Volume II

Independent Oversight Inspection of Emergency Management at the

Nevada Test Site

HSS
Office of Health, Safety and Security

June 2007

Office of Emergency Management Oversight
Office of Independent Oversight
Office of Health, Safety and Security
Office of the Secretary of Energy

OVERSIGHT

Table of Contents

Abbreviations Used in This Report

AMSO	Assistant Manager for Site Operations
caWeb	Joint NSTec and NSO Corrective Action Tracking System
CEMP	Consolidated Emergency Management Plan
DAF	Device Assembly Facility
DCC	Document Control Coordinator
DOE	U.S. Department of Energy
EAL	Emergency Action Level
EMC	Emergency Management Center
EOC	Emergency Operations Center
EPHA	Emergency Planning Hazards Assessment
EPI	Emergency Public Information
ERO	Emergency Response Organization
ERP	Emergency Response Procedure
ESOS	Emergency Services and Operation Support
FY	Fiscal Year
F&R	Fire and Rescue
IC	Incident Commander
JASPER	Joint Actinide Shock Physics Experimental Research
JIC	Joint Information Center
JNPO	Joint NTS Program Office
JNPO-LANL	Los Alamos National Laboratory at NTS
JNPO-LLNL	Lawrence Livermore National Laboratory at NTS
LANL	Los Alamos National Laboratory
LED	Local Emergency Director
LLNL	Lawrence Livermore National Laboratory
LSPT	Limited-Scope Performance Test
NA-40	NNSA Office of Emergency Operations

Continued on inside back page.

1.0 Introduction

The U.S. Department of Energy (DOE) Office of Independent Oversight inspected the emergency management program at DOE's Nevada Test Site (NTS) in March-April 2007. The inspection was performed as a joint effort by Independent Oversight's Office of Environment, Safety and Health Evaluations (HS-64) and the Office of Emergency Management Oversight (HS-63). This volume discusses the results of the review of the NTS emergency management program. The results of the review of the NTS environment, safety and health programs are discussed in Volume I of this report. Independent Oversight reports to the Chief Health, Safety and Security Officer, who reports directly to the Secretary of Energy.

Within DOE, the National Nuclear Security Administration (NNSA) has line management responsibility for NTS. NNSA provides programmatic direction and funding for most activities, including emergency management program implementation at NTS. At the site level, line management responsibility for NTS operations and emergency management falls under the Manager of the Nevada Site Office (NSO). Under contract to DOE, NTS is managed and operated by National Security Technologies, LLC (NSTec), which began to operate NTS in July 2006.[1] Wackenhut Services, Inc. is the protective force contractor responsible for site physical security. Through the Joint NTS Program Office (JNPO), NNSA's Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) perform experiments at NTS and have responsibilities for operations of facilities that were evaluated during this inspection – the U1a complex, operated by JNPO-LANL, and the Device Assembly Facility (DAF) and Joint Actinide Shock Physics Experimental Research (JASPER) facility, operated by JNPO-LLNL. JNPO coordinates with NSO and NSTec to ensure that facility activities are appropriately integrated with the sitewide emergency management program.[2]

NTS's current mission includes support for the NNSA stockpile stewardship program, which includes performing subcritical experiments in support of nuclear weapons stockpile verification efforts and maintaining NTS facilities and infrastructure. Other activities underway at NTS are in the areas of nuclear material stewardship, environmental management (e.g., decontamination and decommissioning, waste management, and environmental technology development), national security response (e.g., emergency response to weapons of mass destruction), and defense and civil technologies (e.g., conventional explosive testing, characterization of hazardous material spills, emergency response training). NTS activities involve significant quantities of hazardous materials in various forms, including radiological materials, explosive materials, and chemicals. However, the site is remotely located and distant from any significant population centers; consequently, the risk to the public is relatively low.

The purpose of this Independent Oversight inspection was to assess the effectiveness of emergency management programs at NTS as implemented by NSTec and JNPO under the direction of NSO. The scope of the emergency management review at NTS considered the results of the September 2004 Independent Oversight inspection, which found that appropriate programmatic improvements had been implemented in nearly every area evaluated during the previous (October 2002) inspection of emergency management, NSO and the lead contractor were correcting known weaknesses, and the concept of emergency operations had remained fundamentally sound. However, the 2004 Independent Oversight inspection

[1] Consistent with common practice, the term "NTS" is used to generally refer to the geographic area encompassing the remotely located test site and the associated facilities.

[2] The terms "JNPO-LLNL" and "JNPO-LANL" are used to refer to LLNL and LANL responsibilities and activities at NTS under the JNPO umbrella organization.

noted significant weaknesses in some aspects of the performance of Fire and Rescue incident commanders (ICs) as the initial decision-makers, identified several programmatic weaknesses, and raised a concern regarding resource issues that could challenge NSO's ability to maintain the appropriate degree of line management oversight of the NTS emergency management program.

This evaluation included an examination of selected elements of the emergency management program at NTS, including those that were determined to need improvement during the September 2004 Independent Oversight inspection and two areas that were not assessed during the 2004 inspection. Independent Oversight used a selective sampling approach to assess a representative sample of facilities and emergency response organization responders at NTS. Specifically, the sampling approach was used to evaluate:

- The effectiveness of the hazards surveys and emergency planning hazards assessments (EPHAs) in serving as an appropriate foundation for the NTS emergency management program.

- The effectiveness of the NSO and NTS emergency responders in applying their skills, procedures, and training to make appropriate decisions and to properly execute actions to protect emergency responders, workers, and the public. To evaluate response performance, Independent Oversight conducted limited-scope performance tests (LSPTs) for initial responders and decision-makers. The performance tests were designed to evaluate the ability of responders to effectively execute their assigned duties during postulated site-specific emergencies. Independent Oversight used trusted agents from the site to assist in developing and conducting the performance test scenarios and validating the results.

These activities, as well as reviews of corrective actions in other assessment areas, provided insights into the effectiveness of NSO and contractor feedback and continuous improvement systems, as well as NNSA's emergency management oversight and operational awareness activities at NTS.

Section 2 of this report provides an overall discussion of the results of the review of the NTS emergency management program elements that were evaluated. Section 3 provides Independent Oversight's conclusions regarding the overall effectiveness of NSO and contractor management of the emergency management program. Section 4 presents the ratings assigned as a result of this inspection. Appendix A provides supplemental information, including team composition. Appendix B identifies the findings that require corrective action and follow-up. Appendices C through F detail the results of the reviews of individual emergency management program elements.

2.0 Results

2.1 Positive Program Attributes

NSO, NSTec, JNPO, and other site organizations with emergency management program responsibilities continue to improve the site's overall ability to respond to a serious emergency event. Positive attributes of the emergency management program are discussed below.

The concept for emergency response is well considered and, with few exceptions, supported effectively by emergency response command facilities, equipment, and procedures. NSO and NSTec have implemented a concept of operations that effectively considers the challenges inherent in managing an emergency event occurring at a remote site, irrespective of time of day. The duty manager serves in a continuously manned, well-equipped response center and, supported by facility local emergency directors (LEDs) and the incident command structure, is available for timely initial decision-making until the emergency response organization is operational. NSO, NSTec, and JNPO have established emergency plans that are consistent with Departmental expectations. Furthermore, NSO and NSTec have developed procedures and checklists that provide clear guidance for responders in the emergency operations center (EOC) and emergency management center. JNPO-LLNL and JNPO-LANL, who are responsible for operating JASPER, DAF, and the U1a complex, have developed response procedures that provide appropriate guidance to the LED and the facility support staff for such key initial emergency event responses as determining the most appropriate protective actions to be taken, making necessary emergency notifications, and categorizing and classifying the event.

The emergency public information (EPI) program has improved significantly since the 2002 and 2004 Independent Oversight inspections, and the EPI implementing mechanisms support the timely issuance of emergency news releases. The EPI program is appropriately detailed in various EPI-related planning and response documents that are well integrated and that collectively reflect nearly all of the EPI requirements and guidance from DOE Order 151.1C, *Comprehensive Emergency Management System*, and the associated *Emergency Management Guide*, respectively. Furthermore, the EPI training program is comprehensive and addresses specialized training for activating and operating a joint information center and interfacing with employees, the media, and the public. Although NSO and NSTec expectations for the timeliness of the initial news release are not consistently defined in program documents, EPI staff used the EOC public affairs officer checklist effectively during LSPTs to develop and issue timely and accurate news releases that met Departmental expectations.

NSO, NSTec, and JNPO-LLNL have established a hierarchy of requirements and guidance documents that effectively support nearly all aspects of EPHA development, and the EPHAs reviewed by Independent Oversight provide an adequate basis for the site's emergency management program. To address a previous Independent Oversight finding, NSO issued a comprehensive requirements manual (NSO Manual 151.1-2) for developing and maintaining hazards surveys, EPHAs, and emergency action levels (EALs). The manual provides appropriate guidance in nearly all areas and, when fully implemented, should facilitate the goal of achieving a consistent level of EPHA rigor across NTS, particularly as DOE Order 151.1C is implemented. Similarly, NSTec has formally defined its approach for developing hazards surveys and EPHAs through such mechanisms as an EPHA technical basis document and an EPHA development procedure. JNPO-LLNL has also developed an EPHA process development guide that, with a few exceptions (primarily in the screening of hazardous materials), contains the desired attributes for developing hazards surveys and EPHAs. Finally, the NSTec and JNPO-LLNL EPHAs are consistent with the associated development guidance documents, and

these EPHAs are mostly effective in identifying the bases for needed event classification thresholds and protective action decision-making. However, the NSO requirements manual is not fully implemented and, as discussed in the first weakness identified in Section 2.2, many of the EALs that have been developed exhibit several weaknesses that impair timely and accurate initial emergency response decision-making.

2.2 Program Weaknesses and Items Requiring Attention

Although the NTS emergency management program has improved since 2004 and exhibits several positive attributes, the Independent Oversight team identified important weaknesses in the usability and content of EALs. Concerns in the consistency of readiness assurance activities and implementation of unified command during non-security events were noted as well. Specific weaknesses are discussed below.

