Independent Assessment of Emergency Preparedness Capabilities at the Nevada National Security Site

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Office of Enterprise Assessments
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Table of Contents

Acronyms

DAF	Device Assembly Facility
DM	Duty Manager
DNF	Defense Nuclear Facility
DOE	U.S. Department of Energy
EA	Office of Enterprise Assessments
EAL	Emergency Action Level
EAT	Emergency Action Team
EMS	Emergency Medical Services
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
ERO	Emergency Response Organization
FBI	Federal Bureau of Investigation
FY	Fiscal Year
F&R	Fire and Rescue Department
HAZMAT	Hazardous Materials
IC	Incident Commander
JIC	Joint Information Center
LED	Local Emergency Director
MOU	Memorandum of Understanding
MRT	Mine Rescue Team
MSTS	Mission Support and Test Services, LLC
NCSO	Nye County Sheriff's Office
NFO	NNSA Nevada Field Office
NLV	North Las Vegas
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Site
OCC	Operations Command Center
OE	Operational Emergency
OFI	Opportunity for Improvement
OST	Office of Secure Transportation
PA	Protective Action
RAP	Radiological Assistance Program
RCT	Radiological Control Technician
REAC/TS	Radiation Emergency Assistance Center/Training Site
RERT	Radiological Emergency Response Team
RWMC	Radioactive Waste Management Complex
SFO	Senior Federal Official
SOC	SOC, LLC
TOC	Tactical Operations Center
TRU	Transuranic
UMC	University Medical Center

INDEPENDENT ASSESSMENT OF EMERGENCY PREPAREDNESS CAPABILITIES AT THE NEVADA NATIONAL SECURITY SITE

Executive Summary

The U.S. Department of Energy (DOE) Office of Enterprise Assessments (EA) conducted an independent assessment evaluating whether the National Nuclear Security Administration Nevada Field Office (NFO); Mission Support and Test Services, LLC (MSTS), the Nevada National Security Site (NNSS) management and operating contractor; and SOC, LLC (SOC), the protective force contractor, established and validated their emergency preparedness capabilities as required by DOE Order 151.1D, *Comprehensive Emergency Management System*. The assessment, conducted from March through May 2022, evaluated a six fiscal year (FY) period, FY 2016 through FY 2021 (October 1, 2015, to September 30, 2021), at the request of NFO. Specifically, the site-level and facility-level exercise programs were evaluated to determine whether Federal and contractor organizations validated emergency preparedness capabilities to ensure that the site can respond effectively and efficiently to all operational emergencies with appropriate response measures to protect workers, responders, and the public. EA also reviewed the status of corrective actions for previous findings from a 2019 EA assessment.

EA identified the following strengths:

- MSTS maintained and validated many site-level emergency preparedness capabilities derived from NFO-approved emergency planning hazards assessments (EPHAs).
- NFO routinely interfaced and coordinated with local, state, and Federal agencies and organizations responsible for offsite emergency response to supplement onsite NNSS capabilities.
- NFO, MSTS, and SOC staffed an emergency response organization consisting of personnel with the skills and disciplines necessary for mitigating emergency incidents.

EA also identified some weaknesses in the NNSS emergency management program, including the following four findings that warrant a high level of attention from NFO and MSTS management:

- MSTS did not adequately establish, maintain, or validate its emergency medical response capability for contaminated or contaminated-injured personnel during the six-year period.
- MSTS did not maintain or annually evaluate its facility-level emergency response capabilities for EPHA facilities or defense nuclear facilities.
- MSTS did not validate some important site-level emergency response or offsite interface capabilities needed to respond to the hazards identified in the EPHAs.
- MSTS did not adequately identify the causes of the problems associated with two of the three EA 2019 findings to prevent recurrence of the issues and did not evaluate the effectiveness of corrective actions through verification and validations conducted by an independent reviewer.

In summary, NFO, MSTS, and SOC adequately maintained many emergency preparedness capabilities. However, MSTS did not maintain and validate its capabilities for facility-level emergency response organizations or its capabilities for a response involving contaminated or contaminated-injured personnel. In addition, MSTS did not validate several of its onsite and offsite interface capabilities during the six-year period. Consequently, MSTS cannot ensure the readiness of some capabilities for responding to the hazards identified in the EPHAs, including proficient response capabilities of the operations staff, emergency management staff, and incident command staff. EA will monitor corrective actions implementation, as appropriate, and seek opportunities to evaluate future exercises and performance tests.

INDEPENDENT ASSESSMENT OF EMERGENCY PREPAREDNESS CAPABILITIES AT THE NEVADA NATIONAL SECURITY SITE

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 establishment and validation of emergency preparedness capabilities at the Nevada National Security Site (NNSS). This assessment is part of a targeted review of emergency preparedness for high-hazard facilities within DOE, including the National Nuclear Security Administration (NNSA). This targeted review, conducted from March through May 2022, evaluated the processes for identifying and maintaining emergency response capabilities in a state of readiness to protect the health and safety of workers, responders, and the public for any incident, whether natural or manmade, that requires response action beyond normal operations.

The initial scope of the assessment was in accordance with the *Plan for the Independent Assessment of Emergency Preparedness Capability at the Nevada National Security Site*, March 2022, which evaluated the site-level and facility-level exercise programs to assess whether the NNSA Nevada Field Office (NFO), Mission Support and Test Services, LLC (MSTS), and SOC, LLC (SOC) validated the emergency response capabilities derived from NFO-approved emergency planning hazards assessments (EPHAs). DOE Order 151.1D, *Comprehensive Emergency Management System*, requires field offices to review and approve all EPHAs. DOE Order 151.1D also identifies the functional emergency response requirements for DOE and NNSA operations. These requirements include developing an integrated and comprehensive emergency management system to ensure that sites can respond effectively and efficiently to all operational emergencies (OEs) so that appropriate response measures are taken to protect workers, responders, and the public. In addition, EA, in coordination with NFO, expanded the scope of the assessment to include a follow-up on the corrective actions for the findings identified in the EA report, *Emergency Management Exercise Program Assessment at the Nevada National Security Site*, June 2019.

MSTS, as the NNSS management and operating contractor, is responsible for managing and implementing the overall emergency management program in collaboration with SOC, the protective force contractor, in order to identify improvement items for emergency preparedness and response capabilities. MSTS is required to determine the necessary site- and facility-level emergency response capabilities based on site-specific attributes, including types and forms of hazardous materials (HAZMAT), demographics, and geography. In addition, MSTS is required to implement the facility-level emergency response capabilities for providing the necessary initial response actions to protect workers, as stated in the NNSS emergency plan. DOE Order 151.1D requires site management and operating contractors to prepare for incidents at the upper end of the potential consequence spectrum and plan for the protection of personnel, mitigation of potential HAZMAT releases, and establishment of appropriate short-term recovery actions.

Additionally, in accordance with DOE Order 151.1D, MSTS emergency planners are required to plan how to acquire response capabilities, when necessary, from external sources, including surrounding communities, state authorities, Federal agencies, and offsite DOE and national assets. Some response capabilities deemed necessary for both low-probability and severe incidents would be a financial burden to maintain on site or could be unavailable when such an incident occurs. Accordingly, preparation for such an incident requires establishing agreements with offsite entities that enable integration into the NNSS emergency response.

2.0 METHODOLOGY

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

As identified in the assessment plan, certain aspects of EA Criteria and Review Approach Document 33-09, *DOE O 151.1D Emergency Management Program*, provided a focused set of assessment objectives, criteria, and approaches. While sites are required to validate capabilities over a five-year period, this assessment evaluated site-specific emergency planning and documented performance demonstrations over a six fiscal year (FY) period from FY 2016 to FY 2021 (October 1, 2015, to September 30, 2021). The addition of the sixth year was at the request of NFO due to their desire to include additional exercises and actual events that occurred in 2021, which validated some response capabilities. This assessment evaluated site-specific emergency planning and documented performance demonstrations over the past five-year period and was not intended to represent a full programmatic evaluation of the site's emergency management program. Due to DOE COVID-19 protocols, the assessment activities were mostly conducted remotely, but included an onsite data validation visit.

