergency information system response capabilities in 11 exercises and 2 actual incidents during the six-year period.

### **Emergency Notification Systems**

NTESS adequately maintains the emergency notification systems for notifying and keeping personnel informed about emergencies at the SNL-NM site or offsite facilities. The emergency notification systems can send notifications to multiple devices, including work phones, cell phones, home phones, and pagers. Onsite notifications are made through the VESTA Alert System. EMCC personnel maintain and administer the emergency notification systems. NTESS adequately validated the emergency notification system response capabilities in 11 exercises and 2 actual incidents during the six-year period.

### **Response Facilities and Systems Conclusions**

Overall, NTESS adequately maintains capabilities for most emergency response facilities and key emergency management systems. In addition, NTESS validated most emergency facilities and systems capabilities during the six-year period. However, NTESS did not validate the capabilities of three key backup facilities (alternate EOC, alternate EMCC, and alternate SCC) during the six-year period. Importantly, SFO has not maintained the capability for a JIC located outside of the SNL-NM EPZ.

#### **3.1.5 Offsite Response Interface Capabilities**

This portion of the assessment evaluated whether SFO and NTESS have established, maintained, and validated coordination and response capabilities with the local, state, and Federal organizations that are responsible for emergency response or that may be used to supplement response capabilities based on hazards identified in the all-hazards planning basis, as required by DOE Order 151.1D.

#### **United States Air Force /377<sup>th</sup> Air Base Wing**

KFES provides core response services that include fire prevention, on-scene incident management, aircraft rescue and firefighting, structural firefighting, HAZMAT mitigation, wildland urban interface, technical rescue, and emergency medical services. BSA FB4469-610, 2020 and MOA FB4469-20310-578 do not require KFES to comply with DOE orders, standards, and guidelines. KFES follows USAF Instruction 32-2001, *FES Program*, and implements USAF Policy Directive 32-20, *Fire Emergency Services*, Department of Labor – Occupational Safety and Health Administration, Code of Federal Regulations, other USAF instructions, and NFPA standards as they are adopted and/or implemented by USAF technical implementation guides. In addition, KFES has mutual aid agreements with Albuquerque Fire Rescue, Bernalillo County Fire Department, U.S. Forest Service, and other emergency response agencies. The KFES IC is the only person who is authorized to request a mutual aid response from any of the listed agencies unless authority is relinquished due to other emergency commitments.

Similarly, MOA FB4469-20310-578 provides response services between the USAF, represented by the 377<sup>th</sup> ABW and the 377<sup>th</sup> SFS, to provide a basis for contingency response planning, coordination, and cooperation between the 377<sup>th</sup> SFS and DOE to deal with threats or overt attacks against SNL-NM organizations on KAFB; and to establish mutual force protection coordination and support requirements. The 377<sup>th</sup> SFS response provides command and control of all USAF responding forces. In addition, the 377<sup>th</sup> SFS provides resources (e.g., security forces, canine services, explosive ordnance personnel, additional radiological and HAZMAT response, first responders, negotiators) as available to respond to an incident. The 377<sup>th</sup> SFS also establishes roadblocks on KAFB public roadways and/or at KAFB motor vehicle gates to control access/egress consistent with USAF Force Protection protocol. Furthermore, the 377<sup>th</sup> SFS assists in the notification of “at risk” personnel inside the boundaries of KAFB and SNL-NM property in the event of a security incident and provides appropriate courses of action. The IC will coordinate life and safety incidents as appropriate depending on the SNL-NM facilities involved. The release of all EPI is coordinated through the KAFB and DOE Public Affairs offices. For incidents occurring on DOE property (if it is on SNL-NM permitted or owned property) the release is coordinated through the SFO Public Affairs Director and DOE Headquarters. NTESS validated the KFES interface capabilities in 11 exercises and 2 actual incidents during the six-year period.

### **DOE Headquarters Watch Office**

SFO and NTESS adequately maintain an interface capability with the DOE Headquarters notification point of contact located in the Headquarters EOC. Upon receiving an incident notification, the watch office duty officer is responsible for notifying the appropriate personnel and activating a DOE or NNSA emergency management team. NTESS validated the DOE Headquarters Watch Office interface capabilities in five exercises and two actual incidents during the six-year period.

### **DOE Headquarters Emergency Operations Center**

SFO and NTESS maintain interface capabilities with the DOE Headquarters EOC, located in the Forrestal Building in Washington, D.C., and the backup EOC in Germantown, Maryland. Both facilities can communicate with SNL-NM via telephone, the emergency communications network, facsimile, and classified/unclassified video teleconferencing. SFO, NTESS, and Headquarters use performance criteria consisting of sending initial and follow-on notifications and maintaining a telephone liaison to assess the adequacy of the interface. However, contrary to DOE Order 151.1D, attachment 4, paragraph 15.a, NTESS did not validate its DOE Headquarters EOC interface capability during the six-year period. (See **Finding F-NTESS-2**.) Consequently, NTESS cannot currently ensure an adequate interface with the DOE Headquarters EOC to promote a common operating picture and situational awareness among emergency response facilities.

### **National Atmospheric Release Advisory Center**

NTESS adequately maintains interface capabilities with the National Atmospheric Release Advisory Center (NARAC) for assessing HAZMAT released into the atmosphere. DOE Order 151.1D requires that facilities maintain the capability to use NARAC as part of near real-time consequence assessment activities. NARAC’s mission is to provide timely and accurate real-time assessment advisories to emergency managers for rapid decision-making during an emergency response involving a nuclear, radiological, or chemical atmospheric release. NTESS validated the NARAC interface capabilities in three exercises during the six-year period.

## **Radiological Assistance Program**

SFO and NTESS maintain interface capabilities with the NNSA RAP, which provides a first response resource in assessing an emergency incident and advising decision-makers on further steps to evaluate and minimize the hazards of a radiological incident. RAP provides resources (e.g., trained personnel and equipment) to monitor radiological hazards. NNSA implements RAP regionally, coordinating between the emergency response elements of the state, local, and Federal agencies. Additionally, the *DOE Region 4 RAP Response Plan* accurately explains radiological monitoring and assessment services available from the Region 4 RAP teams (assembled from personnel located at the Waste Isolation Pilot Plant, Los Alamos National Laboratory, SNL-NM, and Pantex Plant).