Many EALs exhibit weaknesses and do not adequately support timely emergency response decision-making. Although NSTec, JNPO-LLNL, and JNPO-LANL EALs generally follow similar formats and contain similar types of information, they are of mixed quality and usability by emergency responders. For example, contrary to the guidance in the NSO manual for EPHA development and the NSTec procedure for developing EPHAs, the NSTec EALs for the Nonproliferation Test and Evaluation Complex (NPTEC), transportation, and Area 5 Hazardous Waste Storage Unit contain confusing sets of entry conditions; that is, they are based on the weight or equivalent activity of the available hazardous materials and not on directly observable indicators, such as the number and type of affected containers actually used, and they do not include the specific type of predetermined protective action (i.e., evacuate, shelter in place). Additionally, because NSTec lacks both a formal process for notifying EPHA developers of proposed changes in hazardous material inventories and a firm set of maximum allowable quantities of hazardous materials at NPTEC, there is reduced assurance that the NPTEC EALs will be appropriately updated if necessary to accommodate a change in NPTEC operations. Finally, some JNPO-LLNL EALs for DAF events that would require declaring a Site Area Emergency do not include any predetermined protective actions for non-DAF site workers, even though by definition a Site Area Emergency has potential health impacts beyond the facility boundary.

Emergency management assessment and issues management programs implemented by NSO, NSTec, JNPO-LLNL, and JNPO-LANL have varying levels of definition and implementation. NSO has established an appropriate assessment program framework, but neither the CEMP nor the NSO assessment and oversight manual explicitly address NSO emergency management assessment (or self-assessment) requirements. Additionally, although NSO has assessed several aspects of two facility emergency management programs over the past three years, the assessments actually performed did not satisfy the NSO assessment schedule and were not conducted at the depth necessary to effectively identify program weaknesses. NSTec's assessment program is a strength, but few issues resulting from exercises and operational emergencies are being entered into the corrective action tracking system in a timely manner. JNPO-LLNL's process for conducting assessments is less well defined, with the result that the level of detail in JNPO-LLNL assessments is left to the assessor's discretion; JNPO-LLNL also is not effectively using its deficiency tracking system for emergency management purposes. The JNPO-LANL emergency management assessment program is weak overall—the JNPO-LANL NTS emergency management plan requires a self-assessment on an "as-needed" basis, and the last JNPO-LANL assessment, which was conducted in 2004, did not cover all emergency programmatic elements. Finally, some of the completed actions resulting from the two previous Independent Oversight inspections were not effective in correcting the underlying issues associated with EAL format and content. Specifically, these inspections identified such EAL-related weaknesses as ambiguous entry conditions and the absence of predetermined protective actions, and some of these weaknesses remain despite NSTec and JNPO-LLNL completing corrective actions and NSO verifying effectiveness.

During LSPTs, ICs, supporting staff, and duty managers were not consistently effective in ensuring that responders and site workers were adequately protected and that events were appropriately classified and communicated to offsite authorities. Contrary to the CEMP and various sitewide and facility-specific response procedures, the IC did not always serve as the focal point for on-scene determinations,

establish overall objectives and priorities, and develop an incident action plan. Consequently, until the event was verified to be a non-security-related emergency and command was transferred to the senior fire officer, independent strategies and tactics were developed and implemented by the LED (for the facility events), senior fire officer, and Wackenhut Services, Inc. protective force officer, often without coordination. Although the duty managers serve as the focal point for all emergency notifications and reporting and for implementation of onsite protective actions, they did not always ensure that protective actions were promptly initiated or that response information was accurately communicated to other event venues. For example, during one event, the duty manager did not implement any of three separate protective action decisions communicated to him from the deputy crisis manager, crisis manager, and IC. Due primarily to confusing information in the applicable EAL, the duty manager (and other key decision-makers in the emergency management center and EOC) also encountered difficulties in classifying a transportation event and identifying appropriate protective actions and protective action recommendations. Finally, the communication of event information and protective action recommendations to offsite authorities was impaired by incomplete and inaccurate information that was routinely transmitted on the offsite notification form, which could result in confusion about the event at other response venues, and adversely impact the response by offsite recipients.

3.0 Conclusions

The September 2004 Independent Oversight inspection of the NTS emergency management program found that programmatic improvements had been implemented in nearly every area evaluated during the October 2002 Independent Oversight inspection. However, the Independent Oversight team noted significant weaknesses in one area of emergency response during LSPTs and concerns in several other programmatic areas, primarily the accuracy and clarity of EALs and NSO's ability to maintain an appropriate degree of program awareness in light of resource issues. This 2007 inspection found that NSO and NTS organizations have generally continued to improve the site's emergency management program. However, some EAL weaknesses persist, the rigor and degree of implementation of feedback and improvement mechanisms among NSO and site organizations are inconsistent, and several performance issues were identified that indicate the need to refine some of the response concepts.

The most noteworthy program attribute identified during this emergency management inspection is that NSO, NSTec, and JNPO have established and provided the necessary infrastructure for a concept of emergency operations that can facilitate an effective response to site emergencies, irrespective of when the event occurs. This concept appropriately integrates the actions taken by emergency responders at several venues, both at the site and at the in-town EOC. Other strengths were noted as well. The EPI program has improved significantly over the past several years, and the ability to issue timely and accurate initial news releases was demonstrated during performance tests. In addition, NSO, NSTec, and JNPO have developed a group of EPHA development documents that collectively are resulting in a more consistent and comprehensive set of EPHAs for the site's hazardous facilities.

The area most in need of improvement is in the clarity and completeness of EALs. A few EALs have been improved since the 2004 Independent Oversight inspection; however, many EALs contain entry conditions that cannot be directly observed and include only the protective action distance and not the type of protective action initially recommended for the event. As was demonstrated during the performance tests conducted as part of this inspection, confusion in EAL selection and implementation can significantly delay event classification and, more importantly, the implementation of appropriate protective actions for affected persons. The rating in the EPHA area can be largely attributed to the collective impact of the EAL weaknesses.

Other weaknesses were noted in the emergency management readiness assurance area and in the performance of ICs and duty managers during performance tests. NSO, NSTec, and JNPO have assessment and issues management programs that exhibit varying degrees of maturity and implementation, but no entity is consistently identifying emergency management issues, developing effective corrective actions, formally tracking the issues to resolution, and verifying and documenting issue closure. Additionally, during the initial accident phase of the performance tests conducted as part of this inspection, ICs and support staff experienced difficulty in consistently executing an effective response within the unified incident command structure that is specified by site procedures, and duty managers were not consistently effective in ensuring accurate event classifications, formulation of timely and appropriate protective actions, and dissemination of accurate event information.

Overall, the NSO concept of emergency operations is fundamentally sound, and initiatives intended to drive greater consistency across organizational entities continue to evolve. However, NSO, NSTec, and JNPO line management attention is warranted to ensure that EALs can be effectively used in a time-urgent environment to classify events and formulate protective actions for affected populations. NSO, NSTec, and JNPO line management attention is also needed to strengthen the mechanisms for identifying issues and implementing corrective actions that effectively prevent recurrence.

4.0 Ratings

This inspection focused on a detailed assessment of five emergency management programmatic elements, as well as the performance of two key groups of emergency response decision-makers and support functions during performance tests. The individual element ratings reflect the status of each NTS emergency management program element at the time of the inspection. The ratings assigned below to the readiness assurance category are specific to those assessment, corrective action, and performance monitoring mechanisms applicable to the emergency management area.

The ratings for the individual program elements evaluated during this inspection are:

Emergency Planning

Hazards Surveys and EPHAs ..... NEEDS IMPROVEMENT
Program Plans and Procedures ..... EFFECTIVE PERFORMANCE

Emergency Preparedness

Emergency Public Information ..... EFFECTIVE PERFORMANCE

Emergency Response

NTS Incident Command Team Decision-Making ..... NEEDS IMPROVEMENT
EMC/EOC Team Decision-Making ..... NEEDS IMPROVEMENT

Readiness Assurance

NNSA Line Program Management ..... NEEDS IMPROVEMENT
Contractor Feedback and Improvement ..... NEEDS IMPROVEMENT

This page intentionally left blank.

APPENDIX A
SUPPLEMENTAL INFORMATION

A.1 Dates of Review

Scoping Visit	January 17 – 18, 2007
Planning Visit	March 6 – 8, 2007
Onsite Inspection Visit	March 19 – 28, 2007
Report Validation and Closeout	April 11 – 12, 2007

A.2 Review Team Composition

A.2.1 Management

Glenn S. Podonsky, Chief Health, Safety and Security Officer
Michael A. Kilpatrick, Deputy Chief for Operations, Office of Health, Safety and Security
Bradley A. Peterson, Director, Office of Independent Oversight
Steven C. Simonson, Acting Director, Office of Emergency Management Oversight

A.2.2 Quality Review Board

Michael A. Kilpatrick
Bradley A. Peterson
Dean C. Hickman
William T. Sanders
Robert M. Nelson

A.2.3 Review Team

Steven Simonson (Team Leader)

John Bolling
JR Dillenback
Deborah Johnson
Teri Lachman
David Odland
Brian Robinson
Tom Rogers

A.2.4 Administrative Support

Mary Ann Sirk

This page intentionally left blank.

APPENDIX B
SITE-SPECIFIC FINDINGS

Table B-1. Site-Specific Findings Requiring Corrective Action Plans

FINDING STATEMENTS	REFER TO PAGES:
1. JNPO-LLNL has not established EALs that ensure that decision-makers can accurately and rapidly classify events and formulate appropriate protective actions, as required by DOE Order 151.1A, *Comprehensive Emergency Management System*.	16
2. NSTec has not established EALs that ensure that decision-makers can accurately and rapidly classify events and formulate appropriate protective actions, as required by DOE Order 151.1C.	16
3. NSO EPI planning and response documents do not consistently describe NSO requirements for issuing initial news releases that reflect DOE expectations for timeliness or specify the responsibilities and duties of the EPI cadre between EOC activation and JIC activation, as required by DOE Order 151.1C.	22
4. NTS responders did not establish an effective unified incident command system that provided command and control of the response to mitigate event consequences, as required by DOE Order 151.1C.	27
5. During LSPTs, duty managers and crisis managers did not consistently demonstrate effective and timely use of available resources, plans, and procedures to protect emergency responders and site workers from unacceptable consequences following a hazardous material release, as required by DOE Order 151.1C.	28
6. NSO has not formally reviewed and approved the NTS EPHAs and consolidated EPZ, and has not conducted formal programmatic assessments of site and facility emergency management programs, as required by DOE Order 151.1C.	33
7. JNPO-LANL is not conducting annual self-assessments of the emergency management program, as required by DOE Order 151.1C.	35
8. NSTec has not consistently implemented timely and appropriate corrective actions in response to identified emergency management program weaknesses, as required by DOE Order 151.1C.	36
9. JNPO-LLNL is not consistently tracking and verifying the correction of findings from emergency management program assessments and drills, as required by DOE Order 151.1A.	36

This page intentionally left blank.

