



Independent Assessment of the Fire Protection Program at the Nevada National Security Sites

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Acronyms

AHJ	Authority Having Jurisdiction
caWeb	MSTS issues management system
CFR	Code of Federal Regulations
CSE	Cognizant System Engineer
DAF	Device Assembly Facility
DOE	U.S. Department of Energy
DSA	Documented Safety Analysis
EA	Office of Enterprise Assessments
EFSS	Engineered Fire Suppression System
FES	Fire Extinguishing System
FFPA	Facility Fire Protection Assessment
FHA	Fire Hazards Analysis
FPE	Fire Protection Engineer
FPP	Fire Protection Program
F&R	Fire and Rescue
FR	Facility Representative
FSS	Fire Suppression System
ITM	Inspection, Testing, and Maintenance
MSTS	Mission Support and Test Services, LLC
NFO	Nevada Field Office
NFPA	National Fire Protection Association
NNSA	National Nuclear Security Administration
NNSS	Nevada National Security Sites
NSTec	National Security Technologies, LLC
OFI	Opportunity for Improvement
SDD	System Design Description
SSCs	Structures, Systems, and Components
SSO	Safety System Oversight
TSR	Technical Safety Requirement
UCEP	U1a Complex Enhancements Project
URS	Underground Refuge Station
WP	Work Package
ZTBFI	Z-Pinch Experimental Underground System Test Bed Facilities Improvement

INDEPENDENT ASSESSMENT OF THE FIRE PROTECTION PROGRAM AT THE NEVADA NATIONAL SECURITY SITES

Executive Summary

The U.S. Department of Energy Office of Enterprise Assessments (EA) conducted an independent assessment of the fire protection program (FPP) and related elements of the underground safety program at the Nevada National Security Sites (NNSS) in July and August 2023. Mission Support and Test Services, LLC (MSTS) manages and operates NNSS for the National Nuclear Security Administration and is overseen by the Nevada Field Office (NFO). This assessment evaluated the effectiveness of MSTS in managing and maintaining the FPP, including fire and related safety hazards analyses; fire hazards analysis and documented safety analysis integration; design; associated technical safety requirement surveillances; and inspection, testing, and maintenance. Federal oversight by NFO relating to fire protection was also evaluated. The scope of this assessment focused on the U1a Complex, an underground facility. Fire prevention and protection related structures, systems, and components under design by projects in the U1a Complex Enhanced Capabilities for Subcritical Experiments program portfolio were also reviewed. Finally, the status and resolution of fire protection issues previously identified by EA at the NNSS Device Assembly Facility were reviewed.

EA identified the following strengths:

- MSTS has simulated numerous combinations of U1a Complex ventilation changes that could occur during abnormal and emergency conditions and used these simulations to improve the abnormal operating procedures for the U1a Complex.
- MSTS has a strong mine rescue program that maintains six mine rescue teams instead of the required two teams.
- NFO is developing desk guides for oversight positions that will facilitate short- and long-term turnover and backfill of positions.
- NFO has consistently maintained high Facility Representative staffing levels and has plans to ensure that no gap occurs in U1a Complex Facility Representative coverage despite projected turnover.

EA also identified several weaknesses, including two findings, as summarized below:

- MSTS did not perform the 2023 U1a Complex facility fire protection assessment within the required frequency and did not implement the required actions when that assessment became delinquent. (Finding)
- NFO's issues management process does not provide a mechanism for ensuring that contractor problems identified during Department of Energy oversight activities are evaluated and corrected on a timely basis, or for ensuring that the contractor has implemented corrective actions that address the causes and prevent recurrence of high-significance issues and has verified the effectiveness of those actions. (Finding)
- MSTS has not completed an annual review of PLN-U1a.001, *U1a Complex Fire Protection Program Plan*, since 2020 to incorporate new or revised fire and life safety requirements and update the appendix A, *U1a Long Term Fire Protection Strategy*, accordingly.
- MSTS has not performed a comprehensive system evaluation with adequate supporting technical analysis to ensure that two safety significant fire barriers can fulfill their safety function.
- MSTS did not identify acceptance criteria in work control documents used to perform a technical safety requirement surveillance.

- MSTS has not resolved in a timely manner four 2015 EA findings nor four safety-related noncompliances present in two underground refuge stations that MSTS identified in 2018.
- NFO has not implemented line management oversight programs and processes for previous EA findings for the NNSC contractor.

In summary, MSTS has established a generally effective and comprehensive FPP. NFO's oversight program is well-established and generally tailored to provide appropriate levels of oversight of MSTS fire protection activities when fully staffed. However, this assessment identified several specific weaknesses in implementation of the MSTS FPP and issues management, and Federal oversight. Resolution of the weaknesses identified in this report will enhance the effectiveness of MSTS FPP and associated Federal oversight and will help mitigate fire risks at MSTS-managed facilities.

INDEPENDENT ASSESSMENT OF THE FIRE PROTECTION PROGRAM AT THE NEVADA NATIONAL SECURITY SITES

1.0 INTRODUCTION

The U.S. Department of Energy (DOE) Office of Nuclear Safety and Environmental Assessments, within the independent Office of Enterprise Assessments (EA), conducted an assessment of the fire protection program (FPP) at the Nevada National Security Sites (NNSS). Onsite assessment activities were conducted on August 21-30, 2023. This assessment was part of an ongoing review of fire protection at hazard category 1, 2, and 3 nuclear facilities across the DOE complex.

In accordance with the *Plan for the Independent Assessment of the Fire Protection Program at the Nevada National Security Site, July 2023*, this assessment evaluated the NNSS FPP, including policies, procedures, and fire and related safety hazards analyses; fire hazards analysis (FHA) and documented safety analysis (DSA) integration; design; technical safety requirement (TSR) surveillances and inspection, testing, and maintenance (ITM); and Federal oversight relating to fire protection. The scope of this assessment focused on the U1a Complex, an underground facility. Fire prevention and protection related structures, systems, and components (SSCs) under design by projects in the U1a Complex Enhanced Capabilities for Subcritical Experiments program portfolio were also reviewed. Finally, the status and resolution of fire protection issues previously identified by EA at the NNSS Device Assembly Facility (DAF) were reviewed.