DOE Order 151.1D requires that facilities with General Emergencies involving radiological material releases ensure adequate planning for offsite radiological monitoring support to local and state governments. NTESS and the State of New Mexico do not have offsite field monitoring teams and rely on the integration with other potential monitoring teams, which may include the New Mexico National Guard 64<sup>th</sup> Civil Support Team, the DOE Region 4 RAP, EPA Region VI, or other Federal agencies, to provide the primary offsite monitoring capability for an SNL-NM radiological incident. Importantly, NTESS has documented 10 radiological emergency action level (EAL) scenarios that result in a General Emergency declaration that could require RAP to provide monitoring for offsite consequences. Contrary to DOE Order 151.1D, attachment 4, paragraphs 7.d, 10, and 15.a, NTESS did not validate its RAP interface capability during the six-year period. (See **Finding F-NTESS-2**.) Consequently, NTESS cannot currently ensure the planning of offsite field monitoring support for confirming plume boundaries and providing radiological monitoring support to local and state governments.

## **Radiation Emergency Assistance Center/Training Site**

NTESS maintains interface capabilities with the NNSA REAC/TS. DOE Order 151.1D requires that facilities conduct planning for medical treatment associated with incidents identified in the all-hazards planning basis. REAC/TS provides 24/7 emergency response and subject matter expertise for advice and consultation on medical management of radiation incidents for NNSA. The Oak Ridge Institute for Science and Education operates REAC/TS, located in Oak Ridge, Tennessee, which provides a multipurpose facility for handling victims of radiation emergencies and other types of physical injuries. Importantly, NTESS has documented emergency scenarios that could involve inhalation or uptake of radiological material by workers, responders, or the public that would potentially require interaction with REAC/TS during a response. Contrary to DOE Order 151.1D, attachment 3, paragraph 6, and attachment 4, paragraph 15.a, NTESS did not validate its REAC/TS interface capability during the six-year period. (See **Finding F-NTESS-2**.) Consequently, NTESS cannot currently ensure an adequate interface with REAC/TS for timely treatment of affected workers, responders, or the public during radiation incidents.

## **Federal Bureau of Investigation**

SFO adequately maintains interface capabilities with the FBI to respond to any incident at SNL-NM involving terrorists or other security incidents. An initial FBI response to SNL-NM includes personnel from the Albuquerque, New Mexico field office. The FBI may deploy special agents to support response activities, investigations, and intelligence sharing at the EOC and incident command post. The FBI may assume IC responsibilities or integrate into the existing unified command structure during security or law enforcement emergencies. NTESS validated the FBI interface capabilities in one exercise during the six-year period.

## **New Mexico Department of Homeland Security and Emergency Management**

SFO adequately maintains interface capabilities with the NMDHSEM, which has authority for statewide emergency preparedness, response, recovery, and mitigation of emergencies. A memorandum of understanding with the State of New Mexico provides support from the Department of Public Safety and New Mexico Army National Guard when requested by the IC or EOC ED. In addition, initial notifications and the interface with the state are coordinated by the EMCC, or the SNL-NM EOC through the NMDHSEM state duty officer. The KFES IC coordinates with the NMDHSEM for county, state, Federal, or non-governmental agency mutual aid requests, including response and recovery capabilities. The MOA with the NMDHSEM expired June 26, 2017 (see section 3.2). NTESS validated the NMDHSEM interface capabilities in three exercises and two actual incidents during the six-year period.

## **University of New Mexico Hospital**

SFO has established and maintains interface capabilities with the University of New Mexico Hospital (UNMH) for the transport, acceptance, and treatment of radiologically or chemically contaminated or potentially contaminated-injured patients from SNL-NM. UNMH, located in Albuquerque, New Mexico, is the closest Level 1 trauma center to SNL-NM and is accessible by ground and air ambulance. For radiological incidents, NTESS provides radiological control technicians and, if requested, REAC/TS-trained Employee Health Services personnel to be present at the hospital to assist as needed. NTESS can also provide an industrial hygienist to be present at the hospital to assist as needed for chemical incidents. In addition, UNMH has the support of personnel from the Region 4 RAP located in Albuquerque, as needed. The MOA with the University of New Mexico Hospital expired June 13, 2021 (see section 3.2). NTESS validated the UNMH interface capabilities in four exercises during the six-year period.

## **Lovelace Health Systems**

SFO maintains interface capabilities with Lovelace Health Systems for the acceptance and treatment of radiologically, chemically, or biologically contaminated or potentially contaminated-injured patients from SNL-NM. For radiological incidents, NTESS provides radiological control technicians and, if requested, REAC/TS-trained Employee Health Services personnel to be present at the hospital to assist as needed. NTESS can also provide an industrial hygienist to be present at the hospital to assist as needed for chemical incidents. In addition, Lovelace Health Systems has the support of personnel from the Region 4 RAP located in Albuquerque, as needed. The MOA with Lovelace Health Systems expired April 28, 2016 (see section 3.2). NTESS validated the Lovelace Health Systems interface capabilities in one exercise during the six-year period.

## **Presbyterian Healthcare Services**

SFO maintains interface capabilities with Presbyterian Healthcare Services for the transport, acceptance, and treatment of radiologically, chemically, or biologically contaminated or potentially contaminated-injured patients from SNL-NM. For radiological incidents NTESS provides radiological control technicians and, if requested, REAC/TS-trained Employee Health Services personnel to be present at the hospital to assist as needed. NTESS can also provide an industrial hygienist to be present at the hospital to assist as needed for chemical incidents. In addition, Presbyterian Healthcare Services has the support of personnel from the Region 4 RAP located in Albuquerque, as needed. The MOA with the Presbyterian Healthcare Services expired April 25, 2016 (see section 3.2). NTESS validated the Presbyterian Healthcare Services interface capabilities in two exercises during the six-year period.

## **Office of Secure Transportation**

SFO has established and maintains interface capabilities with the Office of Secure Transportation (OST), in accordance with DOE Order 151.1D. As a host site NTESS coordinates, communicates, and integrates applicable aspects of emergency planning, preparedness, and readiness with OST into a documented process to manage and control an OST incident scene inside the SNL-NM boundary. OST hazards are included in the site emergency management program. However, contrary to DOE Order 151.1D, attachment 4, paragraph 15.a, and attachment 5, paragraph 1.a, NTESS did not validate its ability to respond to an OST emergency as a host site during the six-year period. (See **Finding F-NTESS-2**.) Consequently, NTESS cannot currently ensure OST integration during a host site incident in accordance with the methodology developed for coordinating emergency response outlined in the *Concept of Operations between NNSA Host Sites and the Office of Secure Transportation* developed by the Office of Defense Programs and the Office of Emergency Operations.