This assessment evaluated whether NFO, MSTS, and SOC established, and then validated over a six-year period, the NNSS emergency response capabilities using scripted, scenario-driven, operations-based OE 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. Operations-based exercises test and validate policies, plans, procedures, training, equipment, and interagency agreements 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 event. DOE operations-based exercises include functional exercises, full-scale exercises, and full-participation exercises. In addition, MSTS and SOC may credit an actual emergency response as an operations-based exercise by providing a documented critique and an emergency response after-action report.

EA examined key documents, including exercise after-action reports, exercise packages, plans, procedures, manuals, and analyses. EA also conducted interviews with key personnel responsible for developing and executing the emergency management program. The members of the assessment team, the Quality Review Board, and management responsible for this assessment are listed in appendix A.

In 2019, EA assessed the U1a Complex full-scale exercise, as documented in *Emergency Management Exercise Program Assessment at the Nevada National Security Site,* June 2019 and issued three findings. EA followed up on the corrective actions for these three findings during this assessment. In addition, the results of the EA June 2019 assessment determined that the previous management and operating contractor's conclusion to close a 2016 finding was without justification; accordingly, NFO senior management instructed MSTS to reopen the finding in its issues management program and fully address the referenced issues stated in *Emergency Management Exercise Program Assessment at the NNSS, June 2016 Full-Scale Exercise DORSET-16*, July 2016.

3.0 RESULTS

NNSA, through NFO, provides oversight of NNSS operations. The extent of emergency planning and preparedness required for the site directly corresponds to the types and scope of hazards present and the potential consequences of accidents or incidents. MSTS has developed eight NNSS EPHAs that provide the technical basis for emergency planning and preparedness. MSTS used EPHA results to identify and

define personnel, resources, facilities, and systems-related capabilities in NFO-EOC-PLN-101, *Consolidated Emergency Management Plan*, and REF-FR-BNA-2017, rev. 9a, *Nevada National Security Site Fire and Rescue Baseline Needs Assessment Document*. Importantly, part of the NNSS emergency response organization (ERO) is a site-level composite structure consisting of an integrated line and staff organization that responds to all emergency incidents within the NNSS boundary. In addition, seven EPHA facility-level EROs provide initial emergency response to facility-specific incidents, with support from site-level response capabilities as needed. Additionally, the roles of local, state, and Federal agencies and organizations responsible for supplementing onsite response capabilities are documented in formal assistance agreements with individual response organizations and agencies. Finally, MSTS is required to validate each site-level capability over a five-year period; however, at the request of NFO, EA used a six-year data set.

MSTS conducted nine site-level operations-based exercises using scenarios from the spectrum of potential OEs identified in the EPHAs and met the annual site-level exercise requirement during the six-year period. The incidents and scenarios postulated by MSTS at the NNSS EPHA facilities included the substances and materials present at the site to test the integrated emergency response capabilities. Additionally, four of the exercises used earthquakes as the severe event initiators, and one of the exercises included participation by local, state, and Federal organizations. Furthermore, MSTS conducted exercises with postulated incidents involving an active assailant, each requiring an integrated ERO response. During the six-year period, MSTS evaluated its responses to six actual site-level incidents. This assessment credited these incidents because MSTS categorized them as an OE, implemented the NNSS emergency plan, and documented the incident critique and responses in an after-action report, as required by DOE Order 151.1D.

Sections 3.1 through 3.4 discuss response capabilities specific to site-level ERO cadres and teams, facility-level ERO cadres and teams, response facilities and systems, and offsite response interfaces, respectively. NNSS has 12 unique site-level teams, seven EPHA facility-level response teams, 12 primary or alternate response facilities and systems, and 16 offsite response interfaces. Section 3.5 discusses the follow-up for four previous EA findings.

3.1 Site-Level Emergency Response Organization

This portion of the assessment evaluated whether NFO, MSTS, and SOC have established and validated the NNSS 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 baseline needs assessment, hazard survey, and threat and hazard identification risk assessment. Personnel from NFO, MSTS, and SOC fill staff positions within the site-level ERO.

NNSS Fire and Rescue Department

MSTS has adequately established and maintains fire department capabilities. The NNSS Fire and Rescue (F&R) Department provides the following four emergency critical response capabilities:

- Emergency medical services (EMS) at the advanced life support level for uncontaminated, contaminated, and contaminated injured personnel

- Structural fire suppression, investigation, and wildland fire fighting
- HAZMAT response
- Technical rescue, including high/low angle rescue, vehicle extrication, confined space rescue, structural collapse rescue, trench rescue, tower rescue, and surface water rescue.

MSTS has organized F&R into three shifts with a total of 60 personnel. The command structure of each shift includes staffing for two fire stations. Fire Station 1 has an assistant chief, a firefighter captain, an EMS division chief, and a paramedic captain; Fire Station 2 has a firefighter captain and a senior paramedic. There are also five paramedics at Fire Station 1 and two paramedics at Fire Station 2 who have been assigned by F&R to each shift. Under the direction of the MSTS medical director, F&R has sole responsibility for emergency medical response at NNSS. During the six-year period, MSTS validated its fire department response capabilities, including 21 postulated HAZMAT, EMS, or fire incident exercises and six actual incidents.

Protective Force

SOC provides site and facility access control and protection of site assets, including special response team personnel and, when necessary, canine services provided through an agreement with Nye County. Agreements are in place with Federal and state jurisdictions to provide additional personnel, equipment, and capabilities, if needed. During the six-year period, SOC validated its protective force response capabilities in accordance with the site emergency plan, including support for incident response, in nine exercises and six actual incidents.

Incident Commanders

MSTS and SOC have adequately implemented command and control for an onsite incident scene, consistent with the National Incident Management System Incident Command System. The initial assignment of the incident commander (IC) role depends on the nature of the incident. For medical, fire, wildland fire, and HAZMAT incidents, F&R becomes the IC. For security incidents and active threats, SOC assumes the role of IC until there is no remaining threat. As incidents warrant, command and control of the incident scene may transition to a unified command. MSTS and SOC validated their IC response capability in 25 exercises and six actual incidents during the six-year period. During the six-year period, F&R served in the IC capacity 27 times and SOC four times.

NNSS Operations Command Center Staff

MSTS has adequately established and maintains an NNSS operations command center (OCC) staff to receive reports of potential emergency conditions from the field. MSTS continuously staffs the OCC to provide emergency notifications, NNSS 911/F&R dispatch, area access, and air and ground scheduling and deconfliction functions in accordance with EPIP-OCC.001, *OCC Duty Manager Emergency Operations*. In addition, general OCC responsibilities include notifying the protective force of F&R coded duress signals; providing protection of onsite personnel; categorizing and classifying emergencies; performing offsite notifications and issuing protective action recommendations; activating the site-level ERO; and providing overall direction and coordination of the site-level response.

MSTS has stationed a duty manager (DM) in the OCC to manage initial site-level response actions and coordinate initial site response actions. Except for downgrading or terminating from incidents that cause activation of the site-level ERO, the DM has the authority of the Emergency Operations Center (EOC) emergency manager and NFO Senior Federal Official (SFO), as appropriate, until ERO members staff

these positions. MSTS staffs the OCC with 20 personnel who fill four functional positions and validated its OCC staff response capability in 22 exercises and six actual incidents during the six-year period.