Mission Support and Test Services, LLC (MSTS) manages and operates NNSS for the National Nuclear Security Administration (NNSA) and is overseen by the Nevada Field Office (NFO). NNSS supports the NNSA's nuclear weapons stockpile stewardship programs, national defense programs, and national security research, development, and training programs, as well as vital programs of other Federal agencies.

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 “best practices, deficiencies, findings, and opportunities for improvement (OFIs)” as defined in the order.

As identified in the assessment plan, this assessment considered requirements related to DOE Order 420.1C, *Facility Safety*; DOE-STD-1066-2016, *Fire Protection*; 30 CFR 49, *Mine Rescue Teams*; 30 CFR 57, *Safety and Health Standards – Underground Metal and Nonmetal Mines*; 29 CFR 1910, *Occupational Safety and Health Standards*; and 29 CFR 1926, *Safety and Health Regulation for Construction*. EA used the following sections of Criteria and Review Approach Document 31-12, Revision 2, *Fire Protection Program*: 4.1, 4.2, 4.3, 4.4, and 4.6.

EA examined key documents, such as system descriptions, work packages (WPs), procedures, manuals, analyses, policies, and training and qualification records. EA also interviewed key personnel responsible for developing and executing the associated programs; observed fire protection-related activities; and walked down significant portions of the U1a Complex and the DAF, focusing on aspects of the FPP. 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 the NNSS DAF in 2015, as documented in the EA report *Office of Enterprise Assessments Review of the Nevada National Security Site Fire Protection Program, October 2015*. 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 3.7 of this report.

3.0 RESULTS

3.1 Fire Protection Program

This portion of the assessment evaluated the effectiveness of the MSTs FPP policy and implementing procedures, exemptions, FHA program, facility fire protection assessment (FFPA) program, and pre-incident plans.

Fire Protection Program Policy and Implementing Procedures

MSTs has established and implemented generally adequate site-level and facility-specific FPPs that meet the requirements of DOE Order 420.1C, attachment 2, chapter II. CD-2120.017, *Fire Protection Program*, defines the NNSS site-level FPP, and PLN-U1a.001, *U1a Complex Fire Protection Program Plan*, defines the U1a Complex FPP. These FPPs were appropriately approved by NFO as required by DOE Order 420.1C, section 5.d.(5). PY-2120.004, *Fire Protection*, appropriately establishes an FPP policy, as required by DOE Order 420.1C. CD-2120.017 and PD-P200.002, *Nevada National Security Site (NNSS) Underground Facility Safety and Health Program Description*, adequately define FPP staffing, resources, roles and responsibilities, and training requirements, and provide implementation details specific to the design and operation of the U1a Complex. The May 2022 annual U1a FPP assessment is well documented and assesses applicable elements of DOE-STD-1066-2016, section 7.2.

MSTs implements the U1a Complex FPP consistent with integrated safety management principles through a collection of site-level procedures that appropriately address fire protection design and configuration management; exemptions and equivalencies; use of fire resistive materials; control of fixed and transient combustible materials; use, dispensing, and storage of combustible liquids and other hazardous materials; ignition sources and hot work; portable fire extinguishers, and fire and medical emergency response. In coordination with NFO, fire protection contractor authority having jurisdiction (AHJ) responsibilities for day-to-day operations have been appropriately delegated within MSTs to the NNSS Fire and Rescue (F&R) Fire Chief, the NNSS F&R Fire Marshal, and the MSTs Principal Fire Protection Engineer, as defined in PD-P200.002, section 10.0.

While MSTs has established and implemented generally adequate FPPs, two weaknesses have been identified. In its August 2023 triennial oversight assessment (OA-23-AMOS-008-REPORT, *Nevada National Security Site (NNSS) Fire Protection Program (FPP) Triannual Assessment for the NNSS and North Las Vegas Facilities (NLVF)*) NFO identified a finding that CD-2120.017 did not include required actions to ensure that the requirements of DOE-STD-1066-2016 were incorporated into the site-level FPP, contrary to DOE Order 420.1C. Additionally, EA determined that contrary to PLN-U1a.001, section 3.0 MSTs has not completed an annual review of PLN-U1a.001 since 2020. Per PLN-U1a.001, this annual review is performed to incorporate new or revised fire and life safety requirements and update appendix A, *U1a Long Term Fire Protection Strategy*, accordingly. (See **Deficiency D-MSTS-1**.) By not conducting this annual review, MSTs is missing an opportunity to enhance fire protection performance at the U1a Complex.

Exemptions

MSTS has established and implemented an adequate process for developing and submitting FPP-related exemptions in accordance with DOE Order 420.1C. The reviewed U1a Complex exemption E000-RJ-12-0007, *Request for Permanent Exemption from the Fire Protection Design Requirements of Department of Energy (DOE) Order 420.1B for the U1a Complex*, adequately documents commitments, compensatory measures, and Federal conditions of approval.

Fire Hazards Analysis Program

MSTS has developed and implemented an adequate FHA program for the U1a Complex nuclear facility. CD-2120.017, section 4.16; CD-2120.028, *Fire Hazards Analysis*; and PD-P200.002, section 8.18, *Fire Hazards Analyses*, appropriately establish a graded approach for the FHA program. Issues and recommendations resulting from the most recently performed FHA have been appropriately entered into the MSTS issues management system, caWeb. The FHA for the U1a Complex appropriately includes the approved exemption and three equivalencies, including the bases, approval status, and validation of approval conditions for each facility.

Facility Fire Protection Assessment Program

MSTS has established a generally adequate FFPA program as documented in CD-2120.017, section 4.17.3. The reviewed 2022 FFPA (approved on May 23, 2022) properly assessed topics specified in DOE-STD-1066-2016. However, contrary to DOE Order 420.1C, attachment 2, chapter II, section 3.f.(2) and PLN-U1a.001, section 4.3.4, MSTS did not perform the 2023 U1a Complex FFPA within the annual time requirement. Furthermore, contrary to CD-2120.017, section 4.17.3, MSTS did not implement the required actions upon expiration of the 2022 U1a Complex FFPA. (See **Finding F-MSTS-1**.) By allowing the required annual FFPA to lapse without timely completion of required actions, MSTS delayed the potential identification of fire protection risks at the U1a Complex. Specifically, MSTS did not stop work at the U1a Complex as required pending an F&R inspection, identify and enter deficiencies into caWeb, and identify and as necessary implement compensatory measures. Discussion with MSTS revealed that an F&R safety inspection walkdown occurred on July 25, 2023; however, work was not stopped during the period of May 24, 2023 (the required annual FFPA due date) to July 24, 2023, exceeding the allowed FFPA delinquency period.