## **City of Albuquerque**

SFO maintains interface capabilities with the City of Albuquerque, New Mexico per a letter of agreement for mutual assistance during emergencies, which includes provisions for planning, preparedness, and response whenever the combined resources of the two organizations are needed for an emergency response. An MOA with the City of Albuquerque concerning mutual assistance and emergency response expired in 2019 (see section 3.2). NTESS validated the City of Albuquerque interface capabilities in four exercises and two actual incidents during the six-year period.

## **Bernalillo County Emergency Management**

SFO and NTESS maintain interface capabilities with Bernalillo County, New Mexico, through the Bernalillo County Office of Homeland Security and Emergency Preparedness. NTESS validated the Bernalillo County interface capabilities in four exercises and two actual incidents during the six-year period.

## **Offsite Response Interface Capabilities Conclusions**

Overall, NTESS adequately validated offsite response interface capabilities with many organizations that are responsible for emergency response or that may be used to supplement response capabilities based on hazards identified in the all-hazards planning basis, during the six-year period. However, NTESS did not validate 4 of its 14 offsite response interface capabilities. Specifically, during the six-year period, NTESS did not validate response interface capabilities with DOE Headquarters EOC, RAP, REAC/TS, and OST. Consequently, during some high consequence scenarios preparedness may be inadequate to ensure the protection of workers, responders, and the public. Finally, some agreements with offsite capability providers have expired.

## **3.2 Plans and Procedures**

This portion of the assessment evaluated whether SFO and NTESS have emergency plans and procedures that establish and enable a viable, integrated, and coordinated comprehensive emergency management system.

NTESS formalizes program administrative requirements through a set of generally adequate policies, emergency plans, and procedures, with some exceptions described below. Approximately 200 procedures, forms, agreements, and checklists have been developed for execution of the SNL-NM emergency management program, and the combined set adequately implements most aspects of all 15

DOE emergency management program elements as required. Of these documents, two plans lay the foundation for emergency response: EM-PLAN-001, which is the overarching emergency management plan, and EM-PLAN-016.

Although many NTESS emergency management plans, procedures, and checklists adequately describe operational processes and meet DOE requirements, the documents do not clearly define a concept of operations for an SNL-NM emergency response. Most notably, the roles and responsibilities of the IC and ED are not clearly defined, as explained later in this section. SFO has not effectively defined KFES response requirements to the extent necessary to ensure compliance with DOE requirements. Specifically, SFO has not: (1) determined how KFES decisions will be implemented at EPHA facilities requiring special response planning; and (2) defined how KFES compliance with DOE requirements will be ensured. Contrary to DOE Order 151.1D, attachment 3, paragraph 1.d, requirements, SFO has not ensured that appropriate emergency management procedures have been developed and implemented. (See **Finding F-SFO-4**.) Consequently, the lack of a clear concept of operations for KFES response has impacted the ability of NTESS to maintain plans and procedures that adequately implement a viable, integrated, and coordinated comprehensive emergency management system. The two issues mentioned above are explained below:

First, SFO has not determined how KFES decisions will be implemented at EPHA facilities requiring special response planning. NTESS has not been provided current copies of KFES incident command procedures and therefore cannot ensure that KFES responses to SNL-NM incidents fully align with NTESS processes. Furthermore, as described in section 3.1, BSA FB4469-610, 2020 and MOA FB4469-20310-578, do not require KFES to comply with DOE orders, standards, and guidelines; also, while EM-PLAN-016, EM-SOP-53, *SNL Agency Representative*, and EM-SOP-57, *EMCC Duty Officer*, were developed to describe how NTESS interfaces with KFES during emergencies, joint operational procedures for KFES and NTESS have not been developed and implemented as required by the MOA FB4469-20310-578. (See **Finding F-SFO-4** and **OFI-SFO-1**.)

Second, SFO has not defined how KFES compliance with DOE requirements will be ensured. KFES plans and procedures are written to ensure compliance with Department of Defense requirements versus DOE requirements and have not been reviewed to determine whether they provide equivalent protection for NNSA personnel and facilities at SNL-NM. (See **Finding F-SFO-4** and **OFI-SFO-1**.)

In addition, SFO has not ensured that all mutual aid agreements, as identified in appendix C of EM-PLAN-001, are maintained currently. SFO has 11 agreements in place for emergency response support, 8 of which have expired, as follows:

- Sandia Protective Force Operations agreement (expired October 2012).
- Lovelace Health Systems agreement (expired April 2016).
- Presbyterian Healthcare Services agreement (expired May 2016).
- City of Albuquerque agreement for JIC services (expired June 2016).
- City of Albuquerque agreement for mutual aid (expired April 2019).
- University of New Mexico Hospital agreement (expired June 2021).
- Sandia Nuclear Weapons International & Special Programs Department, Sandia Protective Force, Sandia Emergency Management and Kirtland Fire Department agreement (expired August 2021).
- NMDHSEM agreement (expired March 2022).

As a result, contrary to DOE Order 151.1D, attachment 3, paragraph 7, SFO has not ensured the development and implementation of some mutual assistance agreements with local, state, tribal, and

Federal authorities. (See **Finding F-SFO-5**.) Consequently, the health and safety of employees could be compromised because necessary resources may not be available or may not respond as expected during an emergency response.

Compounding the issues described above, NTESS plans and procedures are not structured to implement all DOE requirements effectively. Significantly, EM-PLAN-001 was not revised when significant changes occurred, as required, and is therefore not comprehensive. Much of the concept of operations for incident command is captured in EM-PLAN-016, which is not referenced in EM-PLAN-001, and some NTESS implementing procedures describe the concept of operations for emergency response more accurately than the emergency plans. The following planning weaknesses were identified: (1) roles and responsibilities of the ED and IC are not clearly defined; (2) EM-PLAN-001 does not mention several key emergency response resources; and (3) EPI plans conflict with procedures and do not address all DOE requirements. As a result of these issues, contrary to DOE Order 151.1D, attachment 3, paragraphs 1.a.(4), 1.a.(5), 1.c, 1.c.(2) and 1.d, and attachment 4, paragraph 11.d.(3), NTESS has not updated its emergency plan when significant changes occurred and has not adequately established and enabled an integrated and coordinated comprehensive emergency management system. (See **Finding F-NTESS-3**.) Consequently, a clear and viable concept of operations for emergency operations, which is necessary to ensure employee health and safety during emergencies, has not been adequately implemented in site plans and procedures. The three issues contributing to this finding are explained below:

First, roles and responsibilities of the ED and IC are not clearly defined. EM-PLAN-001 states that the EOC ED maintains overall emergency management responsibility during emergency responses, and MOA FB4469-20310-578 states that the IC is responsible for the management of all incident operations at the incident site. Consequently, unless the IC defines the incident scene area and cedes responsibility for the remainder of the site to the ED, the ED can only make recommendations to the IC. A division of responsibilities, which would give the ED emergency response authority outside of a defined incident scene area, is not driven by procedures and does not occur routinely. In addition, contrary to the MOA, EM-PLAN-001 mentions a unified command structure that does not exist and states that incident command will be implemented in accordance with EM-SOP-8, *Incident Command Procedures*, which has been discontinued. Finally, EM-PLAN-016 includes an EOC organizational chart that shows the KFES IC reporting to the ED. The KFES IC considers recommendations from the ED, but does not report to the ED. (See **Finding F-NTESS-3** and **OFI-NTESS-1**.)