Tactical Operations Center Staff

NFO and SOC have adequately established and maintain a tactical operations center (TOC) staff that provides direct support to protective force members in the field when they are responding to a security-related or law enforcement incident. During these types of incidents, the TOC staff coordinates security-related operations and serves as the primary emergency support organization for protective force field units. During law enforcement-related incidents, the TOC coordinates with law enforcement resources, including the Nye County Sheriff's Office (NCSO) and Federal Bureau of Investigation (FBI). SOC staffs the TOC with a coordinator to integrate response actions. The TOC also has an NFO representative who serves as a liaison between the TOC and NNSA. Additionally, the NCSO Lieutenant, Mercury Division, in accordance with a verbal agreement, assigns one Deputy Sheriff to support TOC operations. Other SOC personnel are assigned to provide TOC communications, logistics, incident action planning, and recovery planning. NFO and SOC validated their TOC response capability in one exercise (conducted 10/14/15) during the six-year period.

Emergency Operations Center Staff

NFO, the National Oceanic and Atmospheric Administration Air Resources Laboratory/Special Operations and Research Division (ARL/SORD), MSTS, and SOC 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 and offsite liaison capabilities, and emergency public information (EPI). MSTS guides and supports emergency response efforts and resources used inside the NNSS boundary through EOC operations. The EOC staff operates as a single capability that has the flexibility to collectively operate from two locations at the North Las Vegas (NLV) facility and the NNSS at Mercury. ARL/SORD provides meteorological support and consequence assessment during emergencies for MSTS. ARL/SORD, MSTS, and SOC have staffed the EOC cadre with 55 personnel who fill 16 functional positions. NFO, ARL/SORD, MSTS, and SOC validated their EOC cadre response capability in 15 exercises and six actual incidents during the six-year period.

NFO Emergency Oversight

An NFO SFO is included as part of the ERO and provides the final authority to commit DOE and NNSA resources. The SFO provides guidance, approves releases of EPI and official situation reports, and concurs on event termination. In addition, the SFO approves the declaration of continuity of operations events, if applicable, and approves requests for offsite support not covered by pre-existing agreements. Furthermore, the SFO supports requests for security actions (e.g., special deliberate rescue or assault procedures, critical negotiation demands, rules of engagement) if law enforcement (e.g., FBI) has not formally assumed responsibility for managing the incident. For safeguards and security emergencies, the IC (SOC) is responsible for the tactical response, and the NFO SFO is responsible for the overall coordination of the emergency response. NFO staffs the Federal ERO positions with four personnel who fill one functional position. NFO validated its emergency oversight response capability in 15 exercises and six actual incidents during the six-year period.

Emergency Public Information Staff

NFO and MSTS 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

provides resources for NFO, 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 and EOC emergency manager; 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. For some emergencies, the public information officer may activate the EPI incident response team (an 8- to 10-person group of Federal and contractor public affairs staff) to conduct operations for employee and government notifications, social media writing and monitoring, and other EPI functions. MSTS staffs the EPI capability with 13 personnel who fill 10 functional positions. NFO and MSTS validated their EPI response capability in five exercises during the six-year period.

Occupational Medicine Team

MSTS has adequately established an occupational medicine team to staff the primary NNSS medical facility, Building 23-650 Occupational Medical Facility, which is equipped to handle personnel with non-life-threatening injuries, illnesses, or exposures, with or without contamination. MSTS transfers individuals who have conditions requiring treatment beyond the scope of occupational medicine to a facility with the appropriate level of care. During normal work hours, the MSTS medical director, physicians, advanced practice clinicians, and other personnel are available to assess the condition of patients, provide necessary urgent or emergency care, arrange for patient transfer to appropriate facilities as needed, and determine appropriate supplemental treatment. During off-hours, on-call occupational medicine staff or the F&R EMS Division Chief determines whether EMS personnel should transfer an individual to an offsite medical facility for treatment. Occupational medicine and F&R staff also maintain a supply of specialized medicines to treat certain hazards, such as calcium gluconate for hydrofluoric acid burns, an antidote for cyanide poisoning, and chelation drugs for internal transuranic (TRU) uptake. MSTS staffs the occupational medicine team with 20 personnel. MSTS did not, however, validate its occupational medicine team's capabilities for incidents identified in the all-hazards planning basis, including the capability to support treatment of contaminated or contaminated-injured personnel (see **Finding F-MSTS-1** and **OFI-MSTS-1**). Consequently, MSTS has not validated a documented process for transporting, accepting, and treating contaminated and contaminated-injured personnel, which includes adequately planning medical treatment for incidents identified in the all-hazards planning basis. See Sections 3.3 and 3.4 for additional information related to this finding.

Radiological Emergency Response Team

MSTS has adequately established and maintains a radiological emergency response team (RERT), typically consisting of two 2-person teams that provides onsite field monitoring. The RERT draws its members from the radiological control department. MSTS dispatches the RERT to perform monitoring to determine safe evacuation routes and conduct monitoring at the furthest distance from the source where measurable radiological readings are probable within the boundaries of NNSS property. In addition, the RERT maintains close coordination with the EOC consequence assessment team to assess the immediate consequences of a radiological material release. The RERT can conduct radiological field monitoring operations offsite when approved by EOC management. MSTS staffs the RERT with 34 personnel who fill four functional positions. MSTS validated its RERT response capability in five exercises during the six-year period.

Industrial Hygiene Emergency Response Team

MSTS has adequately established and maintains an industrial hygiene emergency response team (IHERT) that provides onsite field monitoring using members of the industrial hygiene department. MSTS dispatches the IHERT to perform monitoring to determine safe evacuation routes and conduct monitoring

at the furthest distance from the source where measurable chemical readings are probable within the boundaries of NNSS property. In addition, the IHERT coordinates closely with the EOC consequence assessment team to assess the immediate consequences of a chemical release. MSTS staffs the IHERT with five personnel who fill two functional positions. MSTS is in the process of transferring responsibility for chemical monitoring in the field to the F&R HAZMAT team. MSTS validated its IHERT response capability in four exercises during the six-year period.

Mine Rescue Team

MSTS has adequately established and maintains mine rescue teams (MRTs), each of which consists of five members and one alternate. At least two NNSS-based MRTs are always available when workers are in the NNSS underground facilities. Each MRT consists of personnel who are qualified, trained, and equipped to provide emergency mine rescue services. In addition, a mine rescue station is maintained at Building 01-785204 at the U1a Complex. All required mine rescue and safety equipment are stored and maintained in a state of readiness at the mine rescue station. MSTS validated its MRT response capability in six exercises during the six-year period.

Site-Level Emergency Response Organization Conclusions

During the six-year period, NFO, MSTS and SOC adequately established, maintained, and validated most emergency response capabilities of the site-level ERO cadres and teams, as required by DOE Order 151.1D. Moreover, MSTS derived from its EPHAs an appropriate site-level ERO consisting of requisite skills and disciplines for mitigating emergency incidents. However, MSTS did not validate its occupational medicine team's response capability during the six-year period.

3.2 Facility-Level Emergency Response Organization

This portion of the assessment evaluated whether MSTS has established and validated its facility-level ERO structure and its emergency response capabilities, as required by DOE Order 151.1D. In accordance with the order, as previously stated, 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. 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 event. In addition, Defense Nuclear Facilities (DNFs) are required to annually conduct an exercise involving and evaluating the operations, emergency management, incident command, and EOC staffs.

MSTS has designated a local emergency director (LED), emergency action teams (EATs), and radiological control technicians (RCTs) at all EPHA facilities to respond to facility incidents using checklists and to implement facility-level emergency responses until an authorized IC arrives and turnover occurs. MSTS appropriately conducted annual facility-level exercises at each EPHA facility from October 1, 2015, through September 30, 2019, to validate the readiness of the facility-level EROs. However, after October 1, 2019, MSTS no longer required EPHA facilities (four of these are also DNFs) to annually validate facility-level response capabilities and ERO proficiency because MSTS eliminated most of the facility-level ERO designations. MSTS did not document a decision analysis to support the elimination of facility-level ERO response capabilities, and NFO has not approved the elimination of previously designated facility-level ERO positions. Furthermore, MSTS eliminated some ERO designations while still requiring these facility personnel to perform the same duties without imposing annual training and performance demonstration requirements, including annual demonstration of facility-

level capability and proficiency. Since September 2019, MSTS has not maintained a facility-level ERO and annually validated its facility-level emergency response capabilities for EPHA facilities and DNFs (see **Finding F-MSTS-2** and **OFI-MSTS-2**). Consequently, MSTS has not maintained and annually validated the readiness of response capabilities for the facility-level scenarios, as documented in its three EPHA facilities. In addition, MSTS has not maintained and annually validated the readiness of response capabilities at its four DNFs by involving the operations staff, emergency management staff, incident command staff, and EOC staff. Importantly, MSTS cannot currently ensure the readiness of the facility-level capabilities for responding to the hazards identified in the seven facility-specific EPHAs.