Pre-Incident Plans

MSTS has developed and implemented an adequate pre-incident/mine rescue planning program as documented in OP-2120.041, *Fire and Rescue Pre-Incident Planning Process*. EPIP-U1a.001, *U1a Complex Emergency Response Actions*, and EPIP-MRT.001, *Underground Rescue Emergency Response Actions*, establish effective strategies for emergency response to the underground facility. The mine rescue teams receive specific training for fighting incipient stage fires and initiating emergency evacuation of personnel from the underground.

Fire Protection Program Conclusions

MSTS has established and implemented generally adequate FPP policy and implementing procedures. MSTS has also properly established an FPP-related exemption process, an adequate FHA program, and a generally adequate FFPA program. Further, MSTS has an adequate pre-incident/mine rescue planning program. However, weaknesses were identified related to the completion of the required annual review of PLN-U1a.001 to incorporate new or revised fire and life safety requirements, and the timely

completion of the annual U1a Complex FFPA and of the required actions for not completing the FFPA on-time.

3.2 Fire Hazards Analysis and Documented Safety Analysis Integration

This portion of the assessment evaluated the integration of the U1a Complex FHA into associated safety design basis documentation and the adequacy of fire protection controls for implementation of the facility safety bases.

Overall, MSTS has appropriately integrated FHA-U1a.001, *Fire Hazards Analysis for the U1a Complex*, into the facility DSA to ensure that analyzed fire hazards are prevented or sufficiently mitigated through controls for normal, abnormal, and accident conditions. In general, the FHA and DSA appropriately evaluate credited fire systems and associated fire scenarios, their possible locations, and the consequences of those fires. One issue was identified with respect to credited fire barriers (see section 3.3, under *Engineering*, for more detail). The evaluated fire scenarios and supporting conclusions in the FHA are appropriately included in the DSA hazard evaluations and accident analyses sections in accordance with CD-2120.028 and PD-P200.002.

Except as noted in section 3.3, the U1a underground credited fire alarm and barrier systems and combustible material controls are adequately based on fire hazard identification and supporting accident analyses to ensure the protection of workers, the public, and the environment in accordance with DOE-STD-3009-94, *Preparation Guide for U.S. Department of Energy Nonreactor Nuclear Facility Documented Safety Analyses*, and 10 CFR 830, *Nuclear Safety Management*.

Fire Hazards Analysis and Documented Safety Analysis Integration Conclusions

MSTS has appropriately integrated the FHA into the DSA. The DSA evaluates and analyzes accidents to adequately support the development of required controls for the prevention or mitigation of hazard events for the implementation of the facility safety bases.

3.3 Design

This portion of the assessment evaluated design requirements, engineering, and design verification for fire protection SSCs.

Design Requirements

MSTS has established and implemented an appropriate set of fire protection system design requirements. The reviewed MSTS design calculations clearly substantiate the fire protection system design requirements. The reviewed procedures used to operate, test, and inspect the facility appropriately reference design requirements, which are aligned with design calculations. U1a Complex fire protection engineers (FPEs) and cognizant system engineers (CSEs) demonstrated adequate knowledge of the design requirements during interviews.

Engineering

MSTS has established and implemented adequate programs for the conduct of engineering and configuration management. SOP-U1a-035, *U1a.05 and U1a.07 Fire Detection Systems and U1a.03D Drift and U1a.07 Fire Barrier Semi-Annual Test and Inspection*, appropriately incorporates design requirements. The reviewed documentation for the U1a Complex Scorpius and Z-Pinch Experimental Underground System (ZEUS) test bed fire suppression systems (FSSs), currently in the conceptual design

phase, indicates that the final design will likely incorporate applicable FHA/DSA requirements and include input from qualified FPEs.

MSTS has established and implemented an adequate program for routine performance monitoring of U1a Complex fire safety systems as directed by OP-SENG.002, *System Health Monitoring*. Three reviewed system health reports for the U1a Complex appropriately included system status, system reliability metrics, trending of key parameters, maintenance history, corrective action commitments, and ongoing performance issues. MSTS establishes appropriate training and qualification requirements for CSEs through OP-SENG.001, *Cognizant System Engineer Program*, in accordance with DOE Order 420.1C and DOE Order 426.2, *Personnel Selection, Training, Qualification, and Certification Requirements for DOE Nuclear Facilities*. The interviewed CSEs for U1a Complex safety fire systems were qualified and knowledgeable of their systems, including the status of current maintenance activities, procurement of replacement parts, and ongoing challenges to system operability and reliability.

Despite generally adequate conduct of engineering and configuration management programs, MSTS has not performed a comprehensive evaluation to identify components that can affect the safety function of installed credited fire protection systems, contrary to DOE Order 420.1C, attachment 3, section 3.a.(4)(a), and DOE-STD-3009-94, section 4.4.X.4. Specifically, a technical analysis of the vent dampers is not included in the DSA, section 4.4.10.4, *System Evaluation*, and performance criteria necessary for the vent dampers to fulfill their credited, safety significant function have not been identified. (See **Deficiency D-MSTS-2.**) Incomplete system evaluation and/or technical analysis can result in SSCs not fulfilling their intended safety function. The system design descriptions (SDDs) for the U1a Complex safety significant fire barriers U1a.03D and U1a.07 state that “opening of the vent damper precludes an adverse pressure condition across the fire barrier and the collapse of the exhaust vent duct.” During interviews, the design authority, FPE, and CSEs stated that test data show that the vent damper is required to open on the U1a.03D and U1a.07 fire barriers to relieve differential pressure to allow the exhaust damper to close and complete the fire barrier isolation within the required 75 seconds. However, the reviewed test data was not conclusive, and therefore the safety function of the vent damper is considered undetermined.