APPENDIX C
EMERGENCY PLANNING

C.1 Introduction

Two key elements of emergency planning are developing a hazards survey and emergency planning hazards assessments (EPHAs) to identify and assess the impact of site- and facility-specific hazards and threats, and establishing an emergency planning zone (EPZ). U.S. Department of Energy (DOE) and National Nuclear Security Administration (NNSA) sites and facilities use the results of these assessments to establish emergency management programs that are commensurate with the identified hazards. The site emergency management plan defines and conveys the management philosophy, organizational structure, administrative controls, decision-making authorities, and resources necessary to maintain the site's comprehensive emergency management program. Specific implementing procedures are then developed that conform to the plan and provide the necessary detail, including decision-making thresholds, for effectively executing the response to an emergency, irrespective of its magnitude. These plans and procedures must be closely coordinated and integrated with offsite authorities that support the response effort and receive NNSA emergency response recommendations.

This evaluation included a review of the Nevada Test Site (NTS) hazards surveys, EPHAs, and associated emergency action levels (EALs), as well as the treatment of hazards associated with four NTS facilities and transportation activities. Also reviewed were sitewide and facility-specific emergency plans and associated implementing procedures.

C.2 Status and Results

C.2.1 Hazards Survey and Emergency Planning Hazards Assessments

The hazards survey and EPHAs serve as the foundation of the emergency management program; consequently, their rigor and accuracy are keys to developing effective emergency response procedures and other elements of the program. The degree to which the EPHAs effectively serve this function is primarily dependent upon the completeness of the institutional processes for developing the hazards surveys and EPHAs; the effectiveness of the screening process by which hazardous materials are initially considered; and the adequacy of the analyses contained within the EPHAs.

The September 2004 inspection determined that the NTS lead contractor, Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL) had significantly improved the quality of the hazards survey and EPHA documents since the 2002 Independent Oversight inspection, and these program foundation documents were, with few exceptions, technically adequate. However, formal guidance to ensure that the hazards surveys and EPHAs (and associated EALs) were consistently rigorous and appropriately documented across the site had not been developed and implemented. Consequently, the hazardous material screening processes were not adequately described, and the hazards surveys were not always consistent with the associated EPHAs. Furthermore, EPHA analyses had not been completely and accurately carried forward into the EALs. Finally, many EALs did not contain clear and precise entry statements, which made reliable implementation potentially problematic. This 2007 inspection found that additional guidance has been developed to promote consistent and well-documented approaches to developing hazards surveys and EPHAs, and specific errors observed in 2004 have been corrected. However, not all NTS guidance documents have been implemented, and additional weaknesses were observed in constructing effective EALs from the EPHA results.

Documents governing the NTS hazards survey and EPHA development processes have undergone significant improvements since the last Independent Oversight inspection. Significant program document revisions include the development and release of a Nevada Site Office (NSO) manual (intended to promote hazards survey and EPHA consistency among the multiple contractor organizations at NTS), updates to incorporate DOE Order 151.1C in accordance with the NSO implementation plan for DOE Order 151.1C (which is discussed further in Section C.2.2 of this report), and changes needed to address specific weaknesses identified by Independent Oversight in 2004.

Since 2004, National Security Technologies, LLC (NSTec) and its predecessor organization have issued or revised the documents that comprise the technical and administrative requirements governing the development of hazards surveys and EPHAs, including the development of EALs and facility EPZs. These documents, which consist of an emergency preparedness manual, technical basis documents for screening hazardous materials, hazards survey and EPHA templates, and an operating instruction that outlines responsibilities for developing and reviewing hazards surveys and EPHAs, collectively address nearly all the program requirements of DOE Order 151.1C and the associated *Emergency Management Guide*. The templates provide a model for effectively displaying necessary information in the NSTec hazards surveys and EPHAs, and the operating instruction provides such important details as how to perform quality assurance checks of consequence assessment calculations. In response to a 2004 Independent Oversight finding, Joint NTS Program Office (JNPO)-LLNL also issued a hazards survey and EPHA process guide that adequately documents the JNPO-LLNL approach. However, JNPO-LANL continues to maintain their hazards survey and EPHA document through the JNPO-LANL emergency management plan, which incorporates DOE Order 151.1C by reference, and is using very limited programmatic guidance contained directly in the JNPO-LANL EPHA. JNPO-LANL's approach provides few details, and as described in Section C.2.2 of this report, JNPO-LANL has not met DOE Order 151.1C implementation plan requirements that JNPO-LANL adopt the NSTec screening process and document templates.

In April 2006, NSO developed and approved a comprehensive emergency management system manual (NSO Manual 151.1-2) that provides standardized requirements for developing, formatting, and maintaining hazards surveys and EPHAs. This manual was developed to address corrective actions from a 2002 Independent Oversight finding. The purpose of the manual is to achieve consistency in the content of hazards surveys and EPHAs across all NTS organizations responsible for facility operations. This manual provides an appropriate framework for establishing similar, appropriate analytical methodologies and content in NTS hazards surveys and EPHAs.

Notwithstanding the above, the following weaknesses somewhat diminish the effectiveness of the sitewide institutional process documents:

- The NSTec EPHA development documents do not clearly require that predetermined protective actions (i.e., shelter in place or evacuate) be established for analyzed events.

- The JNPO-LLNL screening criteria do not fully meet DOE Order 151.1B or DOE Order 151.1C requirements in that the criteria allow radioactive materials in a U.S. Department of Transportation Type B container without an overpack to be excluded from further consideration in an EPHA.

- The JNPO-LLNL program document governing EAL development does not specify that EALs must provide the distance to the point at which protective action criteria (PAC) are exceeded, which would enable protective action decision-makers to quickly determine the extent of protective actions.

- The update of the JNPO-LLNL hazards survey and EPHA process guide to DOE Order 151.1C is now overdue per the site implementation plan.

- As mentioned in Section F.2.1 of this report, site organizations are not currently required by contract to follow the NSO manual for developing hazards surveys and EPHAs.

Independent Oversight conducted facility walkdowns and reviewed hazards surveys and EPHAs from four facilities—the Device Assembly Facility (DAF), Joint Actinide Shock Physics Experimental Research (JASPER), the Nonproliferation Test and Evaluation Complex (NPTEC), and the Area 5 Hazardous Waste Storage Unit—and the transportation EPHA to evaluate the extent to which the EPHAs establish an effective NTS emergency planning basis. With the exception of NPTEC, facility managers/owners have established effective processes that establish material-at-risk limits and mechanisms to control hazardous materials within these limits. These include limits established by either technical safety requirements or operational safety requirements and rigorous accountability processes that are well supported by inventory records. At NPTEC, chemical inventories are well maintained; however, there are no limits on maximum allowable chemical quantities established to enable easy recognition that chemical inventories are being maintained within the analyses contained in the EPHA. Overall, facility hazardous

material inventories were consistent with inventory records, a result of periodic or real-time accountability processes performed at the facilities. Additionally, formal mechanisms are in place at most facilities to ensure that new materials or increased quantities of previously evaluated materials are evaluated for emergency planning purposes. However, at NPTEC, no such formal mechanism has been established.

With some exceptions, hazards surveys generally meet the requirements of DOE Order 151.1B and the associated *Emergency Management Guide* and are appropriately maintained and approved. Most surveys contain the required information, including screening criteria that were applied and whether an EPHA is required. However, items sometimes missing from the hazards surveys include building occupancy numbers and a summary of applicable planning and preparedness requirements. Furthermore, except for certain quantities of depleted uranium at DAF and one hazardous chemical at NPTEC, discussed further below, the hazardous material inventories contained in the various hazards surveys are complete and accurate. Finally, NSTec has not developed a hazards survey to address chemical storage at the warehouse (building 23-160) or chemical transportation activities, which may have contributed to some of the EPHA inconsistencies discussed below. However, the impact of this weakness on response capability is mitigated by the availability of the Emergency Response Guidebook for use in identifying protective actions for transportation-related events.

With few exceptions, the EPHAs contain the necessary quantitative analyses for the hazardous materials identified in the associated hazards surveys. The EPHAs generally meet DOE requirements and expectations regarding the level of detail of information contained within the EPHAs, the methodologies used in analyzing hazardous materials, and use of the results in developing EALs and establishing the facility EPZ. The scenarios typically include a wide spectrum of events initiated by a variety of conditions (operational errors and equipment failures, natural phenomena, and malevolent acts), although the NPTEC EPHA does not consider handling events involving single shipping containers, which is a more likely event that would better address classifiable emergencies at the lower end of the severity spectrum. The analytical methodologies are generally consistent among the EPHAs; analyses are performed with dispersion models commonly used across the DOE complex; and the analyses use material-at-risk quantities based on facility operating limits, where available. The results are tabularized to provide pertinent information of consequences using appropriate criteria for protective actions and the threshold for early lethality (TEL) and to provide consequence assessment data for receptors of interest and distance to PAC information. The results of the consequence analysis are then used to develop EALs and establish the facility EPZ for use in developing the site EPZ. Furthermore, all of the weaknesses in site EPHAs specifically identified during the 2004 inspection have been corrected.

Although NTS EPHAs are generally adequate, in several instances the EPHAs contained errors, omissions, or were inconsistent with program requirements:

- The toxicological hazards associated with depleted uranium were not considered in the DAF EPHA because, although present in the facility, the DAF hazards survey did not list depleted uranium as a stored hazardous material.

- The DAF EPHA identifies the worst case TEL limit exceeded at 10 km, whereas the facility EPZ is established at 8.5 km. The facility EPZ should be established at the maximum distance a TEL is exceeded for the set of analyzed events to ensure that the site EPZ is appropriate.

- A significant quantity of tributyl phosphate was inappropriately excluded from consideration in the NPTEC EPHA due to an error in applying the screening criteria.

- The transportation and NPTEC EPHAs contain several inconsistencies. For example, several chemicals analyzed in the NPTEC EPHA (e.g., ammonium hydroxide and chloroacetic acid) are not included in the transportation EPHA, and the transportation and NPTEC EPHAs use different chemical states for the same chemicals.