Before October 1, 2019, each EPHA facility annually validated its ERO response capabilities because of the remote locations of NNSS EPHA facilities and the length of the response times of centralized F&R and site-level ERO teams. MSTS used facility-level EROs for implementing the emergency plan and initiating initial immediate protective actions (PAs) and emergency responses to ensure the safety and health of workers and protect property. The person responsible for initial facility-level emergency management decision-making assumed the role of LED during an emergency and provided direction and oversight for the activities of the facility EAT. In addition, the LED was responsible for initial notifications and facility PAs. Furthermore, the LED assumed responsibility for the management of the incident scene until the arrival of the IC, at which time the LED provided an incident status briefing and turnover of incident command to the IC and then supported the incident command staff as a technical expert on facility operations as part of the unified command staff.

Device Assembly Facility

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT for the Device Assembly Facility (DAF), which is a DNF, through FY 2019. The DAF, located in the east-central portion of the NNSS in Area 6, provides facilities for nuclear test device assembly/disassembly operations, which require handling of high explosives in combination with special nuclear material. A portion of the DAF is designated as the National Criticality Experiments Research Center, which has a host of applications, including stockpile stewardship and numerous training activities, for maintaining and advancing expertise within the nuclear materials community. During the six-year period, MSTS validated its DAF facility-level ERO response capability annually from FY 2016 through FY 2019; however, MSTS did not maintain a facility-level ERO or annually conduct an exercise involving the operations staff, emergency management staff, incident command staff, and EOC staff to annually validate its facility-level emergency response capabilities for DAF in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**). Although a functional exercise was conducted in FY 2021, the facility-level response was simulated during a tabletop discussion, which did not validate any field activity.

Radioactive Waste Management Complex and Radioactive Waste Management Site

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT for the Area 5A Radioactive Waste Management Complex (RWMC) and Area 3 Radioactive Waste Management Site (RWMS), which together are a single DNF, through FY 2019. RWMC accepts both classified and unclassified low-level waste (LLW) for disposal. The developed area of RWMC consists of landfill disposal cells for near-surface disposal of packaged LLW and mixed LLW; a TRU waste storage pad and TRU waste storage pad cover building; and the Waste Examination Facility for the characterization and certification of TRU waste for disposal at the Waste Isolation Pilot Plant. Area 5A has a Resource Conservation and Recovery Act-regulated disposal cell to dispose of mixed LLW. The Area 3 RWMS consists of five disposal cells and two support structures. During the six-year period, MSTS validated its RWMC/RWMS facility-level ERO response capability annually from FY 2016 through FY 2019; however, MSTS did not maintain a facility-level ERO or annually conduct an

exercise involving the operations staff, emergency management staff, incident command staff, and EOC staff to annually validate its facility-level emergency response capabilities for RWMC/RWMS in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**).

Joint Actinide Shock Physics Experimental Research

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT for the Joint Actinide Shock Physics Experimental Research (JASPER) facility, which is a DNF, through FY 2020 (FY 2020 was a site-level exercise involving the JASPER facility.). The JASPER facility, located at the Able Compound, Area 27, conducts shock physics experiments on special nuclear material and other actinide materials. JASPER uses a two-stage, light-gas gun to accelerate projectiles into targets made from actinide materials. During the six-year period, MSTS validated its JASPER facility-level ERO response capability annually from FY 2016 through FY 2019. In FY 2020, MSTS postulated a JASPER incident to support the annual site-level exercise. However, MSTS did not maintain a facility-level ERO or annually conduct an exercise involving the operations staff, emergency management staff, incident command staff, and EOC staff to annually validate its facility-level emergency response capabilities for JASPER in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**).

Area 5 Hazardous Waste Storage Unit and Hazardous Waste Accumulation Area

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT for the Area 5 Hazardous Waste Storage Unit (HWSU) and Hazardous Waste Accumulation Area (HWAA) through FY 2019. The Area 5 HWSU and HWAA are located east of RWMC. HWSU is a prefabricated, rigid steel-framed, roofed shelter used to store hazardous, nonradioactive Resource Conservation and Recovery Act waste, nonradioactive Toxic Substances Control Act polychlorinated biphenyls waste, and state-regulated waste generated at NNSS. There are no full-time resident workers at HWSU or HWAA, but workers are present at the facility during receipt and transfer of waste and for walkthrough surveys. During the six-year period, MSTS validated its HWSU/HWAA facility-level ERO response capability annually from FY 2016 through FY 2019; however, MSTS did not maintain a facility-level ERO or annually evaluate its response capability and proficiency at the HWSU/HWAA facilities in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**).

Test and Evaluation Facilities

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT for the test and evaluation facilities, which include the Area 5 Non-proliferation Test and Evaluation Complex (NPTEC) facility and the Area 26 Port Gaston, through FY 2019. Test and evaluation facilities provide a formalized process to ensure that the products developed to support national security interests are tested and evaluated in a consistent, effective, independent, and operationally sound manner to expedite transition to the user community. Test and evaluation facilities focus on test and evaluation projects that require high-hazard tasks (such as the use of hazardous chemicals) or high-security venues. During the six-year period, MSTS validated its NPTEC and Area 26 Port Gaston facility-level ERO response capability annually from FY 2016 through FY 2019; however, MSTS did not maintain a facility-level ERO or annually evaluate its response capability and proficiency at its Test and Evaluation facilities in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**).

U1a Complex

MSTS had adequately established and maintained a facility-level response team that included an LED, RCTs, and an EAT, which includes an MRT, for the U1a Complex, which is a DNF, through FY 2019. The U1a Complex, located in Area 1, provides multiple expendable drifts as a location for stockpile stewardship subcritical experiments involving the use of high explosives and weapons materials, including plutonium. The U1a Complex consists of various surface-support structures; three vertical shafts (U1a, U1g, and U1h), each approximately 1,000 feet deep; a main horizontal drift approximately 1,750 feet long connecting the three vertical shafts; and side drifts totaling more than 5,547 feet. During the six-year period, MSTS validated its U1a Complex facility-level ERO response capability annually from FY 2016 through FY 2019; however, MSTS did not maintain a facility-level ERO or annually conduct an exercise involving the operations staff, emergency management staff, incident command staff, or EOC staff to annually validate its facility-level emergency response capabilities for the U1a Complex in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**). Furthermore, EA assessed the U1a Complex full-scale exercise in 2019 as documented in *Emergency Management Exercise Program Assessment at the Nevada National Security Site, June 2019* and issued three findings, two of which involved numerous weaknesses and inadequate performance related to the U1a facility-level ERO. As further discussed in section 3.5, MSTS closed these findings without implementing adequate corrective actions for preventing recurrence of the facility-level ERO issues associated with these findings.

U12u Tunnel

MSTS had adequately established and maintained a facility-level response team that included an LED and an EAT for the U12u Tunnel through FY 2019. The tunnel, located in the western Area 12, is U-shaped; the main drifts extend approximately 130 feet, and the back drift is approximately 100 feet long. The U12u Tunnel is used for various assessment capabilities. During the six-year period, MSTS validated its U12u Tunnel facility-level ERO response capability annually from FY 2016 through FY 2019. In FY 2021, MSTS postulated a U12u incident to support the annual site-level exercise. However, MSTS did not maintain a facility-level ERO or annually evaluate its response capability and proficiency at its U12u Tunnel facility in FY 2020 or FY 2021 (see **Finding F-MSTS-2** and **OFI-MSTS-2**).