MSTS has established a fire protection strategy and conceptual design for the fire protection scope (subproject 020) of the U1a Complex Enhancements Project (UCEP), which is the infrastructure part of the Scorpius test bed, as well as for the ZEUS Test Bed Facilities Improvement (ZTBFI) project. The safety design strategies describe the fire protection scope, including the proposed design and installation of new SSCs, such as fire barriers, the fire extinguishing system (FES), and fire alarm and detection systems. The preliminary FHA evaluates the fire risks and conceptual design for the UCEP and ZTBFI project FES, including the selection and technical basis for a hybrid (nitrogen-pressurized water) mist FES.

MSTS is addressing a potential life safety issue associated with the selected FES. In April 2023, a differing professional opinion regarding the U1a Complex fire protection strategy was submitted to the NNSA. The decisional report identified concerns about the selection of the hybrid mist FES, with recommendations that resulted in stopping work on the hybrid mist FES scope for UCEP and the ZTBFI project, as documented in a memorandum from the NNSA Federal Project Director and Contracting Officer Representative, dated June 28, 2023. A plan of action describing how MSTS will address the recommendations was developed and issued to the NFO Manager. In accordance with the plan of action, a committee of experts from multiple Federal and contractor organizations performed an analysis of alternatives. The committee’s recommendation to NNSA was to continue design and procurement of the hybrid mist FES, with additional actions to resolve safety concerns pertaining to oxygen-deficient atmospheres. Direction was issued on August 30, 2023, to restart the design of the hybrid mist FES for UCEP and the ZTBFI project.

Two reviewed SDDs for the proposed hybrid mist FES for the U1a Complex provide information to U1a facility organizations to enable resource planning and procedure development prior to turnover for operation. However, the reviewed SDDs do not acknowledge the need to develop procedures prior to turnover that address the disposition of water and recovery from an oxygen-deficient atmosphere that may be present due to nitrogen discharge following actuation of a hybrid mist FES, or provide a method or describe the equipment needed to safely accomplish these tasks. (See **OFI-MSTS-1.**) These SDDs were approved prior to MSTs taking additional actions to resolve safety concerns pertaining to oxygen-deficient atmospheres potentially created by activation of the hybrid mist FES. As discussed in section 8.0, EA will work with NFO to schedule additional EA oversight of this project to assess the resolution of these safety concerns.

Design Verification

MSTS has established and implemented an effective design verification process. OP-0000.009, *Engineering Design Process*, appropriately ensures that FPEs are involved in design development and design changes. Five reviewed engineering design change packages for SSC modifications (approved and issued during the 2022-2023 timeframe) properly documented the adequacy of the fire protection system design, engineering review, and independent design verification.

Design Conclusions

MSTS has established and implemented an appropriate set of fire protection system design requirements. Further, MSTs has adequate programs for the conduct of engineering and configuration management, as well as an effective design verification process. However, weaknesses were identified in the system evaluation and supporting technical analyses for safety significant fire barriers U1a.03D and U1a.07 at the U1a Complex.

3.4 Surveillances and Inspection, Testing, and Maintenance

This portion of the assessment evaluated the performance of TSR surveillances and ITM of fire protection systems and equipment at the U1a Complex. The approved exemption E000-RJ-12-0007 provides relief from DOE Order 420.1 requirements for fire suppression in existing areas of the U1a Complex. Accordingly, the U1a Complex does not have DSA-credited fire suppression SSCs but does have DSA-credited fire barriers and a fire detection system. In addition, the FPP employs non-credited engineered fire suppression systems (EFSSs) on specific underground equipment (see *Inspection, Testing, and Maintenance* below).

TSR Surveillances

MSTS adequately plans, schedules, and performs TSR surveillances to ensure that the DSA-credited fire barriers and fire detection system can reliably perform their intended safety functions when required. TSR surveillances are to demonstrate that the DSA-credited fire barriers and fire detection system ensure their respective safety functions are met. ITM procedures for these fire safety systems contain detailed steps for performing and documenting TSR surveillances to verify system operability. The reviewed ITM procedures demonstrated, and related interviews confirmed, that ITM on DSA-credited systems is performed and supported by personnel (including design authority engineers) enrolled in an adequate training program and qualified in accordance with National Fire Protection Association (NFPA) requirements. Observed TSR surveillance activities demonstrated compliance with SOP-U1a.035 and the competency of personnel performing the surveillances.

Six reviewed TSR records of surveillances performed over the last three years demonstrated adequate procedure and equipment performance, as well as appropriate approval by a qualified design authority engineer. However, contrary to DOE-STD-3009-94 and SOP-U1a.035, they did not identify acceptance criteria to allow test personnel to verify and document that fire barriers U1a.03D and U1a.07 are operating in accordance with TSR requirements. (See **Deficiency D-MSTS-3.**) Omission of TSR acceptance criteria from work control documents precludes verification and formal documentation of performance data and may lead to systems not performing their intended safety function (see section 3.3, under *Engineering*, for a related issue).

Inspection, Testing, and Maintenance

MSTS has developed and implemented a generally adequate ITM program for the U1a Complex. Important elements of the ITM program include fire barriers, fire alarm and detection, EFSSs, and fire extinguishers. CD-2120.017 effectively establishes MSTS's ITM requirements in accordance with DOE Order 420.1C, attachment 2, chapter II, section 3.d.(1)(c). OP-2120.075, *Fire Prevention Inspections*, provides adequate implementation instructions to ensure the operability of the fire protection system and equipment. OP-9000.009, *Engineered Fire Suppression Systems*, defines requirements for EFSSs installed on construction and mining equipment.

Thirteen reviewed records for monthly and semi-annual ITM of EFSSs completed during 2022 and 2023 demonstrated that, in general, ITM on EFSSs is adequate, and directions for performing specific actions were consistent with manufacturers' criteria. The reviewed WPs were appropriately prepared for performing ITM of fire protection systems and features based on DOE Order 420.1C, DOE-STD-1066-2016, NFPA codes and standards, manufacturers' manuals, and applicable consensus standards.