- The current version of the NPTEC EPHA contains several analytical errors in such areas as determining distance to PAC. The errors noted have been corrected in a draft version awaiting NSO review.

Although some EALs have been improved since the 2004 Independent Oversight inspection (and NSTec and JNPO-LLNL have developed formal EPHA and EAL guidance that is largely consistent

with the requirements of DOE Order 151.1C), EALs continue to exhibit various weaknesses. In response to the September 2004 inspection, JNPO-LLNL revised the DAF EALs to include a clearly observable entry indicator (i.e., number of breached containers). However, for events that are considered to be Site Area Emergencies, which by definition have impacts beyond the facility, the DAF EALs include the protective actions for DAF employees only. Predetermined protective actions for personnel outside of DAF and distances to PAC are not listed. Furthermore, where distances are provided, the specified distances are sometimes not adequate. For example, one of the EPHA consequence assessment scenarios involving a high-explosive material detonation in an assembly cell that also contains a radiological hazard identifies that PAC are exceeded out to 16 km, whereas the EAL only specifies protective actions out to 8.5 km. This information is contained in a table within the DAF EPHA, and the DAF local emergency directors (LEDs) have a copy of the table for reference and use in emergency situations; however, this table has not been included with the EAL set used by response personnel in the emergency operations center (EOC), emergency management center (EMC), or operations coordination center (OCC), who are responsible for the protection of the public or site workers outside of the facility boundary.

Finding #1: JNPO-LLNL has not established EALs that ensure that decision-makers can accurately and rapidly classify events and formulate appropriate protective actions, as required by DOE Order 151.1A, *Comprehensive Emergency Management System*.

In addition, although NSTec has recently issued a generally adequate EPHA technical basis document that describes their approach to EPHA and EAL development, NSTec facility-specific EALs are sometimes ambiguous and are not linked to pre-determined protective actions. For example:

- EALs include classification thresholds that are not easily determined because the quantity of material is represented in ranges and in some instances are less than the contents of a single container for each emergency classification (e.g., the NPTEC EALs specify an anhydrous ammonia release threshold of 0.5 to 4 pounds or <1, 1-ton cylinder for an Alert; 5 to 4,500 pounds or <1 to 3, 1-ton cylinder for a Site Area Emergency; and 296 to 4,500 pounds or <1 to 3, 1-ton cylinder for a General Emergency).

- EALs contain distances labeled as "protective action" distances; however, pre-determined protective actions that are described in the NSTec facility-specific EPHAs are not included in the EAL tables.

- Transportation EALs do not use the calculated distance to PAC contained in the Transportation/ Warehouse EPHA to establish protective action distances. Instead, the distance from the warehouse to the site boundary (1.3 km) is inappropriately used for determination of Site Area Emergency protective action distances.

- Package/container sizes used as entry conditions in the NPTEC and Transportation EALs are different, even though most chemicals that arrive at NPTEC are transported to and from the site warehouse without repackaging.

Finding #2: NSTec has not established EALs that ensure that decision-makers can accurately and rapidly classify events and formulate appropriate protective actions, as required by DOE Order 151.1C.

To summarize, NSO, NSTec, and JNPO have taken positive steps to improve most weaknesses identified during the 2004 inspection. NSTec and JNPO-LLNL issued new or revised governing documents to describe their hazards survey and EPHA development processes, NSO developed and approved a manual to promote consistent hazards survey and EPHAs, and specific weaknesses in the site EPHAs were corrected. With the exception of NPTEC, all facilities that were reviewed had limits established for maintaining hazardous material inventories and rigorous inventory practices to ensure that these limits were maintained within emergency preparedness assumptions. In most cases, hazards surveys at the facilities meet the general requirements of DOE Order 151.1C and are properly maintained. Although some weaknesses and inconsistencies were observed, site EPHAs contain appropriate quantitative analyses, adequately address a spectrum of events, and provide pertinent consequence information. Nevertheless, some weaknesses were identified in the sitewide process documents and the EPHAs. Although NSO approved the hazards survey and EPHA manual, it has not impacted the NTS hazards

survey and EPHA documents because there are no contract mechanisms in place to drive implementation. JNPO-LLNL and JNPO-LANL are not actively upgrading their program documents or hazards surveys and EPHAs to the new standards, and thus likely will not meet published, expected completion dates. Furthermore, the maintenance of hazards surveys and EPHAs under the existing programs is mixed. DAF, NPTEC, and transportation documents contain a number of errors, including incorrect packaging and chemical forms, and consequence analysis results were incorrectly applied in establishing protective action distances and the facility EPZ. As was the case during the October 2002 inspection and the September 2004 inspection, many EALs continue to be problematic because entry conditions are not readily observable or lack complete, accurate, predetermined protective actions; the rating in the EPHA area can be largely attributed to the collective impact of these EAL weaknesses. As was observed during the LSPT transportation scenarios, these weaknesses impacted the ability of key decision-makers to make timely event classifications and formulate an appropriate set of protective actions for affected populations.

C.2.2 Program Plans and Procedures

During the September 2004 inspection, the Independent Oversight team found that the NTS emergency management program was defined and implemented using a comprehensive hierarchy of NSO, lead contractor, LLNL, and LANL plans and procedures. The NSO, contractor, and facility-level corrective actions had, with few exceptions, resulted in significant enhancements of response plans, processes, and procedures. However, as was the case during the October 2002 inspection, there were many inconsistencies between response plans and procedures; in large part, these inconsistencies were the result of recent program improvements. Although they needed to be corrected, the inconsistencies were not considered critical to effective emergency response because the implementing procedures and response checklists, which were used to train emergency responders, were generally more current than the higher-level emergency plans. This 2007 inspection found that substantial improvements have been made to reduce the inconsistencies and potential conflicts with plans and procedures.

NSO, NSTec, the JNPO-LLNL, and JNPO-LANL have established emergency plans that are consistent with the direction and expectations of the Department. The NSO Consolidated Emergency Management Plan (CEMP) establishes appropriate expectations for implementation of the emergency management program by NSO, NSTec, JNPO-LLNL, and JNPO-LANL. In response to the September 2004 Independent Oversight inspection recommendations, NSO and NSTec have improved the clarity and usability of their plans. The CEMP was revised to remove detailed information already included in implementation procedures, thereby eliminating potential conflicts with updated and revised implementation procedures. The NSTec emergency management plan was revised to eliminate redundancies with EMC procedures and provide templates for improved content and consistency of facility procedures.

The CEMP is supported by a hierarchy of NSO, NSTec, JNPO-LLNL, and JNPO-LANL implementing procedures. Implementing procedures have been established that provide appropriate guidance for emergency response operations in the EOC, EMC, OCC, and at the facility level. NSO implementing procedures, which are used by the EOC cadre, ensure that EOC monitoring and activation operations are clearly defined. NSTec implementing procedures, which are used by the EMC cadre and OCC duty managers, provide guidance for activating, conducting, and terminating EMC operations; conducting all required notifications; implementing protective actions; and performing categorizations and classifications. JNPO-LLNL and JNPO-LANL implementing procedures provide guidance to the LED and the facility support staff for determining the most appropriate protective actions to be taken, making necessary emergency notifications, categorizing and classifying emergency events, and implementing or communicating the information as required. The implementing procedures establish a clear chain of command, clearly define position-specific and facility-specific roles and responsibilities, and establish the appropriate maximum allowable time between initial categorization or classification and notifications. Additionally, position-specific checklists have been developed for each EMC cadre position, and facility-specific response checklists have been developed for use by the duty managers. The checklists are well organized and formatted to make them user friendly in a high-stress situation.

In addition to the implementing procedures, NSTec has also developed an emergency preparedness and response manual that establishes the framework for sitewide support of the NSTec emergency

management program. The manual provides guidance and requirements for the preparation for, response to, mitigation of, and recovery from potential consequences of emergency events in all NSTec-managed facilities as well as work locations under the operational control of NSTec. The manual is used in conjunction with facility-specific emergency response procedures (ERPs) to further define the roles and responsibilities of facility managers, personnel from the Emergency Services and Operations Support department, LEDs, emergency action team members, wing/floor/building wardens, and facility occupants. Furthermore, the manual contains such important attributes as guidance on accountability; development, maintenance, approval, and control of hazards surveys and EPHAs; protective actions; bomb threats; and event categorization for operational emergencies not requiring classification. The manual also contains specific details for hazards survey and EPHA development, such as quality control checks for consequence assessment calculations, and checklists for wing/floor/building wardens and LEDs that are well organized and formatted for ease of use.

A review of selected NSTec and JNPO-LLNL facility ERPs identified that they are consistent with the applicable DOE order requirements. The ERPs indicate evacuation assembly and shelter-in-place areas, and assign responsibilities for all facility occupants in the event of an emergency event. However, the ERP for building 23-600, a JNPO-LLNL facility, has been self-identified as requiring revision because the building now houses the EMC and OCC. The ERP requires that an evacuation order be implemented in all areas of the building, but the EMC and OCC may choose to remain operational depending on the emergency event. The ERP is currently being revised to take into consideration the operations of these organizations.

In order to maintain the many emergency management program documents, NSO has established a noteworthy document control process. The EOC document control coordinator (DCC) developed a controlled document distribution list that identifies the documents to be controlled and the names of the document holders. In response to the September 2004 inspection, the EOC DCC extracts the U1a complex and DAF EALs from the emergency plan implementing procedures rather than from the EPHA for inclusion in the EAL sets. Therefore, differences between the EALs appearing in the EPHAs and those in use by U1a complex and DAF LEDs are eliminated. The EOC DCC also:

- Issues new or revised documents to authorized controlled copy holders, utilizing document transmittal/receipt acknowledgment forms to ensure that controlled copies are updated.

- Reviews and tracks acknowledgment forms once they have been signed and returned from each controlled copy holder.

- Maintains a master file of original documents in the EOC.

- Performs audits of selected facilities (EMC, Emergency Support Center, Remote Sensing Laboratory-Nellis) to ensure that current documents are in place.

- Maintains the EALs Guide document to ensure that current and consistent EALs are available in the EOC, EMC, and OCC.

Furthermore, current versions of documents are placed on the NSO, NSTec, and JNPO SharePoint intranet sites for easy access by all users and to supplement their training. When changes to documents are made, affected emergency response personnel are notified of changes by e-mail and, if required reading is mandated, can readily access documents from their respective websites to review.