Second, EM-PLAN-001 does not mention several key site-level emergency response resources, including the 858-HAZMAT ERT. Instead, these resources are described in EM-PLAN-016, which is not referenced in EM-PLAN-001. Additionally, EM-PLAN-016 states that site-specific training and annual drill participation is optional for some key emergency response resources, such as the 858-HAZMAT ERT. (See **Finding F-NTESS-3** and **OFI-NTESS-1**.)

Finally, EPI plans conflict with procedures and do not address all DOE requirements. EM-SOP-4, *Emergency Operations Center*, states that the primary JIC is at the IPOC, which is inside the EPZ, contrary to DOE Order 151.1D, attachment 4, paragraph 11.d.(3). EM-PLAN-001 states that if an offsite JIC is needed, it will be established in the City of Albuquerque EOC, which no longer exists at the referenced location, as described in section 3.1. (See **Finding F-NTESS-3** and **OFI-NTESS-1**.)

Because the concept of operations in EM-PLAN-001 is unclear, issues were also identified with NTESS implementing procedures, including ambiguous processes for implementing changes to protective actions and PARs after initial and technical basis protective actions have been implemented. (See **OFI-NTESS-1**.) For example, EM-SOP-57 does not state whether protective action decisions for secondary incidents must be approved by the KFES IC once incident command has been established.

## Plans and Procedures Conclusions

Overall, NTESS emergency plans and procedures do not adequately establish and enable an integrated and coordinated comprehensive emergency management system. Although NTESS emergency plans and procedures address most aspects of all 15 emergency management program elements, the site emergency plan is not comprehensive and does not clearly define the roles and responsibilities of the IC and ED. Significantly, SFO has not ensured a clear concept of operations for KFES incident command, has not ensured the development of joint operational procedures, has not adequately maintained some mutual aid agreements, and has not planned for a JIC outside of the EPZ.

### 3.3 Technical Planning Basis

This portion of the assessment determined whether NTESS has established a technical planning basis for the emergency management program that identifies all hazards applicable to the operation of the site, defines the provisions of the Emergency Management Hazardous Materials Program, and establishes the planning basis for the emergency management program.

NTESS has appropriately developed an AHS that incorporates the requirements of DOE Order 151.1D; the provisions of DOE Guide 151.1-1B, *Comprehensive Emergency Management System Guide*; and EM-GUIDE-16, *All-Hazards Survey Methodology*, which describes the methodology used to conduct AHSs for the SNL-NM Emergency Management Hazardous Materials Program. NTESS has prepared one AHS covering all SNL-NM facilities/operations, EM-AHS-001, *Sandia National Laboratories, New Mexico, All-Hazards Survey*. The NTESS AHS identifies all the hazards applicable to SNL-NM operations and identifies the SNL-NM facilities requiring an EPHA and co-located facilities requiring a multi-building severe incident EPHA.

EM-GUIDE-14, *Emergency Planning Hazards Assessment Methodology*, provides guidance for consistent application of EPHA preparation requirements and EM-GUIDE-15, *EPHA Scenarios and Modeling Parameters*, identifies the airborne release fractions (ARFs), release fractions, and leak path factors used to calculate the source terms for analyzed EPHA scenarios. Based on the results of the hazards survey, NTESS prepared, and SFO approved, the following three EPHAs and one temporary order for SNL-NM facilities:

- EM-EPHA-001, *Technical Area-V Facility Emergency Planning Hazards Assessment*
  - EM-TO-001, *Technical Area V Facility Emergency Planning Hazards Assessment Temporary Order*
- EM-EPHA-002, *858 Complex Emergency Planning Hazards Assessment*
- EM-EPHA-003, *Hazardous Waste Handling Unit/Transportation Emergency Planning Hazards Assessment*.

Although NTESS EPHAs generally incorporate the provisions of EM-GUIDE-14 and EM-GUIDE-15, the consequence analyses in the EPHAs do not adequately provide conservative estimates of potential consequences from unplanned releases of HAZMAT. NTESS models fire scenarios using the HotSpot general fire model and pre-determined heat release rates under a single set of meteorological conditions, D stability, and 22 miles per hour wind speed, contrary to the more conservative meteorological conditions specified in DOE Order 151.1D, attachment 4, paragraph 2.d.(2). The combination of conditions used for fire modeling results in the introduction of significant plume rise but does not account for the multiple variables involved in a fire such as fire progression, building wake effects, temperature inversion and fumigation, and could result in less conservative decision-making during an emergency. In addition, NTESS has not identified analyzed scenarios with tabulated consequences and distances at which



the PAC and thresholds of early lethality (TELs) would be exceeded for the HWHU EPHA, as required by DOE Order 151.1D, attachment 4, paragraph 2.d. Instead, NTESS uses the Department of Transportation Emergency Response Guidebook to provide substitute analysis results that are applied to the development of categorization, classification, and PAC for all HWHU HAZMAT release operational emergencies. As a result, contrary to DOE Order 151.1D, attachment 4, paragraph 2.a, NTESS has not adequately identified hazards and the potential consequences from unplanned releases of (or loss of control over) HAZMAT identified in the AHS. (See **Finding F-NTESS-4** and **OFI-NTESS-2**.) Consequently, NTESS has not ensured that EPHAs provide a conservative technical basis to minimize emergency-related consequences and maximize life safety and health.

NTESS developed *Technical Area-V Facility Emergency Planning Hazards Assessment Temporary Order* to address planned experiments at the ACRR. The temporary order presents analysis of revised scenarios using worst-case meteorology to produce protective action distances and EALs that supersede the EALs presented in the original TA-V EPHA. Most scenarios in the temporary order are modeled using an ARF of 7.6E-5. This ARF is not presented as an option in EM-GUIDE-15 and is less conservative than the ARFs used in the TA-V EPHA. The temporary order provides no explanation or justification for use of a lower ARF. Contrary to DOE Order 151.1D, attachment 4, paragraph 2.j, NTESS has not documented and discussed assumptions, methodology, models, and evaluation techniques used in the TA-V EPHA Temporary Order. (See **Deficiency D-NTESS-1** and **OFI-NTESS-3**.) Consequently, the potential consequences and protective actions identified in the TA-V temporary order could lead to less conservative incident classification and protective action decision-making during an emergency.