Facility-Level Emergency Response Organization Conclusions

Before October 1, 2019, MSTS had adequately established and maintained facility-level ERO cadres and teams as required by DOE Order 151.1D. However, since the beginning of FY 2020, MSTS no longer required seven EPHA facilities (four of these are also DNFs) to maintain facility-level EROs or annually validate their response capabilities and ERO proficiency because MSTS eliminated most of the facility-level ERO designations without a documented decision analysis to support the change. Nevertheless, MSTS still requires the facility personnel to perform the same duties as required under an ERO designation. Consequently, MSTS cannot currently ensure the readiness of the facility-level capabilities for responding to the hazards identified in the seven facility-specific EPHAs.

3.3 Response Facilities and Systems

This portion of the assessment evaluated whether NFO, MSTS, and SOC have established and validated emergency facilities and systems capabilities commensurate with the associated hazards and threats identified in the all-hazards planning basis. In addition, this portion of the assessment evaluated whether NNSS established and maintained backup capabilities for an EOC, as well as supporting equipment, as required by DOE Order 151.1D. Also assessed were other important emergency response facilities and systems identified by NFO, MSTS, and SOC.

NLV Emergency Operations Center

MSTS has adequately established and maintains an EOC at the NLV Nevada Support Facility. 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 for connecting with fire, medical, and other response teams. The EOC has equipment and systems that allow the use of real-time onsite and offsite meteorological data for consequence assessment of incidents with potential or actual HAZMAT involvement. In addition, the EOC has interface capability with the JIC for implementing EPI protocols and procedures. Basic functions performed in the EOC include conducting incident assessments, supporting facility-level responses, reviewing PAs, and coordinating offsite interfaces. Throughout the EOC, MSTS has provided 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. MSTS validated its NLV EOC capability in 15 exercises and six actual incidents during the six-year period.

NNSS Emergency Operations Center

MSTS has adequately established and maintains a second EOC capability at Mercury in Building 23-600, which can support all EOC functions. The NNSS EOC is a dedicated facility and has work areas for the command staff and support teams. Each work area has the systems and equipment needed to support EOC activities, including an information management system for collecting and disseminating incident information. The NLV and NNSS EOCs each act as an alternate EOC capability for performing the key functions of an EOC if the other is unavailable. In addition, video conferencing supports the collective operation of the NLV and NNSS EOCs. MSTS validated its NNSS EOC capability in 15 exercises and six actual incidents during the six-year period. During one exercise (conducted 5/10/17) that postulated the NNSS EOC being impacted by HAZMAT, MSTS transitioned to operating only out of the NLV EOC by relocating staff from the NNSS EOC.

NNSS Operations Command Center

MSTS has adequately established and maintains an OCC at the NNSS in Building 23-600. MSTS and SOC continuously staff the OCC to provide monitoring, emergency, and dispatch functions. The OCC is a dedicated facility and serves as the site's "E-911" center for immediate emergency response. Numerous systems provide access to site meteorological data, multiple communications capabilities, the National Warning System, and geographical information system computers. MSTS validated its NNSS OCC capability in 22 exercises and six actual incidents during the six-year period.

NLV Operations Command Center

MSTS has adequately established and maintains an OCC located at the NLV Nevada Support Facility, which can support most NNSS OCC functions. The NLV OCC is a dedicated facility that has work areas for the MSTS and SOC staff and access to data and communications systems found in the NNSS OCC. MSTS adequately validated its NLV OCC capability in one exercise (conducted 5/10/17) during the six-year period.

Joint Information Center

NFO and MSTS have adequately established and maintain a primary JIC to disseminate EPI. The JIC is a dedicated facility located at the NLV Nevada Support Facility, which is outside the NNSS emergency

planning zone. MSTS maintains equipment and systems to support EPI activities that include public inquiry, media inquiry, media monitoring, media support services and management, and administrative activities. NFO and MSTS validated their JIC capability in five exercises during the six-year period.

Alternate Joint Information Center

NFO and MSTS have adequately established and maintain an alternate JIC located at the National Atomic Testing Museum in Las Vegas, which is located outside the NNSS emergency planning zone. The alternate JIC is equipped with telephones, fax machines, and information management systems. The alternate JIC includes a media briefing area, administrative support area, media monitoring area, and telephone banks. However, MSTS did not validate its alternate JIC response capability during the six-year period (see **Finding F-MSTS-3** and **OFI-MSTS-2**). Consequently, MSTS cannot currently ensure the readiness of the alternate JIC facility for supporting EPI staff response to the hazards identified in the EPHAs.

NNSS Medical Facility

MSTS has adequately established and maintains a medical facility located at the NNSS in Building 23-650 in Area 23. This dedicated facility, staffed by the occupational medicine team, responds to non-life-threatening injuries and occupational-related injuries, illnesses, and exposures. Chelation therapy treatment for personnel who are determined to have TRU uptake can be performed at the medical facility. The medical director is responsible for the medical protocols used at the NNSS. However, MSTS did not validate its NNSS medical facility capabilities associated with incidents identified in the all-hazards planning basis, including the capability to support treatment of contaminated and contaminated-injured personnel during the six-year period (see **Finding F-MSTS-1** and **OFI-MSTS-1**). Consequently, MSTS cannot currently ensure the readiness of the NNSS medical facility to support the occupational medicine team's response to the hazards identified in the EPHAs.

Central Alarm Station

SOC has adequately established and maintains a central alarm station (CAS) that provides command and control of security-related incidents that require a protective force response. The CAS, located in the DAF at the NNSS, is a dedicated facility staffed 24/7 to monitor, process, and validate all security alarms occurring at the DAF. The secondary alarm station, also located at the NNSS, is a dedicated facility staffed 24/7 to monitor, process, and validate all non-nuclear security alarms occurring at the NNSS. The secondary alarm station serves as a backup/redundant system to the CAS. During the six-year period, MSTS validated the CAS capability in two exercises and one actual incident and the secondary alarm station capability in one exercise (conducted 8/28/2019).

Tactical Operations Center

SOC has adequately established, maintains, and manages a TOC in Area 23 for use by the protective force and law enforcement to support incident response. The TOC provides support for emergency responses associated with law enforcement and security incidents, serves as the primary emergency support for protective force field units, and receives logistical support from the EOC as needed. SOC validated its TOC capability in one exercise (conducted 10/14/15) during the six-year period.

Personnel Decontamination Facilities

MSTS has adequately established and maintains personnel decontamination capabilities and facilities located at the NNSS (at the DAF in Area 6, Building 05A-31 in Area 5A, and the NNSS medical facility

in Area 23), which are staffed by the RCT and/or the occupational medicine team. However, during the six-year period, MSTS did not validate the capability of any of its onsite personnel decontamination facilities and staffing to support the treatment of contaminated and contaminated-injured personnel (see **Finding F-MSTS-1** and **OFI-MSTS-1**). Consequently, MSTS cannot currently ensure the readiness of the personnel decontamination facilities to support the RCT and occupational medicine team's response to the hazards identified in the EPHAs.

Emergency Information System

MSTS has adequately established and 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. MSTS has installed the WebEOC application on two computer servers located in the EOCs to avoid a single point of failure. The two servers are independent of the NNSS network and firewall constraints, enabling operation in stand-alone mode, which is independent of potential degradation of the NNSS infrastructure. In addition, WebEOC has connected workstations in the EOCs, OCCs, JICs, TOC, and most EPHA facilities. Furthermore, MSTS can share WebEOC status boards with DOE Headquarters and other external agencies, using previously established and approved information technology protocols, as needed and with permission granted by the SFO during an emergency. MSTS validated its WebEOC capability in 14 exercises and six actual incidents during the six-year period.