Additionally, in November 2006, NSO issued a comprehensive implementation plan for DOE Order 151.1C. The implementation plan defines the requirements, planned actions, and schedules for NSO, NSTec, JNPO-LLNL, and JNPO-LANL to implement the new requirements contained in DOE Order 151.1C. NSO has revised the CEMP and has also developed a comprehensive emergency management system manual (NSO Manual 151.1-2) that provides requirements for developing standardized hazards survey, EPHA, and EAL formats among all NTS contractors and maintaining hazards surveys and EPHAs that are consistent with DOE Order 151.1C. NSTec has revised their emergency management plan and procedures, and has developed technical basis documents for developing hazards surveys and EPHAs that include associated templates. NSTec hazards surveys and EPHAs are currently under revision and are expected to meet the estimated completion dates in the implementation plan. JNPO-LANL has revised the emergency management plan and has incorporated the NSTec hazards survey and EPHA

templates into the plan. However, JNPO-LANL has not initiated revisions to the hazards survey and EPHA, and the estimated completion dates will likely be delayed. JNPO-LLNL staff have indicated that efforts to revise JNPO-LLNL emergency planning and response documents have been delayed due to resource constraints, and the estimated completion dates are expected to be missed.

To summarize, the CEMP establishes expectations for implementing the emergency management program and is supported by a hierarchy of NSO, NSTec, JNPO-LLNL, and JNPO-LANL implementing procedures. Redundancies and inconsistencies between response plans and procedures noted in previous inspections have been resolved by removing unnecessary details from the plans and ensuring that there are adequately detailed procedures and checklists. NSO and NSTec have implemented effective procedures and checklists to define the roles and responsibilities of the emergency response organization. JNPO-LLNL and JNPO-LANL have implemented effective procedures to define the roles and responsibilities of the LED and facility support staff. NSTec has developed a manual that is used in conjunction with facility-specific ERPs to establish the framework for sitewide support of the NSTec emergency management program. Additionally, some steps have been taken to upgrade governing emergency management documents to the requirements of DOE Order 151.1C. NSO has issued a DOE Order 151.1C implementation plan and NSTec efforts are proceeding on schedule. However, JNPO-LLNL and JNPO-LANL efforts will not meet the published schedule.

C.3 Ratings

A rating of NEEDS IMPROVEMENT is assigned to the area of hazards surveys and EPHAs.

A rating of EFFECTIVE PERFORMANCE is assigned to the area of program plans and procedures.

C.4 Opportunities for Improvement

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are offered to the site to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific emergency management program objectives and priorities.

Nevada Site Office

- To promote easy usage by responders and ensure consistency in analytical methodologies, content, and format of hazards surveys, EPHAs, and EALs, consider incorporating NSO M 151.1-2 into the contracts or work smart standards of NTS contractors, laboratories, and other users responsible for developing these documents.

National Security Technologies and Joint Nevada Test Site Program Offices

- To enable responders to more quickly select the appropriate EAL and formulate appropriate protective actions and protective action recommendations, consider implementing the following revisions to EALs:
  - Use container size and number and the maximum quantity of the container's contents as observable conditions in the EAL statement.
  - Add pre-determined protective actions (i.e., designate shelter in place or evacuation actions) to the protective action statement for each EAL. Likewise, revise the applicable governing process document to establish this practice as a requirement.
  - Ensure that the protective actions and protective action recommendations specified by EALs are accurately derived from the consequence analysis results, including distance to PAC, contained in the applicable EPHA.
  - Identify and remove unneeded EALs, such as the DAF plutonium oxide EALs, which are not supported by the hazards survey process.
- To promote incorporating more factual information into the EPHA, consider developing a checklist for facility managers that specifically addresses validation of hazardous material form and quantity and container types and sizes.

JNPO-Lawrence Livermore National Laboratory

- To complete and improve the accuracy of the DAF EPHA, consider the following:
    - Add an analysis for depleted uranium and consider its chemical toxicity as the dominant health hazard.
    - Re-analyze the facility EPZ and base it on the scenario with the farthest distance to TEL.
    - Consider eliminating scenarios that are not plausible because the hazardous materials do not exist at DAF.
    - Document a quantitative analysis for lithium compounds in the EPHA.

APPENDIX D
EMERGENCY PREPAREDNESS

D.1 Introduction

An effective emergency public information (EPI) program provides the public, media, and U.S. Department of Energy (DOE) employees with accurate and timely information during an emergency event. In part, effectiveness is based on having in place a long-term, documented program to educate the public and the media about actions that may be required during an emergency response.

The Office of Independent Oversight team evaluated EPI plans and applicable processes for an emergency at the Nevada Test Site (NTS).

D.2 Status and Results

D.2.1 Emergency Public Information

The 2002 Independent Oversight evaluation of the NTS EPI area determined that NTS had developed a comprehensive EPI program commensurate with site hazards and implemented it through an integrated set of procedures that, in most cases, were adequate. However, position-specific training did not adequately support the EPI program. In September 2004, the Nevada Site Office (NSO) EPI area was not fully evaluated, rather, the inspection team focused on the improvement items identified in the 2002 EPI inspection and found that the EPI procedures did not reflect the organizational changes that had occurred since 2002. This 2007 inspection found that the EPI program is mostly well conceived and implemented. However, some of the planning documents and checklists lack sufficient detail, and one essential EPI activity has not been formalized.

In 2006, NSO and National Security Technologies, LLC (NSTec) revised the EPI plan, consolidating some EPI documents and developing detailed position checklists for the joint information center (JIC) cadre. The current EPI planning documents incorporate most of the requirements in DOE Order 151.1C relevant to the EPI area and they implement important EPI components recommended by DOE's *Emergency Management Guide*, such as a detailed approval process, pre-approved templates for news releases, rumor control, employee communications, and provisions for a JIC. Fundamentally, the EPI program is mostly well-conceived and comprehensive, with staffing levels based on the nature, severity, duration, and public and media perception of the event. With few exceptions, the EPI planning and program definition documents and supporting checklists adequately document processes necessary to provide site workers, the news media, and the public with accurate, candid, and timely information. They clearly delineate the roles and responsibilities for the emergency operations center (EOC) public affairs officer (PAO) and JIC staff, include an appropriate set of position-specific response checklists for these roles, and detail nearly all response actions and associated criteria to activate and operate the JIC. The EPI program exhibits several noteworthy practices, including capturing lessons learned from real events and incorporating them into the NTS program, making prompt programmatic changes based on lessons learned from drills and exercises, installing site Fire and Rescue organization radios in the Office of Public Affairs to enable public affairs staff to monitor communications regarding event conditions and response activities, and acquiring "take-away" laptops (for use in the field) loaded with pre-formatted news releases, EPI plans, and pre-approved site and facility information for release to the public.

A comprehensive JIC training program based on job-task analyses supports JIC activities. The training program includes an appropriate mix of training modules, required reading, and position cross training; the program also requires a drill or exercise prior to initial qualification. The Office of Public Affairs has developed an internal tracking system that effectively monitors the qualification status of the JIC cadre. Details of the JIC training program are set forth in the EPI plan and an informal reference document entitled "EPI Training Plan" that provides a broad description of the training program.

Although the program is mostly positive, site emergency planning documents include conflicting guidance regarding the expectation for timely issuance of the initial news release. For example:

- The EOC PAO checklist appropriately requires the initial news release to be issued *within one hour of event classification* and calls for a second news release within one hour of EOC activation.

- The procedure that addresses EOC operations similarly calls for issuing a "canned" news release *within one hour of event categorization*, with a second news release within one hour of EOC activation.

- The 2006 Consolidated Emergency Management Plan (CEMP) appropriately required the initial news release to be issued within one hour of event classification, but a recent revision of the CEMP and the NSTec emergency management plan call for the initial news release to be issued *within one hour of EOC activation*.

- With the exception of the EOC PAO response checklist, the EPI planning documents do not address the NSO policy to issue the initial news release within one hour of categorization/ classification rather than EOC activation.

Furthermore, several EPI planning documents and supporting checklists for the rumor control process lack the detail necessary to ensure effective implementation. For instance, the JIC news manager is tasked with ensuring that all media and public calls and questions are addressed in a timely manner and misinformation is corrected. However, neither the plan nor the checklists reflect how this is to be accomplished. Similarly, the JIC media monitoring team checklists require that the team complete the media analysis and concern form and provide it to the JIC news manager, but the news manager checklist does not refer to this form or include further steps elaborating how to resolve an identified issue. Further, the public inquiry team checklist does not include any rumor control activities, and while both the media and public inquiry team checklists refer to a team lead, there are no checklists for this position.

Finally, JIC activation is not automatically required at any classification level, and the decision to activate the JIC is therefore based on such parameters as the nature and severity of an event or whether offsite local officials desire to participate. As demonstrated during the limited-scope performance tests conducted as part of this inspection, there was significant coordination of information between the EOC PAO and their support staff outside the EOC. During this initial response period, after EOC activation and before JIC activation, EPI planning documents state that public affairs personnel will support the EOC. These documents however, do not provide clarification of this process or the requisite supporting position-specific checklists.

Finding #3: NSO EPI planning and response documents do not consistently describe NSO requirements for issuing initial news releases that reflect DOE expectations for timeliness or specify the responsibilities and duties of the EPI cadre between EOC activation and JIC activation, as required by DOE Order 151.1C.

In the public education area, the Office of Public Affairs has initiated a proactive public education program commensurate with actual risks and the level of local interest. Their approach includes site tours, a speaker's bureau, public school presentations, and a continuous emergency employee hotline. The program also includes a multilingual public National Nuclear Security Administration (NNSA)/NSO website that provides pre-approved site information, approved employee and public announcements, emergency news releases, an overview of the EPI policy, emergency contact numbers, and guides on dealing with family emergency preparedness and how to shelter in place.

Lastly, NSO and NSTec have not developed the integrated checklists necessary to ensure that public affairs staff can issue news releases that meet DOE expectations for timeliness. As mentioned above, the installation of a Fire and Rescue organization radio in two of the PAO offices facilitates the early involvement of the PAO for events in which there may be public interest. However, if the PAO is not in the vicinity of the radio, public affairs staff must depend on the site notification process, initiated by the duty manager, to alert them of an emergency. However, the PAO is not on any initial notification list, and therefore must rely on either an EOC activation page or a courtesy call by the EOC deputy emergency manager. Moreover, public affairs staff indicated that during actual incidents, this notification has taken as long as one or two hours.