In addition, DOE Order 151.1D requires that EPHAs include a determination of the size of the EPZ and the development of a consolidated/integrated EPZ for the site. The NTESS EPHAs include the determination of an EPZ minimum and maximum distance for use in determining the composite EPZ, which is documented in the November 2017 document SAND2018-1102, *Emergency Planning Zone Analysis Sandia National Laboratories/New Mexico*. The document identifies a composite EPZ distance of 21,120 feet based on a large nighttime spill, fire, or explosion at Buildings 958/959; however, the EPZ distances in SAND2018-1102 are not consistent with EPZ distances presented in current NTESS EPHAs. For example, current EPHAs identify EPZ maximum distances of 33,136 feet for TA-V, 16,270 feet for the 858 Complex, and 36,960 feet for HWHU. As a result, NTESS does not have a current consolidated EPZ for use in facilitating a pre-planned strategy for protective actions during an emergency and determining an acceptable location for the JIC. (See **OFI-NTESS-4**.)

### **Technical Planning Basis Conclusions**

Overall, NTESS has developed an AHS that incorporates the relevant order requirements and procedures for the development and maintenance of technical planning documents that provide appropriate guidance for consistent application of AHS and EPHA requirements. However, the fire modeling and associated EALs present results that could result in less conservative decision-making during an emergency, and NTESS has not identified analyzed scenarios with tabulated consequences and distances at which the PAC and TEL would be exceeded for the HWHU EPHA. In addition, NTESS used a less conservative ARF in the TA-V temporary order, and NTESS has not developed an accurate EPZ based on the results of EPHAs.

### **3.4 Issues Management**

This portion of the assessment determined whether SFO maintains and implements an effective oversight program to ensure NTESS maintains a process to develop and address corrective actions for findings identified during evaluations, assessments, drills, exercises, and actual emergencies. Corrective action plans (CAPs) documenting corrective actions, due dates, and assignees must be developed within 45 days

of the assessment report or after-action report, and corrective actions for Federally directed or external assessments must also be submitted to the field element manager for approval within 45 days of an assessment or after-action report, and as requested for contractor-initiated assessments. Additionally, a formal tracking system must be used to track the completion of corrective actions.

The issues management program used at SNL-NM for resolving emergency management program issues is governed by three primary site-level program documents: QA001, *Quality Assurance Policy*; QA001.2, *Identify and Manage Risks and Opportunities*; and QA001.3, *Identify and Manage Issues*. Flowing down from the site-level program are EM-PLAN-11, *Emergency Readiness Assurance Program*, and EM-SOP-43, *Risk and Issues Management*, which describe the issues management process that applies to all emergency management identified issues. Together, the NTESS plan and procedure implement site-level issues management requirements as well as DOE Order 151.1D requirements for correcting emergency management findings and deficiencies.

The NTESS plan and procedure adequately define a detailed process for addressing emergency management issues identified in program assessments, annual exercise reports, and real incidents. NTESS emergency management has adequately processed 85 findings and 96 OFIs for emergency management since 2021 using the NTESS procedure process. The plan and procedure provide direction to appropriately categorize issues to ensure that they receive the correct level of attention and rigor, and EM-PLAN-11 and EM-SOP-43 both identify the additional requirements listed in DOE Order 151.1D for issues originating from external assessments as well as issues involving DNFs. NTESS effectively manages and tracks identified issues to closure in Sage, a web-based issue tracking system, which requires all issues identified by NTESS to be categorized as either a finding or an OFI, based on significance. Sage is an effective software tool used to manage issues and their associated actions and documentation per procedures QA001.3 and EM-SOP-43. Issue documentation, including closure documentation, corrective action closure evidence, and issue closure verification/validation documentation, is appropriately maintained in Sage.

While the NTESS plan and procedure are adequate, NTESS has not adequately dispositioned identified KFES performance issues. NTESS identified 27 issues involving KFES that have not been entered or addressed internally by NTESS using Sage as required by EM-SOP-43 because KFES has not provided any information or corrective action input pertaining to the issues. As a result, contrary to DOE Order 151.1D, attachment 3, paragraph 14.b.1(c), NTESS does not meet the requirement to develop a CAP for findings documenting corrective actions, due dates, and assignees within 45 calendar days of the assessment report or after-action reports for identified KFES issues. (See **Deficiency D-NTESS-2** and **OFI-NTESS-5**.) Consequently, KFES emergency response issues and improvement items have not been addressed or resolved to improve performance and prevent re-occurrence.

Additionally, SFO has not effectively defined requirements or an effective concept of operations relative to KFES issues management to ensure compliance with DOE Order 151.1D and DOE Order 226.1B. Importantly, MOA FB446920310-578, as discussed in section 3.1.1, does not define an agreed-upon process for disposition of KFES issues, which leaves SFO, and ultimately NTESS, with no ability to ensure that KFES addresses and corrects performance issues. As a result, contrary to DOE Order 151.1D, attachment 3, 14.b.1.(a), SFO does not ensure the development of corrective actions for KFES findings identified during evaluations, assessments, drills, exercises and actual emergencies for SNL-NM. (See **Finding F-SFO-6** and **OFI-SFO-2**.) Consequently, by not requiring KFES to address identified issues in accordance with DOE Order 151.1D requirements, incident performance issues are not addressed, which could result in continued incident performance problems and impact personnel health and safety. NTESS has formally requested SFO to revise the MOA to include issues management requirements for KFES.

## Issues Management Conclusions

Overall, NTESS has implemented a compliant emergency management issues management program that addresses identified findings, deficiencies, and improvement items for NTESS response assets. For the reviewed issues, NTESS effectively managed and tracked issues to closure per DOE Order 151.1D requirements. However, issues identified by NTESS for KFES response assets have not been addressed per NTESS procedure requirements, and SFO has not obtained a formal agreement from KFES on a process to disposition KFES identified issues; consequently, the disposition of KFES issues does not meet DOE Order 151.1D requirements for addressing identified performance issues to prevent reoccurrence.

### 3.5 Exercise Program

This portion of the assessment determined whether SFO and NTESS have established a framework and associated mechanisms for ensuring that the NTESS exercise program is effective on a programmatic and performance level while promoting a culture of continuous improvement.