DOE Alert, Warning, Accountability, and Response System

MSTS has adequately established and maintains DOE Alert, Warning, Accountability, and Response - Nevada (DOE AWARe) since 2019 as its primary mass notification system for notifying and keeping personnel informed about emergencies at the NLV facility and NNSS. DOE AWARe is a cloud-based service, like the system used at DOE Headquarters, capable of sending notifications to multiple devices, including work phones, cell phones, home phones, and email. In addition, the OCC DM uses DOE AWARe to activate ERO venues, such as the EOC, JIC, and Continuity of Operations Response Team. Additionally, DOE AWARe is used to provide personnel accountability for NNSS and NLV and PAs for personnel in an affected area. MSTS validated its DOE AWARe capability in 17 exercises and six actual incidents during the six-year period.

Response Facilities and Systems Conclusions

NFO, MSTS, and SOC have adequately established, maintained, and validated capabilities for many of the primary emergency response facilities and all key emergency management systems. However, during the six-year period, MSTS did not validate the capabilities of its alternate JIC, NNSS medical facility, or personnel decontamination facilities.

3.4 Offsite Response Interface Capabilities

This portion of the assessment evaluated whether NFO, MSTS, and SOC 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.

DOE Headquarters Watch Office

NFO and MSTS have adequately established and maintain an interface capability with the DOE Headquarters notification point, collocated with the Headquarters EOC. Upon receiving an event notification, the watch office duty officer routinely notifies the appropriate personnel responsible for activating a DOE or NNSA emergency management team. MSTS validated its DOE Headquarters notification point interface capability in six exercises and six actual incidents during the six-year period.

DOE Headquarters Emergency Operations Center

NFO and MSTS have adequately established and maintain interface capabilities with the DOE Headquarters EOC, located in the Forrestal Building in Washington, D.C. A backup EOC is in Germantown, Maryland. Both facilities can communicate with NNSS via telephone, the emergency communications network, facsimile, and classified/unclassified video teleconferencing. NFO, MSTS, 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. MSTS validated its DOE Headquarters EOC interface capability in two exercises during the six-year period.

Aerial Measuring System

NFO and MSTS have adequately established and maintain interface capabilities with the NNSA Aerial Measuring System (AMS), which provides fixed and rotary wing aircraft equipped with radiological monitoring instrumentation to assess airborne and ground deposition of radioactive materials. AMS provides collected information to the Data and Assessment Group at the Federal Radiological Monitoring and Assessment Center for organization, evaluation, interpretation, and distribution to appropriate emergency management centers or agencies. NNSA administers the AMS, which operates out of Nellis Air Force Base in Las Vegas, Nevada, and Joint Base Andrews in Maryland. MSTS validated its AMS interface capability in one exercise (conducted 2/27/19) during the six-year period.

National Atmospheric Release Advisory Center

NFO and MSTS have adequately established and maintain interface capabilities with the NNSA Atmospheric Release Advisory Capability for assessing HAZMAT released into the atmosphere. DOE Order 151.1D requires that facilities maintain the capability to use the National Atmospheric Release Advisory Center (NARAC) as part of near real-time consequence assessment activities. Lawrence Livermore National Laboratory operates the Atmospheric Release Advisory Capability at NARAC. 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 release. MSTS validated its NARAC interface capability in one exercise (conducted 2/27/19) during the six-year period.

Radiological Assistance Program

NFO and MSTS have adequately established and maintain interface capabilities with the NNSA Radiological Assistance Program (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) for monitoring offsite radiological hazards. NNSA implements RAP regionally, coordinating between the emergency response elements of the state, local, and Federal agencies. The Region 7 RAP team consists of personnel located in Las Vegas, Nevada, and Livermore, California. 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. MSTS does not have dedicated offsite field monitoring teams, but the RERT can conduct radiological field monitoring operations offsite when approved by the EOC. Moreover, offsite field monitoring relies on the integration of other potential state and Federal monitoring teams, including the Region 7 RAP, to provide the primary offsite monitoring capability for an NNSS radiological incident. Importantly, MSTS has documented 71 radiological emergency action level (EAL) scenarios that would result in a general emergency declaration that could require RAP to provide monitoring for offsite consequences. However, during the six-year period, MSTS did not validate its RAP interface capability, which provides the primary means of offsite radiological field monitoring for the State of Nevada and DOE (see **Finding F-MSTS-3** and **OFI-MSTS-2**). Consequently, MSTS cannot currently ensure the readiness of offsite field monitoring capabilities for confirming plume boundaries and providing radiological monitoring support to local and state governments.

Radiation Emergency Assistance Center/Training Site

NFO and MSTS have adequately established and maintain interface capabilities with the NNSA Radiation Emergency Assistance Center/Training Site (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, MSTS has documented EAL scenarios for an unplanned nuclear criticality that would potentially require interaction with REAC/TS during a response. Furthermore, REAC/TS interface is potentially required for 71 EAL scenarios that could involve inhalation of radiological material by workers, responders, or the public. However, MSTS did not validate its REAC/TS interface capability for medical treatment associated with incidents identified in the all-hazards planning basis including unplanned nuclear criticality and inhalation of radiological material (see **Finding F-MSTS-1** and **OFI-MSTS-1**). Consequently, MSTS cannot currently ensure the readiness of its occupational medicine team or offsite hospital staffs to effectively integrate with REAC/TS following an unplanned nuclear criticality exposure or inhalation of radiological material.

Federal Bureau of Investigation

NFO has adequately established and maintains interface capabilities with the FBI to respond to any incident at the NNSS involving terrorists or other security incidents, in accordance with the memorandum of understanding (MOU) between NFO and the Department of Justice, FBI, Las Vegas Field Office. NFO has integrated FBI technical specialists into the NNSS ERO structure and concept of operations. An initial FBI response to NNSS includes personnel from the Las Vegas Field Office. The FBI may deploy special agents to support response activities, investigations, and intelligence sharing at the EOC and incident command post, in accordance with the MOU between NFO and the FBI for incident response resolution. The FBI may assume IC responsibilities or integrate into the existing unified command structure during security or law enforcement emergencies. MSTS validated its FBI interface capability in one actual incident (occurred 1/28/19) during the six-year period.

Bureau of Land Management

NFO has adequately established and maintains interface capabilities with the Bureau of Land Management for wildland fire response at the NNSS, in accordance with the MOU between NFO and the U.S. Department of Interior, Bureau of Land Management, Southern Nevada District. The MOU provides for timely assistance when a wildland fire response requires resources beyond the current F&R

capabilities at the NNSS. The F&R IC determines additional resource needs and Bureau of Land Management responders become part of a unified command. MSTS validated its Bureau of Land Management interface capability in five actual incidents during the six-year period.

U.S. Department of the Air Force

NFO has adequately established and maintains interface capabilities with the U.S. Department of the Air Force for wildland fire response at the NNSS, in accordance with the MOU between NFO and the U.S. Department of the Air Force. The MOU provides mutual assistance for emergency response and training, including a wildland fire response that requires resources beyond the current F&R capabilities at the NNSS. The F&R IC determines additional resource needs and U.S. Department of the Air Force responders become part of a unified command. Senior fire officers for F&R and the U.S. Department of the Air Force provide on-scene management, technical support, or communication coordination, as required. MSTS validated its U.S Department of the Air Force interface capability in three actual incidents during the six-year period.

Office of Secure Transportation, Host Site

NFO, MSTS, and SOC have adequately established and maintain interface capabilities with the Office of Secure Transportation (OST), in accordance with DOE Order 151.1D. In addition, DOE Order 151.1D requires DOE OST host sites to conduct an exercise no less than once every five years to assess and validate emergency response training related to the host site's ability to respond effectively to an OST emergency at the host site. As a host site, NFO, MSTS, and SOC, coordinate, communicate, and integrate applicable aspects of emergency planning, preparedness, and readiness with OST into a documented process for managing and controlling an OST event scene inside the NNSS boundary. NFO and MSTS include OST hazards in the site emergency management program. In addition, NFO and OST have entered into an agreement specific to rest-over-night or safe-haven requests from OST. This agreement includes the conduct of an exercise every five years to validate the required capabilities. During the six-year period, MSTS validated this agreement during one exercise (conducted 4/14/21). However, MSTS did not validate its ability to respond to an OST emergency as the NNSS host site during the six-year period (see **Finding F-MSTS-3** and **OFI-MSTS-3**). Consequently, MSTS cannot currently ensure its readiness to integrate OST to aid and assist the NNSS during a host site incident in accordance with *Concept of Operations between NNSA Host Sites and the Office of Secure Transportation*.