To sumarize, since the last Independent Oversight inspection, the EPI program has been appropriately detailed in various EPI-related planning and response documents that are well integrated and that collectively reflect nearly all of the EPI requirements and guidance from DOE Order 151.1C. With few exceptions, the EPI planning documents and supporting checklists appropriately document most processes necessary to provide site workers, the news media, and the public

with accurate, candid, and timely information. The JIC training program is comprehensive and addresses specialized training for activating and operating a JIC and dealing with employees, the media and the public. The Office of Public Affairs also has been proactive in starting a public education program. However, this inspection identified a few areas of the program requiring clarification or additional structure. NSO and NSTec policy and expectations regarding the acceptable timeframe for the initial news release are not consistently documented; some supporting EPI checklists are missing or lack sufficient detail; and EPI planning documents and checklists do not fully detail the coordination of information flow during the period between EOC activation and JIC activation.

D.3 Rating

A rating of EFFECTIVE PERFORMANCE is assigned to the area of EPI.

D.4 Opportunities for Improvement

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are offered to the site to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific emergency management program objectives and priorities.

Nevada Site Office

- To enhance the overall performance of the EPI function, consider performing a job task analysis of EPI functions during the early period of an event when the JIC has not been activated and assign all tasks to specific EPI positions. Thereafter, update the EPI plan, CEMP, NSTec emergency plan, and EPI position checklists accordingly. Specific actions to consider include:
  - Add a description to the EPI plan governing the initial EPI response period and develop supporting checklists that provide an appropriate level of detail for the initial and ongoing exchange of public information between the NSO PAO and the public affairs staff.
  - Review the EOC PAO checklist to ensure that it adequately specifies how to coordinate and distribute initial EPI information.
  - Revise the EPI plan and supporting checklists to add the NSO policy of issuing the initial news release within one hour of event categorization/classification.
  - Provide criteria in the EPI plan and implementing checklists that detail the transition of operations from the initial EPI response team to the JIC. Include protocols for the declaration of JIC operability and the transfer of EPI responsibilities to the JIC.
- To enhance the processes for rumor control, consider the following actions:
  - Add further details in the EPI plan and implementing checklists to describe responsibilities of the JIC News Manager, the JIC Media Monitoring Team, and the Media Inquiry Team. Specifically, include responsibilities for identifying rumors and misinformation, use of the Media Analysis and Concern Form, and interactions with other positions that are used to identify and address misinformation in a timely manner.
  - Add rumor control responsibilities for the Public Inquiry Team into the EPI plan and develop appropriate implementing checklists. Specifically, include responsibilities for identifying rumors and misinformation, use of the Media Analysis and Concern Form, and interactions with other positions that are used to identify and address misinformation in a timely manner.
  - Revise the CEMP and the NSTec emergency plan to update them to the current policies, roles, and responsibilities contained in the latest EPI plan revision.
- Consider formalizing the EPI training program by developing a detailed training manual that incorporates all EPI positions. Specific actions to consider include:

- Validate the informal training document, revise it as necessary, and include it as part of an authorized training document that is controlled and undergoes periodic review and approval that ensures it is current and relevant.

- Expand the JIC training manual to include the entire EPI cadre and add programmatic goals and objectives, training analysis and design, itemized training activities, and qualification and re-qualification training requirements.

- Consolidate the various components of the EPI training program into one EPI training document.

• To strengthen the mechanism used to notify the NSO PAO of an event, consider the following:

  - Identify the ERO position best suited to provide a timely notification (sufficient to allow the PAO to distribute the initial press release within one hour of event initiation) to the NSO PAO.

  - Add a description of the necessary protocols for completing this task to the CEMP and EPI plan.

  - Revise the applicable implementing procedures and/or checklists to implement this function.

APPENDIX E
EMERGENCY RESPONSE

E.1 Introduction

The ultimate objective of emergency planning and preparedness is to prepare emergency responders so that they can apply their skills, procedures, and training to make appropriate decisions and to properly execute actions to protect emergency responders, workers, and the public. Critical elements of the initial response include formulating protective actions, categorizing and classifying the emergency, and notifying onsite personnel and offsite authorities. Concurrent response actions include reentry and rescue, provision of medical care, and ongoing assessment of event consequences using additional data and/or field monitoring results.

The information provided in this section is based on observations from two sets of emergency management limited-scope performance tests (LSPTs) evaluated by the Office of Independent Oversight. Each set of LSPTs involved a combined assessment of response activities in the emergency operations center (EOC), emergency management center (EMC), operations coordination center (OCC), and within the incident command team. The EOC teams consisted of a Nevada Site Office (NSO) EOC emergency manager, NSO EOC deputy manager, National Security Technologies, LLC (NSTec) senior manager, NSO or NSTec public affairs officer, and selected EOC support staff. The EMC teams consisted of an NSTec EMC crisis manager, EMC coordinator, environment, safety and health advisor, NSO representative, and selected EMC support staff, including a consequence assessment team member. The incident command decision-making team participating in the LSPTs consisted of a shift protective force officer and support staff; local emergency director (LED) and support staff for the affected facility; and a Fire and Rescue (F&R) assistant chief, chief's aide, and operations chief, all functioning from a separate room in Building 600 to represent field play.

In the event of a facility emergency, the facility manager or designee (if available) becomes the LED, initiates emergency management decision-making, and assumes the role of incident commander (IC) until relieved by a qualified person. Transfer of the IC role is accomplished in accordance with the type of event involved. For emergencies considered to be security-related (which applies to all events until proven otherwise), a Wackenhut Services, Inc. (WSI) protective force officer assumes the IC position, and during non-security emergencies, the F&R officer assumes the IC position. For site events (or facility events if the LED is not available), the WSI protective force or F&R officers assume responsibility for emergency management decision-making and fill the IC position. LEDs, F&R, and protective force officers are supported by personnel in the OCC, which houses the duty manager and F&R dispatcher; both positions are staffed 24 hours per day.

LEDs initially categorize and classify facility emergencies using emergency action levels (EALs). Depending on the type of emergency, LEDs or ICs are initially responsible for formulating protective actions and protective action recommendations. LEDs also initiate notifications through the duty manager until relieved by the crisis manager as part of the EMC activation process. During an operational emergency, the LED is relieved of emergency management decision-making, with the exception of categorization and classification, by the arrival of a senior F&R or WSI officer, and the LED then becomes a member of the unified incident command structure. The IC directs the tactical response while the LED retains facility operational control through unified incident command. For site transportation accidents, the cognizant IC directs the tactical response, and the duty manager implements initial protective action decision-making, categorizes and classifies the event, and initiates notifications.

Emergency management decision-making for the site response transitions to the crisis manager, or in the case of a security emergency, to the tactical operations center coordinator, after the appropriate response center has been activated. The EMC provides site-level support to the LED and IC. The EOC, after becoming operational, coordinates the response with state and local governments, disseminates public information, and interacts with the Headquarters EOC. After the EOC is activated, the EOC emergency manager ensures the adequacy of categorization and classification determinations, protective actions, and protective action recommendations. Other key emergency manager responsibilities include ensuring

the adequacy of emergency response, approving the release of emergency public information, and approving security actions that are reserved only for Federal personnel.

Two operational emergency scenarios were developed for the LSPTs: a facility operational event that results in the release of a hazardous radiological material and multiple personnel injuries, and a transportation event involving a release of a hazardous chemical and multiple personnel injuries. The LSPT scenarios, which were developed by Independent Oversight in conjunction with Nevada Test Site (NTS) trusted agents, were presented to the participants by the NTS trusted agents to ensure scenario validity and delivery of accurate event cues. The trusted agents also played the roles of several positions that were not otherwise staffed.

E.2 Status and Results

During the September 2004 inspection, all members of the unified incident command system, including the affected LED, F&R ICs, and protective force ICs, established an effective command and control system that generally mitigated the consequences of the postulated LSPT events. Consequence assessment teams demonstrated their ability to confirm the adequacy of initial protective action decision-making and quickly developed estimates of expected event consequences. However, F&R ICs were unable to adequately protect workers and the public and accurately classify emergency events using response procedures and references without undue reliance on supporting responders. This 2007 inspection identified several performance strengths, particularly those related to F&R personnel performance in the incident command structure and in the LEDs' demonstrated ability to effectively perform emergency management and response at the facility. However, during the performance tests, decision-makers deviated from the roles and responsibilities described in the Consolidated Emergency Management Plan (CEMP) and response procedures; ICs did not establish an effective unified incident command system; and duty managers and crisis managers did not consistently demonstrate effective and timely use of available resources, plans, and procedures to protect emergency responders and site workers in the event of a hazardous material release.

E.2.1 NTS Incident Commander Team Decision-Making

Overall, the Joint Actinide Shock Physics Experimental Research (JASPER) facility LEDs are knowledgeable of their emergency response roles and responsibilities, JASPER protocols and procedures in implementing the emergency response, and methods used in keeping personnel safe, and had available most of the tools needed to support their decision-making. JASPER personnel quickly assumed the role of the LED following each event initiation, and effectively implemented JASPER emergency response procedures. LEDs demonstrated effective use of available JASPER staff, designating both a communicator and recorder for support. LEDs also notified the adjacent facility to implement protective actions, and maintained continuous communications with the OCC and duty manager. JASPER radiological control technicians were quickly utilized to provide radiological monitoring support. The LED either served as a facility subject matter expert supporting the protective force IC and F&R IC or arranged for support from other available JASPER staff.

All LSPT events were initially considered to be initiating events for security emergencies in which the WSI protective force officer is required to be the IC until the EOC security director determines otherwise. However, implementation of incident command responsibilities was inconsistent with the approach described in the CEMP, the organization's instructions for implementing an incident command system, and the JASPER emergency response plan. The IC did not serve as the focal point for all on-scene determinations at a strategic level; establish overall objectives, priorities, and an incident action plan; and assign specific objectives to tactical-level units. During both JASPER events, independent strategies and tactics were developed and implemented by the LED, F&R assistant chief, and WSI protective force officer, often without any IC coordination. This resulted in incomplete or different understandings of protective action decisions, structural status of the facilities, and planned strategies or tactics. Other examples of ineffective IC decision-making were also observed during the transportation events, during which initial incident command post locations were established downwind of the event scenes and had to be relocated.