Two WPs associated with annual ITM and repairs on fire barriers and fire doors were reviewed as part of this assessment. Although WPs in general were adequately developed and performed, action steps in WP #3003908171, section 40.5 to initiate impairments to perform the fire barrier ITM were checked to indicate their completion; however, in the subsequent section 40.7, action steps to remove the impairments were marked "N/A" (Not Applicable), without further explanation. (See **OFI-MSTS-2.**)

Additional issues were observed during a U1a Complex facility walkdown. Contrary to OP-9000.009, section 4.1.9, two inspection labels for EFSSs installed on mining equipment were not annotated to indicate completed monthly visual inspections. A follow-on walkdown by MSTS determined that a total of six of these inspection labels were similarly not annotated, although completion records of the required monthly inspections had been documented on MSTS FRM-1183. (See **Deficiency D-MSTS-4.**) A lack of up-to-date inspection information on equipment labels hinders workers' ability to readily ensure that the equipment has been maintained according to work instructions and design requirements. Also, during the facility walkdown, a manual FSS actuator was identified on one EFSS that was coated with shotcrete. It is likely that actuation of this EFSS would have been difficult, or impossible, because shotcrete adhesion between the actuation lever and the equipment body would result in binding of the actuation lever. MSTS subsequently resolved this issue by removing the adhered shotcrete. (See **OFI-MSTS-3.**)

The NNSS F&R training program is adequate to prepare personnel to perform TSR surveillances and ITM in accordance with U1a Complex FPP requirements. The interviewed personnel who directly perform or supervise ITM demonstrated an understanding of expectations for procedural compliance and other conduct of operations requirements.

Surveillances and Inspection, Testing, and Maintenance Conclusions

Surveillances and the ITM program are generally adequate. However, weaknesses were identified related to missing TSR acceptance criteria for fire barriers and incomplete documentation for ITM performed on mining equipment.

3.5 Underground Safety

This portion of the assessment evaluated aspects of underground safety at the U1a Complex, including ventilation, emergency evacuation, refuge stations, and mine rescue.

The U1a Complex underground safety requirements are defined in PD-P200.002, which NNSA and NFO specified as a condition of approval of the NNSU U1a Complex exemption request, *Request for Permanent Exemption from the Fire Protection Design Requirements of Department of Energy Order 420.1B for the U1a Complex*, dated July 30, 2012. PD-P200.002, which is NFO-approved, appropriately provides mine safety requirements derived from several sources, including Mine Safety and Health Administration regulations contained in Title 30 CFR that would not otherwise apply at a DOE facility.

Ventilation

MSTS provides adequate underground ventilation to maintain continuous air quantity and quality during normal operations. The ventilation survey results from the past three years showed adequate air quality during normal operations, demonstrating that MSTS has conducted annual surveys as required by PD-P200.002 and U1a-RPT-2023-002, *U1a Complex Ventilation Plan*. Additionally, MSTS has appropriately simulated some emergency situations to determine whether airflow could be adjusted as needed to ensure a safe evacuation. Although MSTS has made significant progress in this area since 2020, personnel acknowledged during interviews that not all possible emergency scenarios have been simulated to date. (See **OFI-MSTS-4**.) The procurement documents for four ventilation doors demonstrate fire ratings appropriate to ensure extended survivability of these containment barriers and the acceptability of air quality during a fire emergency.

The observed work was performed in compliance with work documents by trained and qualified personnel. Work observations and associated work records demonstrated compliance with OP-U1a.025, *Roles, Responsibilities, Accountabilities, and Authorities for the U1a Complex*, and SOP-U1a.004, *U1a Complex Ventilation System*. The observed gas detection equipment was properly calibrated, and 35 reviewed industrial hygiene underground survey reports demonstrated adherence to OP-U1a.025 and PD-P200.002. The three personnel who were interviewed on this subject were knowledgeable of required actions if flammable gas is detected.

Emergency Evacuation

MSTS provides adequate escapeways for emergency evacuation and has posted evacuation maps at appropriate locations in the underground facility. As observed during walkdowns, designated escapeways were well illuminated, unobstructed, unrestricted, and configured to promote rapid evacuation. Six interviewed underground employees were appropriately knowledgeable of evacuation procedures and escapeways. Record reviews and interviews demonstrated that emergency evacuations drills are routinely conducted and that escapeways are inspected at regular intervals.

Refuge Stations

MSTS provides three generally adequate underground refuge stations (URSs) and adequate self-contained self-rescuers (SCSRs) – robust respiratory devices that provide oxygen in a contaminated air environment – for protecting workers during an emergency. The observed URS locations are clearly posted on evacuation maps and easily reachable within 30 minutes from all underground workstations. The reviewed test records demonstrated that URSs have adequate breathable air systems sufficient for 48 hours of use, long enough to allow evacuation of the entire permitted underground population.

All three observed URSs were properly stocked with supplies and underground-to-surface voice communication equipment, and the six interviewed underground employees confirmed their knowledge of the URS locations. SCSRs are staged in well-marked caches and available to underground employees in case of an emergency. The reviewed records, observations, and interviews confirmed that SCSRs are properly and regularly examined for case damage, latch seals, dirt and moisture, mouthpiece plug, loose parts, handle straps, and gauge pressure.

However, as identified in the 2018 *UIA Complex Backfit Analysis Report*, the U1a and U1g URSs continue to not meet some of the requirements of PD-P200.002. (See **Deficiency D-MSTS-5.**) The delayed resolution of the weaknesses listed below in these URSs could compromise the safety of underground personnel during an emergency. The identified weaknesses are:

- The U1a and U1g URSs are not separated with a fire resistance rating of at least two hours.
- The U1a and U1g URSs do not have a vestibule to enter and exit the refuge station.
- The U1a and U1g URSs do not have appropriate seating for occupants who enter the refuge station.
- The U1a and U1g URS design does not ensure a temperature of 86°F in a fully occupied shelter.

A new refuge station at U1a.02B to replace the non-compliant refuge stations is currently in the design phase.

Mine Rescue

MSTS has established and implements a strong mine rescue program for the U1a Complex, with six mine rescue teams instead of the required two teams; PD-P200.002 requires at least two teams to always be available, with one team being underground or within a 30-minute travel distance, and the second team being within a two-hour travel distance. PD-P200.002 incorporates the requirements of both Occupational Safety and Health Administration 29 CFR 1926.800(g)(5)(i) and Mine Safety and Health Administration 30 CFR 49.2(a)(1) and (b). The reviewed employment records show that each rescue team member has been employed for at least one year of the past five years at NNSS as required by PD-P200.002. The records also demonstrate that each rescue team member has adequately completed training and physical exam requirements to perform mine rescue activities and that rescue team members appropriately receive 96 hours of training annually (16 hours of which are conducted underground), with a maximum of six months between trainings.