State of Nevada Department of Public Safety 24-hour Dispatch Center

NFO and MSTS have adequately established and maintain an interface capability with the State of Nevada Department of Public Safety (DPS) 24-hour Dispatch Center, located in Carson City, Nevada. Upon receiving an event notification, the dispatch center duty officer notifies the appropriate personnel responsible for activating state response personnel. The OCC DM gives initial notifications and interfaces with the State of Nevada through the DPS 24-hour Dispatch Center. Subsequent notifications are sent to the State Duty Officer and EOC, if activated. MSTS validated its interface capability with the State of Nevada DPS 24-hour Dispatch Center in three exercises and five actual incidents during the six-year period.

State of Nevada Division of Emergency Management

NFO and MSTS have adequately established and maintain interface capabilities with the State of Nevada EOC organizations that have emergency response or control responsibilities relevant to NNSS. The State of Nevada's emergency response for the NNSS is governed by the *State of Nevada Comprehensive Emergency Management Plan* and *State of Nevada Radiological Emergency Response Plan*. In addition,

the State of Nevada has an agreement in principle with NFO to support emergency management activities at the NNSS, designating the Nevada Division of Emergency Management (NDEM) to manage offsite state, local, Federal, and private organizations in a coordinated response to an incident at the NNSS. Responsibility for the response to an offsite emergency resides with the affected counties, with support from the State of Nevada when necessary. Requests for resources, including the National Guard, must be communicated to NDEM. MSTS validated its interface capability with the State of Nevada EOC in one actual incident (occurred 9/20/19) during the six-year period.

Offsite Medical Centers and Hospitals

NFO has established and maintains interface capabilities with the University Medical Center (UMC) of Southern Nevada, located in Las Vegas, Nevada. UMC is the State of Nevada's only Level I Trauma Center and Burn Care Center. The MOU between NFO and UMC provides the framework for the administration and internal management of the agreement and provides a means for direct communications between NFO and UMC related to preparation and support for emergency response, transportation planning, and other issues associated with NNSS activities. UMC has informally agreed to accept contaminated and contaminated-injured personnel from NNSS; however, the current MOU does not specifically address the transport, acceptance, and treatment of radiologically or chemically contaminated or contaminated and contaminated-injured personnel from NNSS.

DOE Order 151.1D requires sites containing hazardous materials to document the process for transporting, accepting, and treating contaminated and contaminated injured personnel. In addition, the site must ensure implementing agreements, as may be appropriate, for emergency medical first responder organizations, medical receiving facilities, and emergency medical transport services, including all reasonable modes of transportation. Ground transport from NNSS to either of the two closest offsite hospitals is approximately 60 to 70 miles. At the request of the F&R IC or paramedic on scene, medical transport by helicopter can be requested from Mercy Air Services. Typically, these services are available to NNSS within 18 minutes depending on availability of equipment. However, NFO does not have a formal agreement with Mercy Air Services to transport contaminated and contaminated-injured personnel. A working group is actively engaged in addressing this concern.

MSTS did not establish and maintain implementing agreements for emergency medical helicopter transport services (Mercy Air Services) or medical receiving facilities (local hospitals) for contaminated and contaminated=injured personnel or validate its interface capability with UMC during the six-year period (see **Finding F-MSTS-1** and **OFI-MSTS-1**). Consequently, MSTS has not validated a documented process for transporting, accepting, and treating contaminated and contaminated-injured personnel, which includes planning for medical treatment associated with incidents identified in the all-hazards planning basis. MSTS did not validate its interface capability with UMC during the six-year period, partly because of the cancelation of the March 2020 site exercise due to COVID-19.

Local and State of Nevada Law Enforcement

NFO has adequately established and maintains interface capabilities with both the NCSO and the DPS, Nevada State Police (NSP) through individual MOUs for law enforcement to support the protection of special nuclear material and other national security assets, people, equipment, and property located at NNSS. MSTS validated its interface capability with the NCSO in 16 exercises and one actual incident during the six-year period. However, MSTS did not validate its interface capabilities with the DPS, NSP during the six-year period (see **Finding F-MSTS-3** and **OFI-MSTS-2**). Consequently, MSTS cannot currently ensure the readiness of interface capabilities with the DPS, NSP.

Nye County Emergency Management

NFO has adequately established and maintains interface capabilities with Nye County, Nevada, per the reciprocal MOU for mutual assistance during emergencies. In addition, Nye County has a contract with NFO that requires the NCSO to maintain an office location at the NNSS in Mercury, Nevada, and provide law enforcement services 24/7 for the NNSS. MSTS validated its Nye County Emergency Management interface capability in three exercises and one actual incident during the six-year period. One of the exercises included a response from the Nye County EMS and heavy rescue.

Offsite Response Interface Capabilities Conclusions

NFO, MSTS, and SOC have adequately established and maintain response capabilities with many of 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. Interrelationships with many local, state, and Federal organizations are appropriately prearranged and documented in formal plans, agreements, understandings, or other prearrangements for mutual assistance and describe emergency measures provided by non-NNSS entities. However, MSTS did not validate five of its 16 offsite response interface capabilities during the six-year period. Specifically, during the six-year period, MSTS did not validate its Federal interface capabilities with RAP, REAC/TS, OST, or the DPS, NSP. Most importantly, MSTS has not maintained and validated an emergency medical response capability for contaminated and contaminated-injured personnel or documented implementing agreements for emergency medical helicopter transport services or medical receiving facilities.

3.5 Finding Follow-up

This portion of the assessment evaluated whether NFO and MSTS have closed previous EA findings associated with a DNF in accordance with DOE Order 151.1D, which requires conducting a causal analysis, developing a DOE-approved corrective action plan, and evaluating the effectiveness of corrective actions through verification and validations conducted by an independent reviewer.

MSTS entered the three findings from EA's June 2019 assessment of the NNSA emergency management exercise program into its issues management system. MSTS also conducted causal analyses, developed corrective action plans, and closed the findings. Although MSTS adequately addressed Finding F-MSTS-3 from the 2019 assessment, MSTS did not adequately address the other two findings, primarily because it did not include important performance issues, cited as the basis for the findings, in the causal analyses or corrective action plans. For example:

- The U1a LED and the IC did not effectively maintain situational awareness and a common operating picture with the OCC DM and the F&R dispatch.
- The LED directed the evacuation of personnel to a location inside the protective action zone.
- Some ERO notifications were delayed because OCC staffers were overwhelmed with multiple tasks at the beginning of the U1a incident and the DM did not have an effective method to track assigned tasks to completion throughout the OCC, contributing to the delay in EOC and MRT activation.
- The DM and F&R dispatch entered most of the incident information into WebEOC hours after the events occurred because OCC personnel had to recreate handwritten notes, which did not support real-time situational awareness by the ERO.

MSTS also did not adequately identify the cause of problems associated with two of the findings at a DNF to prevent recurrence or to evaluate the effectiveness of corrective actions through verification and

validations by an independent reviewer (see **Finding F-MSTS-4** and **OFI-MSTS-4**). Consequently, MSTS has not ensured that ERO performance issues are prevented from recurring.