Finding #4: NTS responders did not establish an effective unified incident command system that provided command and control of the response to mitigate event consequences, as required by DOE Order 151.1C.

F&R assignments to the incident command system positions were clearly identified, and the participating chiefs' aides and operations section chiefs were significantly involved with the overall event scene response. F&R assistant chiefs effectively demonstrated the ability to implement response actions, lead the field response team, and request additional response resources. F&R IC staff promptly acquired information from the automated hazardous material inventory database and shipment manifests, and used various technical resources to develop strategies and tactics. The IC gave priority to injured worker rescue, providing medical treatment, and transport of the injured. Throughout the response, F&R personnel provided safe route information for responding units, designated staging areas for responding units, and ensured that the incident command post and staging locations were widely communicated. Requests for mutual assistance were comprehensive and timely. Without exception, after the transfer of incident command was made between the protective force and F&R assistant chiefs (which typically required approximately one hour from the time of event discovery to the determination by the EOC security director that there was not a security event), coordination of the event scene response improved. Overall, the performance of the F&R organization was a significant improvement from that observed during the September 2004 Independent Oversight inspection.

The OCC served as the focal point for all emergency notifications, reporting, and onsite protective action implementation. F&R dispatchers promptly notified key NTS response organizations, and OCC staff maintained contact with the ICs, provided effective support, and obtained updated information on a regular basis. However, OCC personnel did not always ensure that protective actions were promptly implemented or that response information obtained was correctly recorded and communicated to other response locations. For example, during one event, the duty manager did not implement three separate protective action decisions communicated to him by the deputy crisis manager, crisis manager, and IC. Other delays in protective action implementation resulted from difficulty in converting distance units for use in the GeoCast system, a reverse 911 emergency notification system. During another event, the duty manager made appropriate notifications to onsite personnel and senior management, but provided incomplete information in the "all nets" radio announcement and untimely and incomplete information to other underground facilities.

Effective response was also impacted by several weaknesses in procedures and response practices. Most importantly, duty managers had difficulty in accurately classifying some events and providing appropriate protective actions because the entry conditions in the applicable EALs were confusing. EAL weaknesses are discussed further in Section C.2.1 of this report. During both transportation events, duty managers had difficulty locating in the EALs the chemical that had been released because the chemical was listed only by an acronym (i.e., CSA versus chlorosulfonic acid). Some communication weaknesses also hampered an effective response. "Meet-me" calls were effective for exchanging information between venues; however, at various times the calls removed the IC and other key command staff from more important response tasks for extended periods. Such calls involving the IC need to be limited to instances where no other means exists to obtain and validate event information. Response personnel also struggled with converting measurements between English and metric units. Lastly, incomplete and inaccurate information was routinely transmitted on the NSO 149 notification form, which resulted in confusion among some EMC and EOC responders and would have made it difficult for offsite agencies to fully understand the event.

To summarize, JASPER LEDs were knowledgeable of their emergency management roles and responsibilities and JASPER protocols and procedures in implementing the emergency response, and were effective in emergency management decision-making. Unified command was declared at all event scenes, and F&R assistant chiefs and staff effectively demonstrated the ability to implement all required response actions, which was a significant improvement from the September 2004 Independent Oversight inspection. However, the incident command structure was not effective because clear roles and responsibilities for emergency response decision-making were not established. Typically, independent strategies and tactics were developed and implemented by the LED, WSI protective force officer (acting as the IC until the event was determined to be not security related), and F&R assistant chief, often without coordination,

resulting in incomplete or different understandings of protective action decisions, status of facilities, and incident action plans. OCC staff demonstrated the ability to maintain good contact with the ICs, obtain updated information on a regular basis, and provide effective support to the field response. However, OCC personnel did not always ensure that response information obtained was correctly recorded and communicated to other response locations or that protective actions were promptly implemented. Finally, difficulties were observed in arriving at an accurate event classification and providing appropriate protective actions and protective action recommendations.

E.2.2 EMC/EOC Team Decision-Making

Overall, the NTS EMC teams provided appropriate guidance and support to on-scene responders. EMC team members typically anticipated many of the support needs in the field and off site. The EMC also provided corroboration of LED categorization and classification decisions. In the consequence assessment area, NTS has a large array of such references as emergency planning hazards assessments and the hazardous material inventory database to serve as the basis for quantifying hazardous material releases, a sophisticated meteorological monitoring system to support real-time dispersion modeling, and a wide variety of available dispersion modeling programs for predicting potentially impacted areas following a hazardous material release. Another positive is that, to compensate for the fact that the EMC manning roster includes only one consequence assessment person, this individual used another EMC staff person to verify all plume modeling input data during the first set of LSPTs.

However, the observed response in the EMC was not always consistent with the approach discussed in the CEMP and with emergency response procedures. For example, during the postulated JASPER events, the crisis managers took some actions to verify earthquake damage and injuries, order shelter-in-place, and ensure that underground workers were at the surface, but in neither event was there a systematic approach to verifying the status of facilities following the earthquake. As previously described, the duty managers frequently became overwhelmed with decision-making tasks, notifications, and implementation of protective actions. However, the crisis managers did not improve the situation by assuming responsibility for protective action decision-making for site personnel away from the event scene.

Finding #5: During LSPTs, duty managers and crisis managers did not consistently demonstrate effective and timely use of available resources, plans, and procedures to protect emergency responders and site workers from unacceptable consequences following a hazardous material release, as required by DOE Order 151.1C.

Furthermore, during LSPTs, consequence assessment personnel demonstrated inconsistent performance in the use of available resources. For example, only one of the two consequence assessors appropriately confirmed meteorological conditions. Additionally, inconsistency was observed in the use of chemical property data sheets for determining hazardous material density and establishing the material-at-risk quantity. Lastly, consequence assessment staff were not always aware of event classification and protective action decisions for which they should have provided input.

The NSO EOC team demonstrated familiarity with most EOC operations and their assigned responsibilities. NSO decision-making authorities are clear and well identified in response procedures and NSO checklists. Public affairs officers provided timely and accurate emergency public information. However, the observed response was not always consistent with the EOC operations procedure. Although the EOC emergency manager tentatively made a decision to raise the event classification for one of the transportation events from an Alert to a General Emergency, his decision was delayed for over an hour, and only after lengthy discussions with the crisis manager was the upgrade made. Inconsistent performance was demonstrated by the EOC safety advisors. During one of the JASPER events, the safety advisor correctly verified the amount of radiological material and high explosive involved; confirmed material and equipment locations; and ensured the status and adequacy of EALs, event categorization/classification, protective actions, and consequence assessment. In contrast, during one of the transportation events, the safety advisor used inaccurate plume plots, and did not verify the accuracy of consequence assessment, event categorization/classification, and protective actions.

To summarize, during performance tests, EMC and EOC teams were well equipped and demonstrated familiarity with many of the protocols, such as notifying offsite officials, establishing operational

facilities, preparing news releases, and providing event information to site workers. In addition, EOC staff worked together effectively to produce timely emergency public information. However, decision makers and support staff did not make full use of EALs or verify event conditions from available sources to arrive at accurate event classifications and commensurate protective actions. Oftentimes, duty managers became overwhelmed with decision-making tasks, notifications, and implementation of protective actions; nonetheless, crisis managers did not improve the situation by assuming responsibility for protective actions decision-making. Furthermore, performance difficulties were observed in EAL use, correlating protective actions, and corroborating event classification and protective action decision-making. Communication and notification weaknesses also hampered an effective response, and resulted in incomplete and inaccurate information being routinely transmitted on the offsite notification form. Consequence assessment personnel demonstrated inconsistent performance in the use of available consequence assessment resources. Lastly, through conservative actions, the emergency response organization demonstrated the ability to protect emergency responders, site workers, and the public during an emergency response. However, the observed weaknesses diminish confidence that emergency response organization responders can consistently and appropriately respond to significant site events. As mentioned in Appendix C, some of these weaknesses can be attributed to deficiencies in EAL content and usability.

E.3 Ratings

A rating of NEEDS IMPROVEMENT is assigned to the area of NTS incident command team decision-making.

A rating of NEEDS IMPROVEMENT is assigned to the area of EMC/EOC team decision-making.

E.4 Opportunities for Improvement

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are offered to the site to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific emergency management program objectives and priorities.

Nevada Site Office

- Consider formalizing, by adding steps in the EOC security director's checklist, the practice of making a determination whether an event involves category I or II quantities of special nuclear material or another security interest and the authorization/approval to transfer incident command responsibilities from the protective force commander to the F&R commander.

- To keep other EOC cadre members informed of response actions, consider projecting a map display that depicts the location of the affected facility, road blocks, incident command post and staging areas, and wind direction.

National Security Technologies

- To further enhance command and control functions, consider the following actions:

  - Define and document the prerequisite qualifications and training for all individuals expected to perform as ICs.

  - Ensure that periodic training is provided on incident command protocols, accountability processes, and measures for controlling personnel contamination and mitigating hazards at the event site.

- Consider building upon existing emergency response organization knowledge of the Emergency Response Guidebook by providing training on using it to determine event classifications and formulate protective actions. In the training, provide information on radiological and hazardous materials transported across the NTS, and then drill responders on different types of hazardous material releases.

- To enhance the consequence assessment output products and the timeliness of their availability, consider the following:

  - Preload emergency planning hazards assessment-specific source term data into the dispersion model programs to enable a

timely assessment that uses current weather conditions while obtaining other event-specific data to support source term refinement.

- Revise consequence assessment procedures and checklists to ensure the use of field measurements instead of computer modeling outputs when recommending reduction of protective action distances.

- Develop procedures or checklists that provide specific guidance (e.g., use of software tools and modeling assumptions) on the development of required output products.

- Perform drills with consequence assessors to ensure integration and proficiency of activities (e.g., using modeling output data to determine where field monitoring teams should be deployed, back-calculating the source term using field measurements).

• When strengthening the emergency response organization's communications protocols, consider the following actions:

- Adopt the protocol of always reporting and recording wind direction as "from" a direction (versus "to" a direction).

- Emphasize the need to provide all known information on NSO Form 149 notifications during drills and exercises.

- Emphasize the need to maintain complete records of actions taken on checklists used in the OCC and EMC.

- Select a standard unit of measurement, either English or metric; during drills, practice using the software available on the EOC information management system for converting available units to desired units.

- Formalize the turnover practice by developing written performance guidance, and practice this evolution during drills.