Although MSTS is currently exceeding PD-P200.002 requirements by having six mine rescue teams available, MSTS should consider evaluating the adequacy of the two team requirement in PD-P200.002 and making a document revision as necessary. Experience indicates that mine emergencies can extend into multiple days, which would necessitate more than two mine rescue teams. (See **OFI-MSTS-5.**)

The reviewed mine rescue records and observed equipment are organized effectively, and records indicate that maintenance and testing associated with mine rescue breathing equipment are adequate to ensure

proper operability to support mine rescue operations. Observations and interviews confirmed that MSTs has adequately established and posted the underground facility rescue plan. The mine rescue emergency hoist is tested monthly as required by PD-P200.002.

Underground Safety Conclusions

Underground safety is generally adequate and meets applicable plans, policies, and DOE orders. MSTs provides adequate underground ventilation, and personnel are properly trained and qualified for entry and emergency response actions. MSTs provides adequate escapeways for emergency evacuation and maintains properly stocked URSSs. MSTs has a strong mine rescue program, and reviewed mine rescue records and observed equipment were effectively organized. However, two of the three URSSs do not meet all requirements of PD-P200.002.

3.6 DOE Field Element Oversight

This portion of the assessment evaluated the adequacy of NFO's oversight of MSTs's implementation of the FPP at the U1a Complex and DAF, including program and field oversight of FPP-related activities.

NFO's sitewide oversight process is directed by the field office manager in NFO SDD 226.X, *NFO Oversight System Description Document*. Supplemental direction for operational oversight by Facility Representatives (FRs) is provided by the Assistant Manager for Operations and Safety in FRP-1, *Facility Representative Procedure*. Both instructions appropriately provide for rigor and frequency of nuclear safety oversight, including FPP oversight, tailored to facility hazards in accordance with DOE Order 226.1B, *Implementation of Department of Energy Oversight Policy*.

NFO SDD 226.X provides direction for the processing of issues identified during NFO oversight activities but relies on the MSTs issues management system (caWeb) to document and track issues to closure, as described in NFO Guidance Document *Issues Management*. Issues identified during oversight are screened through an NFO management committee to determine whether and how they are to be transmitted to MSTs for corrective action. However, many Federal oversight personnel do not have direct access to caWeb, and instead rely on MSTs personnel to provide the status of corrective actions. Most internal NFO issues are similarly tracked within caWeb; however, some issues, such as those that are personnel-related, are not transmitted to MSTs for tracking due to their sensitivity and are therefore excluded from tracking in the issues management system. (See **OFI-NFO-1**.)

DOE Order 227.1A, section 4.f.(1), requires corrective action plans to be developed and implemented for EA findings, and further requires cognizant DOE managers to use site- and program-specific issues management processes and systems developed in accordance with DOE Order 226.1B to manage and approve these corrective action plans and track them to completion. As discussed in section 3.7 of this report, the site contractor did not develop corrective action plans for four previous EA findings reviewed during this assessment, and initially closed some associated issues in caWeb without adequate resolution. NFO has not provided adequate oversight of these issues to ensure that the contractor met the requirements of DOE Order 226.1B. (See **Deficiency D-NFO-1**.) Continued inadequacy in required Federal oversight of issue resolution could result in incidents due to unresolved vulnerabilities, and additional instances where issues do not receive adequate and timely correction.

NFO Guidance Document *Issues Management* states that "NFO performs a formal Effectiveness Review/Finding Validation" for Federally identified issues prioritized by MSTs as a "high significance finding" or when "required by an applicable DOE or NNSA Directive." NFO relies on the responsible subject matter expert to ensure that the requirement for follow-up is met. The guidance document states, "When such a review is required, it is typically conducted by the appropriate NFO personnel 3 to 6

months after the issue has been closed in the contract partner's issues management system.” However, there is no mechanism in the issues management process to ensure that such actions are taken, as required by DOE Order 226.1B, section 4.b.(4). (See **Finding F-NFO-1.**) Reliance on individual subject matter experts to follow up on issues as required, with no formal mechanism to ensure compliance, could lead to insufficient follow-up, as in the examples described above. The required effectiveness reviews are even more likely to be missed if the subject matter expert staff changes while corrective actions are implemented over months or years, without a mechanism in place to ensure that the reviews occur.

NFO staffs two FPE positions to provide programmatic oversight of MSTs's implementation of the NNSS FPP. The incumbents in these positions qualify to DOE-STD-1137-2014, *Fire Protection Engineering Functional Area Qualification Standard*, and are also assigned safety system oversight (SSO) qualifications for safety class or safety significant fire protection systems at assigned NNSS nuclear facilities. At the time of the onsite portion of this assessment, one of these FPE positions was vacant, and the incumbent in the other position, though an experienced FPE, had not yet completed the assigned fire protection and SSO technical qualification programs. As a result, NFO did not have a qualified FPE on staff and did not have a qualified SSO for safety fire protection systems at the U1a Complex or DAF. (See **OFI-NFO-2.**)

FRs are appropriately qualified per both DOE-STD-1151, *Facility Representative Functional Area Qualification Standard*, and the *Nevada Field Office Facility Representative Qualification Standard – October 2016*, which includes generally applicable FR competencies and facility-specific appendices that FRs complete for their assigned facilities. NFO has maintained qualified FR staff for both of the reviewed facilities for the approximately three-year period reviewed, and has maintained greater than 85% FR staffing overall for the same period according to the reviewed FR staffing analyses. However, as noted by NFO in a June 2021 FR program self-assessment, the 2016 FR qualification standard contains several outdated or incorrect items. This issue was entered into the issues management system but has since received two due date extensions, with responsibility for resolution also twice reassigned, and has yet to be corrected. Additionally, the individual facility-specific appendices are not consistent in format, including prerequisites for facility-specific qualifications and level of required knowledge. (See **OFI-NFO-3.**)

NFO has recently begun an initiative to establish “desk guides” documenting processes used by oversight personnel, including FRs and SSOs, in performing their day-to-day oversight. These desk guides are intended to facilitate coverage by backup or alternate personnel during short- or long-term absences of incumbents and to assist with onboarding of new personnel following position vacancies. Additionally, NFO has taken action to ensure that a knowledgeable U1a Complex FR who plans to leave the organization remains available to assist the incoming FR until the incoming FR completes qualification, and to act as qualifying official for the incoming FR. Ensuring continuity of qualified staff will enhance the effectiveness of NFO safety oversight at the U1a Complex.