SFO and NTESS have adequately established and maintain a site-level exercise program with some weaknesses. NTESS defines exercise requirements in EM-PLAN-12, *Exercise Program*. Exercises are scheduled on a five-year forecast and a FY schedule, which includes annual site-level full scale exercises involving site-level ERO elements and resources. All annual site-level exercise plans are reviewed and approved by SFO. NTESS exercises are used to validate and close out findings identified during previous exercises. NTESS maintains an emergency management drill and exercise objective bank within EM-Template-67, *Sandia National Laboratories Baseline Master List*. To address the validation of ERO response capabilities in the exercise program, NTESS revised the five-year exercise schedule to include a table that lists several response and facility capabilities and shows which planned exercise will validate the listed capabilities over a five-year period.

Through Emergency Management Special Interest Groups, NTESS has worked to improve its exercise evaluation guides (EEGs) by benchmarking with the Office of Emergency Management Policy (NA-41) to identify what other sites are using. Internally, NTESS identifies opportunities to improve its EEG bank following exercises and drills when necessary and is currently updating with the NA-41 and EA CRADs. Lead controllers/evaluators lead the development of venue specific EEGs with input from all controllers and evaluators assigned to those venues. While NTESS has made considerable progress on its EEG bank, some EEGs do not contain initial response actions listed on checklists or provide clear objectives for all positions such as the Senior Federal Official.

As discussed in section 3.1, NTESS plans and procedures identify 39 specific response and interface capabilities derived from EPHAs as required by the order, some of which are not included in the capability table listed in the NTESS five-year exercise schedule. As a result, NTESS did not validate 5 out of the 39 response and interface capabilities over the six-year period. Contrary to DOE Order 151.1D, attachment 4, paragraph 15.a.(8), NTESS has not fully developed and implemented an exercise program that validates the capability and proficiency of the ERO to respond to the full spectrum of hazardous emergencies identified in the EPHAs. (See **Finding F-NTESS-2**.) This is a recurrence of the 2018 EA finding F-NTESS-1. Consequently, inclusion of 11 of the 39 response capabilities in the five-year exercise schedule may result in some ERO response capabilities not being validated, which may cause response deficiencies during an actual emergency response. (See **OFI-NTESS-6**.) In addition, SFO has not developed EEGs to evaluate the SFO Senior Federal Official position based on the *Sandia Field Office Emergency Plan, Document Control No. 0401.01*, which identifies key actions required during an emergency. The SFO EOC position has not been evaluated since 2018. (See **OFI-SFO-3**.) SFO developed EM-FORM-XX, *EOC, Senior Federal Official Checklist*, for the senior Federal position, which was determined to be inadequate during an internal exercise review in FY 2019.

## Exercise Program Conclusions

Overall, SFO and NTESS have established frameworks and mechanisms for ensuring effective emergency management and continuous improvement. NTESS is improving its EEGs by benchmarking with other sites for best practices. By incorporating a structured approach with realistic scenarios and technical accuracy, NTESS demonstrates a commitment to readiness and effectiveness in emergency response. Adhering to DOE Order 151.1D requirements, NTESS conducts exercises that assess and validate emergency response training, ensuring coordination with offsite interfaces to demonstrate capabilities. However, NTESS has not fully developed or implemented an exercise program that validates the ERO capabilities and proficiencies to the full spectrum of hazards identified in the EPHAs.

### 3.6 Finding Follow-up

This portion of the assessment determined whether corrective actions were effective for the four findings identified in EA report *Office of Enterprise Assessments Assessment of Sandia National Laboratories/New Mexico Emergency Management Exercise Program, August 2018*.

EA conducted an assessment of SNL-NM's emergency management exercise program in 2018 and identified four findings. EA returned to SNL-NM in 2021 and initiated a follow-up review of the corrective actions for the issues to determine whether the corrective actions were adequately closed and evaluated to verify effectiveness. During the 2021 review, EA determined that the corrective actions completed to address the FY 2018 findings were not adequate to prevent recurrence. As a result, in FY 2022, the corrective actions were re-opened by NTESS for the four EA findings and new CAPs for the issues were developed. The revised CAPs were submitted to SFO for approval in March 2022, and approved in May 2022. The revised corrective actions and verifications and validations for the four issues have been completed by NTESS emergency management. In addition to the expected verification/validation and effectiveness reviews required by procedure for issue closure, the four issues are also currently undergoing an additional and separate independent effectiveness review by the NTESS issues management organization. The results of the EA review of the completed corrective actions, closure evidence, and verification/validation documentation for the four issues during this assessment are described below:

**2018 EA Finding F-NTESS-1:** This finding identified that NTESS had not fully developed and implemented an exercise program that validates the capability and proficiency of the ERO to respond to the full spectrum of hazardous emergencies identified in the HAZMAT facility emergency planning hazard analyses, including a methodology to ensure demonstration of responder proficiency. In response to the issue, NTESS developed corrective actions to update EM-PLAN-11 and EM-PLAN-12 to reflect the requirement to validate the capabilities and proficiency of the ERO and to update the NTESS five-year exercise schedule to include exercises to validate the capability and proficiency of the ERO. The corrective actions, verifications/validations, and required effectiveness reviews have been completed by NTESS to close the issue. Proficiency requirements, including requirements for demonstration of proficiency, were added to plans, procedures, and training for specified ERO members. To address the capabilities part of the issue, and as discussed in section 3.5, the five-year exercise schedule was revised to include a table that lists some emergency response capabilities, as well as the plan to validate the listed capabilities in specific exercises over a five-year period. However, NTESS has not referenced all capabilities in the five-year exercise schedule as identified in its plans and procedures. As defined and identified in section 3.1, NTESS plans and procedures identify 39 emergency response capabilities used to respond to the full spectrum of hazardous emergencies identified in EPHAs at SNL-NM. As a result, the completed corrective actions developed for the finding adequately addressed ERO proficiency requirements, but the completed corrective actions pertaining to capabilities only partially addressed the original finding. See section 3.5 for further discussion. (See **Finding F-NTESS-2**.)

**2018 EA Finding F-NTESS-2:** This finding identified that during the 2018 full-scale emergency management exercise, NTESS did not promptly identify and issue worker protective actions that were commensurate with the potential hazards of the facility. In response, NTESS developed corrective actions to update procedures SOP-57, and SOP-53, *SNL Agency Representative*, to reflect the requirement and expectations to promptly identify and issue worker protective actions and provide training on the updated procedures to all SARs and EMCC Duty Officers. A corrective action was also identified that required NTESS to conduct a proficiency drill with a focus on promptly identifying and issuing worker protective actions to all SARs and EMCC Duty Officers upon completion of the revisions and training. All procedures were revised to include the requirements to identify and promptly issue protective actions, and required training was completed and verification/validation was completed with protective actions being promptly identified and issued during proficiency drills. As a result, completed corrective actions developed for the finding adequately addressed the identified issue.