Additionally, contrary to DOE Order 151.1D, NFO did not approve the corrective action plans for three findings identified in the EA 2019 assessment (see **Deficiency D-NFO-1** and **OFI-NFO-1**). Consequently, NFO did not ensure that corrective actions were tracked, identified, and implemented. In addition, EA's June 2019 assessment determined that the previous operating contractor's conclusion to close a 2016 finding was without justification; accordingly, during the assessment, NFO senior management instructed MSTS to reopen the finding in its issues management program and fully address the issues identified in *Emergency Management Exercise Program Assessment at the NNSS, June 2016 Full-Scale Exercise DORSET-16*, July 2016. MSTS opened the finding in its issues management system, developed an NFO-approved corrective action plan, and developed an *NNSS Offsite Response Interface Guide*, February 2022, which NFO also approved. MSTS has scheduled the closure of this issue for June 2022.

Finding Follow-up Conclusions

MSTS adequately closed one of the three EA 2019 findings and is progressing on addressing the reopened EA 2016 finding. However, MSTS did not effectively resolve two of the 2019 findings, primarily because it did not include important performance issues, cited as the basis for the findings, in the causal analysis or corrective action plans. Furthermore, MSTS did not evaluate the effectiveness of the corrective actions through verification and validations by an independent reviewer. Finally, contrary to requirements, NFO did not approve the corrective action plans for the 2019 findings. Consequently, MSTS has not ensured that the 2019 ERO performance issues are prevented from recurring.

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 corrective action plans for findings. Cognizant DOE managers must use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1 to manage the corrective actions and track them to completion.

Mission Support and Test Services, LLC

Finding F-MSTS-1: MSTS did not adequately establish, maintain, or validate its emergency medical response capability for contaminated or contaminated-injured personnel during the six-year period: (DOE Order 151.1D, att. 3, par. 6 and att. 4, par. 15)

- MSTS did not validate its occupational medicine team's capabilities for incidents identified in the all-hazards planning basis, including the capability to support treatment of contaminated or contaminated-injured personnel. (DOE Order 151.1D, att. 3, par. 6 and att. 4, par. 15)

- MSTS did not validate the capability of its onsite personnel decontamination facilities and staffing (the DAF in Area 6, Building 05A-31 in Area 5, and the NNSS medical facility in Area 23) to support treatment of contaminated or contaminated-injured personnel. (DOE Order 151.1D, att. 3, par. 6 and att. 4, par. 15)

- MSTS did not establish and maintain implementing agreements for emergency medical helicopter transport services (Mercy Air Services) or medical receiving facilities (local hospitals) for contaminated or contaminated-injured personnel or validate its interface capability with UMC. (DOE Order 151.1D, att. 3, par. 6.c and att. 4, par. 15)
- MSTS did not validate its REAC/TS interface capability for medical treatment associated with incidents identified in the all-hazards planning basis, including unplanned nuclear criticality and inhalation of radiological material. (DOE Order 151.1D, att. 3, par. 6 and att. 4, par. 15)

Finding F-MSTS-2: MSTS did not maintain a facility-level ERO or annually validate its facility-level emergency response capabilities for EPHA facilities and DNFs during the six-year period: (DOE Order 151.1D, att. 4, par. 15)

- MSTS did not maintain a facility-level ERO or annually conduct an exercise at its four DNFs involving the operations staff, emergency management staff, incident command staff, and EOC staff. (DOE Order 151.1D, att. 4, par. 15.h)

- MSTS did not maintain a facility-level ERO or annually evaluate its response capability and proficiency at its three EPHA facilities. (DOE Order 151.1D, att. 4, par. 15.e)

Finding F-MSTS-3: During the six-year period, MSTS did not always validate the site-level emergency response or offsite interface capabilities needed to respond to the hazards identified in EPHAs: (DOE Order 151.1D, att. 4, par. 15)

- MSTS did not validate its alternate JIC and the NNSS medical facility response capabilities (DOE Order 151.1D, att. 4, par. 15)
- MSTS did not validate its RAP interface capability, which provides the primary means of offsite radiological field monitoring for the State of Nevada and DOE. (DOE Order 151.1D, att. 4, pars. 7, 10, and 15)
- MSTS did not validate its ability to respond to an OST emergency as the NNSS host site. (DOE Order 151.1D, att. 4, par. 15 and att. 5, par. 1.a)
- MSTS did not validate its interface capabilities with the DPS, NSP. (DOE Order 151.1D, att. 4, par. 15)

Finding F-MSTS-4: MSTS did not adequately identify the cause of problems associated with two of the EA 2019 assessment findings at a DNF to prevent recurrence of the issues or evaluate the effectiveness of corrective actions through verification and validations conducted by an independent reviewer. (DOE Order 414.1D, att. 2, par. 3.c and DOE Order 151.1D, att. 4, par. 15.j)

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.

NNSA Nevada Field Office

Deficiency D-NFO-1: NFO did not approve the corrective action plans for three findings identified in the EA 2019 assessment. (DOE Order 151.1D, att. 4, par. 15.j)

7.0 OPPORTUNITIES FOR IMPROVEMENT

EA identified five OFIs 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.

NNSA Nevada Field Office

OFI-NFO-1: Consider ensuring that NFO consistently documents its approval of corrective action plans for external findings associated with DNFs by incorporating DOE Order 151.1D requirements into field office procedures.

Mission Support and Test Services, LLC

OFI-MSTS-1: Consider ensuring that the NNSS response capabilities for contaminated or contaminated-injured personnel are appropriately planned, documented, and periodically validated by:

- Establishing MOUs with UMC and Centennial Hills Hospital to accept contaminated or contaminated-injured personnel
- Establishing an MOU with Mercy Air Services and ground ambulances to transport contaminated or contaminated-injured personnel
- Maintaining a rolling five-year matrix to monitor the validation of the response capabilities supporting site-level and offsite transport, acceptance, and treatment of contaminated or contaminated-injured personnel.

OFI-MSTS-2: Consider ensuring that all NNSS emergency response capabilities are appropriately documented and periodically validated by maintaining a rolling five-year matrix to monitor the validation of site-level, facility-level, and offsite response capabilities.

OFI-MSTS-3: Consider ensuring that an effective interface is established and validated as an OST host site by:

- Obtaining the latest version of the OST, *Concept of Operations between NNSA Host Sites and the Office of Secure Transportation,* and when necessary, updating MSTS plans and procedures to be consistent with the OST concept of operations
- Training the MSTS ERO, as necessary, on the revised procedures
- Conducting an OST-focused exercise once every five years to validate MSTS host site capability.

OFI-MSTS-4: Consider ensuring that readiness assurance processes related to addressing external findings are effective by:

- Revising procedures to include actions to: (1) ensure that corrective action plans for emergency management external findings and findings at DNFs are approved by the field office, and (2) evaluate the effectiveness of corrective actions through verification and validations by an independent reviewer.
- Revising emergency management and/or corporate procedures dealing with corrective actions to ensure that DOE Order 151.1D requirements are included in the corrective action process, particularly the requirements for causal analysis for emergency management findings as well as the requirements for the identification of compensatory measures while the causal analysis and corrective actions implementation are pending.
- Determining the effectiveness of corrective actions by conducting exercises or evaluated drills.
- Revising the emergency management corrective action implementing procedures and exercise development procedures to incorporate verification and validations steps for all drill and exercise performance findings and externally identified performance findings. In addition, as part of the readiness assurance process for validation, include objectives in the site's annual evaluated exercise package that are designed to validate corrective actions that were implemented for deficiencies, findings, or trends from previous site exercises.
- Incorporating a summary of corrective action validations into drill and exercise after-action reports for any findings.

Appendix A
Supplemental Information

Dates of Assessment

Remote Assessment: March 14, 2022, to May 10, 2022

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
Kevin M. Witt, Director, Office of Nuclear Safety and Environmental Assessments
Kimberly G. Nelson, Acting Director, Office of Worker Safety and Health Assessments
Jack E. Winston, Director, Office of Emergency Management Assessments
Joseph J. Waring, Director, Office of Nuclear Engineering and Safety Basis Assessments

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