DOE Field Element Oversight Conclusions

Overall, NFO's oversight program is well-established and generally tailored to provide appropriate levels of oversight of MSTs fire protection activities when fully staffed. However, lack of a qualified FPE and SSO for FP safety systems challenges effective programmatic oversight of the FPP at all site facilities and limits the assurance of adequate oversight of resolution of FPP-related issues. Additionally, the issues management program is not adequate to ensure that NFO oversight requirements for documented issues are met in all cases. Day-to-day oversight at the U1a Complex and DAF, which includes operational oversight of the FPP, is provided by a well-staffed FR program. The potential adverse effects of outdated FR qualification standards are mitigated in at least one case by ensuring that knowledgeable and fully qualified personnel are available to act as qualifying official for new FRs. Oversight effectiveness is

further enhanced by the development of desk guides to facilitate continuity during personnel turnover or absences.

3.7 Follow-up on Previous Device Assembly Facility Findings

This portion of the assessment examined the status of corrective actions for the four DAF-related findings documented in EA report *Office of Enterprise Assessments Review of the Nevada National Security Site Fire Protection Program, October 2015*. At the time of the 2015 assessment, National Security Technologies, LLC (NSTec), the predecessor to MSTs, managed and operated NNSS.

MSTs defines priority levels for categorizing issues to implement issues management requirements per the commitments and graded approach in accordance with CD-1000.200, *Issue Resolution and Improvement System*. Issues are categorized, in decreasing significance, as Significant, Adverse, Track Until Fixed, or Trend Only; suggestions or recommendations are categorized as OFIs. NSTec categorized the four 2015 EA findings as Track Until Fixed (“A noncompliance with requirements that has little or no consequences to overall requirements objectives, or a condition with little or no impact to operational performance, or a low consequence task or activity that may be addressed with minimal work planning or at an administrative level”).

Because these issues could have resulted in consequences affecting the performance of safety SSCs, the issues would more appropriately be categorized as Adverse (“An issue that is outside established expectations and has an unacceptable effect on safety, health, quality, security, safeguards, cyber security, emergency management, or the environment”) or Significant (“An issue that is outside established expectations and has an intolerable effect on safety, health, quality, security, safeguards, cyber security, emergency management, or the environment”). MSTs did not recategorize the significance of these issues during the transition from NSTec to MSTs as the M&O contractor for NNSS. Further, at the conclusion of this assessment, none of the issues had been fully addressed and corrected. Therefore, contrary to CD-1000.200, appendix B and section 4.1.3, MSTs has not resolved the four 2015 EA findings in a timely fashion. (See **Deficiency D-MSTs-6.**) Inappropriately categorized issues can result in missing or ineffective corrective actions and unanalyzed operational risk for the facility. Further, because these issues were categorized as Track Until Fixed, no cause analysis was performed and no corrective action plan was developed, both of which would have been required had the issues been appropriately categorized as Adverse or Significant. Finally, issues that are not promptly and adequately corrected can result in unnecessary operational risk for the facility.

The four 2015 EA findings and their status are described below:

Finding F-NSTec-1 of the 2015 EA report stated that NSTec did not comply with the requirements of NFPA 22, *Water Tanks for Private Fire Protection*, (invoked by DOE Order 420.1C and DOE-STD-1066-2012) that require exposed piping and a low-level water gauge be located to prevent freezing.

Status: MSTs initially closed this finding based on incomplete actions. Further evaluation was completed to address the finding, and currently all actions are complete except for determining whether a formal analysis of the freeze protection is needed.

Finding F-NSTec-2 of the 2015 EA report stated that NSTec did not comply with the requirements of NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems* (invoked by DOE Order 420.1C and DOE-STD-1066-2012) to evaluate, in the DAF DSA, the failure and subsequent effects of the altitude valve FSS-ALTV-205-1 for the underground fire water supply system.

Status: This finding remains open. The body of the 2015 EA report references two distinct elements of the finding – “safety class boundaries” and “failure and subsequent effects.” The altitude valve is listed as part of the safety class *Water Storage Tank & Supply* SSCs in DAF-FCD-F021, *Functional Classification Documentation (FCD) - DAF Fire Suppression Water Storage Tank and Distribution Piping*; however, a failure modes and effects analysis was not specifically performed for this component. MSTs stated that the first element of the finding will be addressed through review of the functional classification document to determine whether it should be revised to provide a comprehensive analysis of the altitude valve, and the second element of the finding will be addressed by the review of current ITM requirements for water storage tanks and their appurtenances, as identified in chapter 9 of NFPA 25, and then a review of applicable MSTs ITM procedures to identify any gaps.

Finding F-NSTec-3 of the 2015 EA report stated that NSTec did not adequately implement design requirements for the DAF FSS redundant water supply as described in the DAF DSA section 2.7.1.3, *Fire Suppression System*, to comply with DOE Orders 5480.7, *Fire Protection*, and 6430.1, *General Design Criteria Manual*. The FHA also references these orders but does not identify the requirement for or exemption from a redundant water supply based on the maximum permissible financial loss value of the facility.

Status: MSTs initially closed this finding through the development and issuance of report 01488-RPT-001, *Device Assembly Facility (DAF) FSS Redundancy Requirements*. In this report, the applicable codes of record for the design of the DAF were identified as DOE Orders 6430.1 and 5480.7, matching those listed in finding F-NSTec-3. In these orders, redundant fire protection systems are required when the “maximum possible fire loss” is above \$25 million. These orders refer to “redundant fire protection systems,” which are not exclusively redundant water supplies as this finding indicates. DOE Order 6430.1 states that the response capability of onsite fire departments is an acceptable method of redundant fire protection, and Report 01488-RPT-001 cites the NNS F&R Department’s response as an appropriate redundancy to meet DOE Orders 6430.1 and 5480.7. Although the NNS F&R Department’s response is not specifically listed as a redundancy in the DAF DSA or FHA, the statement that the DAF FSS was designed to comply with these codes of record is correct. MSTs stated that the FPE AHJ will determine whether the NNS F&R Department’s response should be specified as a redundant fire protection feature in the DAF DSA and FHA.