**2018 EA Finding F-NTESS-3:** This finding identified that NTESS had not fully implemented exercise program resources to effectively evaluate emergency plans, procedures, and resources. To address the issue, the following four corrective actions were identified: (1) update EM-PLAN-12, to reflect the requirements and expectations for controller/evaluator briefings and training; (2) update EM-Plan-13, *Training Program*, to reflect the training requirements and expectations for controllers/evaluators; (3) develop a standard controller/evaluator training program to reflect the requirements and expectations for controlling, evaluating, and documenting exercises; and (4) develop an objectives bank and EEGs using the CRAD to support the requirement to have evaluation criteria for each objective. The identified plans have been revised to include new requirements for controller/evaluators including the addition of an updated controller/evaluator training program. EEGs have been developed and are continually revised based on procedure and process revisions. As a result, completed corrective actions developed for the finding adequately addressed the identified issue.

**2018 EA Finding F-NTESS-4:** This finding identified that NTESS corrective actions did not fully address two of the findings from EA's 2015 assessment report, and the corrective actions did not include validation of the effectiveness of corrective actions in resolving the original finding. To address the issue, NTESS identified corrective actions to revise EM-PLAN-12 and EM-PLAN-11 to add the requirement to verify/validate the effectiveness of corrective actions. The identified plans have been revised to include the verification/validation requirements to address the issue. Additionally, training on the revised plans and procedures was provided to all exercise planners and readiness assurance staff. As a result, completed corrective actions developed for the finding adequately addressed the identified issue.

### **Finding Follow-up Conclusions**

NTESS completed all corrective actions to address the four findings identified during the 2018 EA assessment. The completed corrective actions for 2018 findings F-NTESS-2, F-NTESS-3, and F-NTESS-4 adequately addressed the identified issues to prevent recurrence. However, for 2018 finding F-NTESS-1, NTESS has not adequately referenced all capabilities as identified in its plans and procedures in the five-year exercise schedule, as discussed in section 3.5, thereby not ensuring that the completed corrective actions addressed the identified issue to prevent recurrence.

## **4.0 BEST PRACTICES**

No best practices were identified during this assessment.

## 5.0 FINDINGS

Findings are deficiencies that warrant a high level of attention from management. If left uncorrected, findings could adversely affect the DOE mission, the environment, the safety or health of workers and the public, or national security. DOE line management and/or contractor organizations must develop and implement CAPs for findings. Cognizant DOE managers must use site- and program -specific issues management processes and systems developed in accordance with DOE Order 226.1, *Implementation of Department of Energy Oversight Policy*, to manage the corrective actions and track them to completion.

### National Technology and Engineering Solutions of Sandia, LLC

**Finding F-NTESS-1:** NTESS has not conducted an exercise to validate critical response capabilities needed for a high-consequence scenario that involved multiple response elements and resulted in offsite impacts during the six-year period. (DOE Order 151.1D, att. 4, par. 15.b.)

**Finding F-NTESS-2:** NTESS has not fully developed and implemented an exercise program that validates the capability and proficiency of the ERO to respond to the full spectrum of hazardous emergencies identified in the EPHAs. Specifically, NTESS did not validate the following facility-level response capabilities, alternate facility capabilities and offsite interface capabilities: (DOE Order 151.1D, attachment 4, paragraph 15.a.(8))

- 858 Complex facility-level emergency response capabilities annual validation (DOE Order 151.1D, att. 4, para. 15.e.)
- HWHU facility-level emergency response capabilities annual validation (DOE Order 151.1D, att. 4, para. 15.e.)
- Alternate EOC, EMCC, and SCC facilities capabilities (DOE Order 151.1D, att. 4, par. 15.a)
- DOE Headquarters EOC interface capability (DOE Order 151.1D, att. 4, par. 15.a)
- RAP interface capability (DOE Order 151.1D, att. 4, pars. 7.d, 10, and 15.a)
- REAC/TS interface capability (DOE Order 151.1D, att. 3, par. 6, and att. 4, par. 15.a)
- NTESS did not validate its ability to respond to an OST emergency as the NNSS host site. (DOE Order 151.1D, att. 4, par. 15.a, and att. 5, par. 1.a)

**Finding F-NTESS-3:** NTESS has not updated its emergency plan when significant changes occurred and has not adequately established and enabled an integrated and coordinated comprehensive emergency management system. (DOE Order 151.1D, att. 3, pars. 1.a.(4), 1.a.(5), 1.c, 1.c.(2), and 1.d, and att. 4, par. 11.d.(3)) Specifically:

- Roles and responsibilities of the ED and IC are not clearly defined.
- EM-PLAN-001 does not mention some key resources.
- EPI plans conflict with procedures and do not address all DOE requirements.

**Finding F-NTESS-4:** NTESS has not adequately identified hazards and the potential consequences from unplanned releases of (or loss of control over) HAZMAT identified in the hazards survey. (DOE Order 151.1D, att. 4, par. 2.a) Specifically:

- NTESS models fire scenarios using the HotSpot general fire model and pre-determined heat release rates under a single set of meteorological conditions, D stability, and 22 miles per hour wind speed, contrary to the more conservative meteorological conditions specified in DOE Order 151.1D.

NTESS has not identified analyzed scenarios with tabulated consequences and distances at which the PAC and TEL would be exceeded for the HWHU EPHA.

## **Sandia Field Office**

**Finding F-SFO-1:** SFO has not ensured that NTESS maintained a BNA to accurately define and provide emergency response capabilities, as necessary, to meet site needs as established by the BNA, safety basis requirements, and applicable regulations, codes, and standards. (DOE Order 151.1D, att. 3, par. 3.e and DOE Order 420.1C, att. 2, ch. II, par. 3.e)

**Finding F-SFO-2:** SFO has not ensured that information has been provided to local and state agencies on EPHA scenario distances at which PAC would be exceeded and plume arrival times at specific offsite receptors. (DOE Order 151.1D, att. 4, pars. 7.c. and 7.d)

**Finding F-SFO-3:** SFO has not established and maintained a location for the JIC outside of the EPZ. (DOE Order 151.1D, att. 4, par. 11.d)

**Finding F-SFO-4:** SFO has not ensured that appropriate emergency management procedures have been developed and implemented. (DOE Order 151.1D, att. 3, par. 1.d)

- SFO has not determined how KFES decisions will be implemented at SNL-NM EPHA facilities requiring special response planning.
- SFO has not defined how KFES compliance with DOE requirements will be ensured when responding to emergencies at SNL-NM.