Finding F-NSTec-4 of the 2015 EA report states that NSTec did not complete the required ITM for the DAF FSS in accordance with NFPA 25 and 72 requirements (invoked by DOE Order 420.1C and DOE-STD-1066-2012).

Status: MSTs initially closed this finding based on incomplete actions. A crosswalk was performed between the applicable ITM requirements identified in NFPA 25 and 72 and the implementing procedures for the DAF. Several gaps were identified for the Fire Detection and Alarm System, and subsequent requests were entered to begin developing procedures to address these gaps. The specific components lacking ITM were the water storage tank altitude valve and bypass valve, post-indicator valve for the water storage tank outlet to the DAF, water storage tank pressure transducers and their associated batteries, and sensing lines. MSTs stated that the required ITM per NFPA 25 for those components will be reviewed, along with the applicable MSTs ITM procedures, to identify any gaps.

Overall, MSTs has not resolved four 2015 EA findings in a timely fashion. Similar issues with untimely resolution of issues were documented in EA report *Assessment of Mission Support and Test Services, LLC Issues Management at the Nevada National Security Site, December 2020*, as Finding F-MSTs-2, which also remains open.

Follow-up on Previous Device Assembly Facility Findings Conclusions

MSTS implemented its graded, structured approach to track the four 2015 EA findings. However, weaknesses were identified in categorization of findings and timely implementation of corrective actions.

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, *Implementation of Department of Energy Oversight Policy*, to manage the corrective actions and track them to completion.

Mission Support and Test Services, LLC

Finding F-MSTS-1: MSTS did not perform the 2023 U1a Complex FFPA within the annual time requirement and did not implement the required actions when the FFPA annual date lapsed. (DOE Order 420.1C, att. 2, ch. II, sec. 3.f.(2); PLN-U1a.001, sec. 4.3.4; and CD-2120.017, sec. 4.17.3)

Nevada Field Office

Finding F-NFO-1: NFO's issues management process does not provide a mechanism for ensuring that contractor problems identified during DOE oversight activities are evaluated and corrected on a timely basis, or for ensuring that the contractor has implemented corrective actions that address the causes and prevent recurrence of high-significance issues and has verified the effectiveness of those actions. (DOE Order 226.1B, sec. 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 a finding are listed below, with the expectation from DOE Order 227.1A for site managers to apply their local issues management processes for resolution.

Mission Support and Test Services, LLC

Deficiency D-MSTS-1: MSTS has not conducted an annual review of PLN-U1a.001 since 2020 to incorporate new or revised fire and life safety requirements and updated appendix A accordingly. (PLN-U1a.001, sec. 3.0)

Deficiency D-MSTS-2: MSTS has not performed a comprehensive system evaluation with adequate supporting technical analysis (e.g., SDD, test data) to ensure that the safety significant fire barriers U1a.03D and U1a.07 can fulfill their safety function. (DOE Order 420.1C, att. 3, sec. 3.a.(4)(a), and DOE-STD-3009-94, sec. 4.4.X.4)

Deficiency D-MSTS-3: MSTS work control documents for a TSR surveillance did not identify acceptance criteria to allow the required verification and formal documentation of performance data to validate that TSRs are met. (DOE-STD-3009-94 and SOP-U1a.035)

Deficiency D-MSTS-4: MSTS personnel conducting monthly visual inspections of EFSSs on construction and mining equipment in the U1a Complex did not annotate six inspection labels to indicate completion of the inspections. (OP-9000.009, sec. 4.1.9)

Deficiency D-MSTS-5: MSTS has not ensured that the U1a and U1g URSs meet all established requirements. (PD-P200.002)

Deficiency D-MSTS-6: MSTS has not resolved four 2015 EA findings in a timely fashion. (CD-1000.200, app. B and sec. 4.1.3)

Nevada Field Office

Deficiency D-NFO-1: NFO has not implemented line management oversight programs and processes for previous EA findings for the NNSS contractor. (DOE Order 226.1B, sec. 5.f.(3))

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.

Mission Support and Test Services, LLC

OFI-MSTS-1: Consider revising the SDDs for the proposed hybrid sprinkler addition to address the disposition of discharged water and recovery from a potential oxygen-deficient atmosphere after actuation of a hybrid mist FES.

OFI-MSTS-2: Consider reviewing ITM WP expectations for marking ITM action steps as “Not Applicable.”

OFI-MSTS-3: Consider reviewing EFSS monthly visual inspections to determine whether ITM criteria and provided training are sufficient for personnel to identify failure modes unique to underground operations (e.g., shotcrete adhesion to EFSS actuation levers, which could cause binding).

OFI-MSTS-4: Consider continuing efforts and improvements related to modeling ventilation simulations of high-risk emergency situations that may occur, such as equipment fires.

OFI-MSTS-5: Consider evaluating the adequacy of the two mine rescue team requirement in PD-P200.002 and making a document revision as necessary.

Nevada Field Office

OFI-NFO-1: Consider enhancing the NFO issues management process to provide separate but integrated Federal and contractor issues management systems, allowing for Federal management of field office issues, direct transmission of issues to the contractor as appropriate, and easier oversight of contractor issues. The issues management system used at the Hanford Site is an example of such an integrated system.

OFI-NFO-2: Consider expediting qualification for assigned FPEs, including SSO qualification, to ensure adequate oversight of MSTS implementation of the FPP and management of fire protection safety systems at NNSS facilities.

OFI-NFO-3: Consider expediting the update of the *Nevada Field Office Facility Representative Qualification Standard* to include the issues noted in the June 2021 FR program self-assessment report; incorporating the additional facility changes since then; and achieving consistency throughout facility-specific appendices.

8.0 ITEMS FOR FOLLOW-UP

EA will conduct additional follow-up on MSTS's progress in completing actions pertaining to the four 2015 EA findings related to the DAF FPP, as well as the findings identified in both the current report and the EA report *Assessment of Mission Support and Test Services, LLC Issues Management at the Nevada National Security Site, December 2020*.

EA will work with NFO to coordinate additional EA oversight activities of the U1a Complex Enhancement Project, including the resolution of the safety concerns pertaining to oxygen-deficient atmospheres potentially created by the activation of the hybrid mist FES.

Appendix A Supplemental Information

Dates of Assessment

Onsite Assessment: August 21-30, 2023

Office of Enterprise Assessments (EA) Management

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