**Finding F-SFO-5:** SFO has not ensured the development and implementation of mutual assistance agreements with state, tribal, and local authorities. (DOE Order 151.1D, att. 3, par. 7)

**Finding F-SFO-6:** SFO does not ensure the development of corrective actions for KFES findings identified during evaluations, assessments, drills, exercises and actual emergencies for SNL-NM. (DOE Order 151.1D, att. 3, para. 14.b.1.(a) and DOE Order 226.1B, par. 4.b.(4))

## **6.0 DEFICIENCIES**

Deficiencies are inadequacies in the implementation of an applicable requirement or standard. Deficiencies that did not meet the criteria for findings are listed below, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

### **National Technology and Engineering Solutions of Sandia, LLC**

**Deficiency D-NTESS-1:** NTESS has not documented and discussed assumptions, methodology, models, and evaluation techniques used in the TA-V EPHA. (DOE Order 151.1D, att. 4, par. 2.j)

**Deficiency D-NTESS-2:** NTESS does not meet the requirement to develop a corrective action plan for findings documenting corrective actions, due dates, and assignees within 45 calendar days of the assessment report or after-action reports for identified KFES response asset issues. (DOE Order 151.1D, att. 3, para. 14.b.1.(c))

## **7.0 OPPORTUNITIES FOR IMPROVEMENT**

EA identified the OFIs shown below to assist cognizant managers in improving programs and operations. While OFIs may identify potential solutions to findings and deficiencies identified in assessment reports,

they may also address other conditions observed during the assessment process. These OFIs are offered only as recommendations for line management consideration; they do not require formal resolution by management through a corrective action process and are not intended to be prescriptive or mandatory. Rather, they are suggestions that may assist site management in implementing best practices or provide potential solutions to issues identified during the assessment.

### **National Technology and Engineering Solutions of Sandia, LLC**

**OFI-NTESS-1:** To improve plans and procedures, consider:

- Creating a single comprehensive emergency plan, consolidating all key information pertaining to the NTESS concept of operations for emergency management into a single document and eliminating (or at a minimum referencing) response plans that are subordinate to EM-PLAN-001, such as EM-PLAN-016. Key information includes incident command post operations, as well as support resources for the IC, such as the Building 858-HAZMAT ERT, and should be based on joint operational procedures required by the MOA FB4469-20310-578.
- Clarifying in both plans and procedures whether protective action decisions for secondary incidents must be approved by the KFES IC once an incident command post has been established, and how the process of implementing new or revised protective actions will occur.
- Defining a new process in plans and procedures that drives the IC to define the incident scene so that the ED can take responsibility for the balance of the site.
- Revising EM-PLAN-016 to require site-specific training and drills for specialized response teams such as the Building 858-HAZMAT ERT.
- Defining the responsibilities of the bio-environmental team representative and whether the IC has authority to revise technical basis offsite PARs issued by NTESS.
- Defining the process for ensuring consistent messaging to offsite agencies when both the SNL-NM and KAFB EOCs are activated for SNL-NM emergencies.
- Accurately describing locations for the primary and alternate JIC.
- Updating EM-GUIDE-13, *Criteria for Operational Emergency Declaration*, to ensure that all DOE Order 151.1D EALs for categorizing incidents as operational emergencies not requiring classification are included, and outdated EALs are removed.
- Creating a new emergency facilities and equipment procedure that fully describes processes and activities necessary to ensure the readiness of emergency equipment.

**OFI-NTESS-2:** To improve the SNL-NM technical planning basis, consider:

- Revising fire modeling methodology to eliminate significant plume rise and introduce reasonably conservative modeling parameters.
- Identifying scenarios with analyzed consequences for HWHU by analyzing representative HAZMAT for the Department of Transportation hazard classes stored at the facility.

**OFI-NTESS-3:** To improve the TA-V EPHA, consider using modeling parameters identified in EM-GUIDE-15 or provide a justification in the EPHA when alternate parameters are used.

**OFI-NTESS-4:** To improve the SNL-NM technical planning basis, consider developing an updated consolidated EPZ based on EPA distances identified in current EPHAs.



**OFI-NTESS-5:** Consider revising NTESS emergency management plans/procedures to exclude KFES issues from the NTESS issues management process and instead, formally provide those issues to SFO for disposition until SFO and KFES agree and document a formal process to disposition KFES improvement items.

**OFI-NTESS-6:** Consider including in the exercise planning matrix all 39 site-specific capabilities and the frequency that each one needs to be tested in exercises.

### **Sandia Field Office**

**OFI-SFO-1:** Consider revising MOA FB4469-20310-578 to ensure that KFES incident command processes comply with all DOE requirements, and that mechanisms are in place to ensure that KFES complies with DOE order requirements.

**OFI-SFO-2:** Consider revising the MOA between DOE/NNSA and the USAF to include a defined process to ensure that KFES addresses identified emergency response issues associated with SNL-NM as required by DOE Order 151.1D.

**OFI-SFO-3:** Consider reviewing EEG banks and revising them to include initial response actions that provide clear objectives for all positions such as the SFO.

## **8.0 ITEMS FOR FOLLOW-UP**

EA identified many significant weaknesses in the readiness of response capabilities that were not previously identified by the NTESS contractor assurance system, SFO oversight, or Program Secretarial Office oversight. As such, EA plans to conduct a follow-up effectiveness-based assessment (programmatic and exercise performance evaluation) during FY 2025/2026.

## **Appendix A Supplemental Information**

### **Dates of Assessment**

January 23 to March 19, 2024

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

John E. Dupuy, Director, Office of Enterprise Assessments  
William F. West, Deputy Director, Office of Enterprise Assessments  
Kevin G. Kilp, Director, Office of Environment, Safety and Health Assessments  
David A. Young, Deputy Director, Office of Environment, Safety and Health Assessments  
Thomas E. Sowinski Director, Office of Nuclear Safety and Environmental Assessments  
Kimberly G. Nelson, Director, Office of Worker Safety and Health Assessments  
Jack E. Winston, Director, Office of Emergency Management Assessments  
Brent L. Jones, Director, Office of Nuclear Engineering and Safety Basis Assessments

### **Quality Review Board**

William F. West, Advisor  
Kevin G. Kilp, Chair  
Thomas C. Messer  
Mark A. Delgado  
William A. Eckroade

### **EA Assessment Team**

Dr. Wade W. Gough, Lead  
Yuri V. Graves, Lead (Under Instruction)  
Dr. Terrance J. Jackson  
Anthony D. Parsons  
John D. Bolling  
Robert F. Gee  
Jonathan L. Pack  
John L. Riley  
William J. Scheib