• Strengthen the process of implementing the onsite shelter-in-place protective actions. Specific actions to consider include:

- Predetermine facility-specific actions and responsibilities that should be taken to increase the effectiveness of sheltering (i.e., heating, ventilation, and air conditioning shutdown during sheltering).

- Incorporate facility-specific actions into facility Emergency Response Plans, and drill facility occupants on these actions.

APPENDIX F
READINESS ASSURANCE

F.1 Introduction

Emergency management program administration includes elements of readiness assurance as well as performance of some planning and response functions. Readiness assurance activities ensure that emergency management program plans, procedures, and resources of the Nevada Site Office (NSO) and Nevada Test Site (NTS) will facilitate an effective response to an emergency at the site. Readiness assurance activities include implementation of a coordinated schedule of program evaluations, appraisals, and assessments. Key elements of the readiness assurance program include the active involvement of National Nuclear Security Administration (NNSA) line organizations in monitoring program effectiveness; effective implementation of NSO, National Security Technologies, LLC (NSTec), and Joint NTS Program Office (JNPO) self-assessment programs; and performance of timely corrective actions for identified weaknesses.

This inspection examined the processes by which NSO and the NNSA Office of Emergency Operations (NA-40) provide guidance and direction to and maintain operational awareness of the NTS emergency management program. The inspection included a review of NSO emergency management program assessment processes, and review of NSTec and JNPO self-assessment processes. Additionally, the inspection included reviews of the NTS issues management processes, and the status of actions taken to address findings identified in the previous Independent Oversight inspection.

F.2 Status and Results

F.2.1 NNSA Line Program Management

The September 2004 inspection determined that NSO had clearly defined roles, responsibilities, and authorities required for line management oversight of the NTS emergency management program, and that oversight activities were governed by a comprehensive set of processes. Further, NSO personnel were actively engaged in providing direction to and maintaining awareness of the NTS emergency management program through an active assessment program, noteworthy use of the performance evaluation plan, involvement in the corrective action system, and interactions with the site emergency management organizations. Independent Oversight identified weaknesses in the NSO self-assessment and site assessment programs and uncertainty in the longer-term ability of NSO emergency management staff to provide adequate, ongoing line management oversight of the NTS emergency management program. This 2007 inspection found that NSO has adequate processes for providing direction and conducting oversight of site activities. NSO remains actively engaged in the site exercise program, and has utilized corrective action processes appropriately to identify issues and implement corrective actions for external evaluations and most internal evaluations. Nevertheless, some key NSO responsibilities are not being executed, and weaknesses in implementing the NSO assessment program were identified.

NA-40 has continued an appropriate level of awareness of the NTS emergency management program and has provided ongoing support to NSO to maintain the site's program. Personnel from the Office of NNSA Emergency Management Implementation (NA-43) reviewed the emergency preparedness program as part of the NNSA biennial review of nuclear safety at NTS, and also prepared a summary status of the site program for inclusion in the NNSA annual review of the emergency management system. In October 2006, personnel from the NNSA Office of Emergency Management and Policy (NA-41) conducted a no-notice exercise at the site, which identified a number of important issues relating to the site's emergency response program. Additionally, NA-43 personnel have participated in the site's annual exercises and the no-notice exercise, and have conducted a number of site visits. NA-43 has also provided supplemental assistance to the site; for example, NA-43 participated in a recent programmatic assessment and provided assistance in improving the site's emergency public information processes, and has committed to provide technical resources for upcoming reviews of emergency planning hazards assessments (EPHAs).

NNSA and NSO have established clear roles and responsibilities for the site emergency management

program, and NSO has instituted adequate tools to provide direction and oversight to the contractor and JNPO. Responsibility for program direction and oversight is clearly established in the respective Functions, Responsibilities, and Authorities Manuals and the site Consolidated Emergency Management Plan (CEMP), and rests with the Assistant Manager for Site Operations (AMSO). Further, memoranda of agreement between the Livermore and Los Alamos Site Offices and NSO establish the roles, responsibilities, and processes for exercising oversight of laboratory activities at the site. Although oversight responsibilities and authorities are clearly established, some important responsibilities have not been fully exercised. For example, NSO has informally reviewed and commented on the facility EPHAs, but has not formally approved any of the current documents. Additionally, although the facility emergency planning zones (EPZs) are included in the facility EPHAs, a recent revision to the CEMP removed the site's consolidated EPZ from the plan. With no replacement document, the result is that no current document contains an approved, consolidated EPZ for the site.

NSO has established an appropriate framework for the performance evaluation program, and has implemented an adequate set of performance measures for emergency management. Performance measures continue to be used to establish goals and focus contractor efforts, and provide a structured method for evaluating some aspects of contractor performance and communicating ongoing expectations to the contractor. During this fiscal year, an important element of performance is the completion of the Department of Energy (DOE) Order 151.1C implementation plan, and the status of plan actions is routinely discussed with responsible contractor personnel. Additionally, AMSO provides quarterly input to the Livermore Site Office and Los Alamos Site Office regarding performance.

Generally, NSO has established an appropriate framework for assessing NSTec, JNPO, and user emergency management programs. The recently revised CEMP establishes the assessment requirement applicable to these programs using the NSO assessment and oversight manual. The assessment and oversight manual is well-structured and describes a sound approach; it includes detailed instructions for assessment planning, performance, reporting, and issue management. Nonetheless, the CEMP does not explicitly incorporate the requirement from DOE Order 151.1C to review the contractor self-assessment programs, and the assessment and oversight manual does not specifically address emergency management.

NSO appropriately publishes assessment schedules at three organizational levels. An overall high-level master assessment schedule for senior managers does not address emergency management assessments directly, but does include emergency management as a functional sub-topic in larger safety management program assessments. At the site operations level, the AMSO also publishes an annual assessment schedule, which includes facility exercises but not functional area assessments. In fiscal years 2005 and 2006, the emergency management program manager scheduled several of the required annual programmatic assessments and included an appropriate set of objectives and criteria. These assessments were also included in the emergency readiness assurance plan schedule but not in the AMSO assessment schedule. More recently, the emergency management program manager, with assistance from NA-43, has laid out a three-year programmatic assessment schedule in the AMSO assessment schedule; however, the emergency management schedule does not explicitly identify the target organizations or facilities. Although the assessments contained in the three schedules are generally comprehensive, the fragmented nature of the schedule inhibits the ability of managers to maintain awareness of the status of the assessments, and a number of the assessments were not completed, as discussed further below.

Although the comprehensive nature of the overall assessment schedule is a positive attribute, NSO has only partially implemented the schedule, and significant weaknesses were identified in the completed assessments. NSO personnel have engaged in oversight and assessment through direct participation in the conduct and evaluation of site and facility exercises. Additionally, assessments of the NSTec programs for training, drills, and exercises are in progress. Two programmatic assessments of facility emergency management programs were conducted as part of the safety management program assessments that were scheduled; however, the emergency management assessments did not demonstrate the critical approach or depth of inquiry necessary to provide an adequate review of the facility programs. For example, in one assessment the review record for training and drills does not indicate that any training records were reviewed and the record for readiness assurance does not refer to the facility's self-assessment program. Finally, none of the program assessments scheduled by the emergency management program manager in the validation and

assessment plan were completed, and the scheduled items were not replaced by reviews of the contractor or JNPO self-assessments. As a result, NSO has not performed an adequately comprehensive assessment of the NSTec or JNPO emergency management programs within the past three years.

Finding #6: NSO has not formally reviewed and approved the NTS EPHAs and consolidated EPZ, and has not conducted formal programmatic assessments of site and facility emergency management programs, as required by DOE Order 151.1C.

Overall, NSO has implemented a program of self-assessments, though some weaknesses in the program were identified. During 2005, NSO conducted a number of self-assessments, which identified several issues that were subsequently addressed by corrective actions. During 2006, no self-assessments were completed; more recently, NSO performed a detailed management self-assessment that addressed five significant emergency management functional areas using the self-assessment guidance provided by NA-43. This self-assessment was thorough, followed the objectives and lines of inquiry in the guidance, and identified some significant opportunities for improvement. Nevertheless, some weaknesses were noted in the NSO self-assessment report. For example, a reviewer indicated that a criterion dealing with the availability of hazards surveys and EPHAs was met despite a discussion that indicated that the emergency management program manager did not have access to all of the hazards surveys. Finally, the Order requirement for the self-assessment program is not included in the CEMP.

NSO has established and implemented an effective issues management program that includes a suitable process for prioritizing issues and managing corrective actions identified during exercises and internal and external assessments. The issues management process provides an appropriate review and prioritization of identified issues and establishes a suitable mechanism for developing corrective actions and tracking them to closure. The process is supported by an issues management database that provides a useful tool for tracking and closing corrective actions under NSO's cognizance. NSO has effectively managed corrective actions identified during external assessments, such as those conducted by Independent Oversight (see discussion below). Additionally, NSO took timely action to address issues identified during the October 2006 no-notice exercise conducted by NA-41, and implemented a number of corrective actions, including conducting a follow-up no-notice exercise, prior to releasing the formal after-action report. NSO has also effectively managed issues identified during internal assessments and site exercises; however, starting in spring 2006, exercise-related issues were not entered into the issues tracking system for approximately 12 months.

NSO has ensured that the corrective actions resulting from the two previous Independent Oversight inspections have been implemented and effectiveness reviews completed. However, some completed actions may not have been effective in correcting the underlying issues associated with the finding. The corrective actions that addressed the findings from the two previous inspections were appropriately entered into the issues tracking system, tracked to closure, and appropriately documented. Subsequent effectiveness reviews were completed by NSO staff and documented in detailed reports. The recently completed effectiveness review for the 2002 inspection corrective actions was thorough, critical, and well documented, although it did not look in depth at performance or output documents. The effectiveness review for the 2004 inspection items was less thorough and primarily validated that corrective actions were completed, rather than evaluating their appropriateness or effectiveness in addressing the issue. In almost all cases, the corrective actions identified for the findings were adequate to address the underlying issues. However, in some instances the corrective actions did not fully address the issue and have not been fully effective in achieving the desired program improvements. For example, the 2002 inspection identified various weaknesses with pre-determined protective actions in emergency action levels, and although the corrective actions have been closed, this inspection found similar problems with the current set of emergency action levels (see Section C.2.1 of this report for further discussion). Similarly, although a corrective action for the 2002 inspection included developing a site manual governing the preparation of hazards surveys and EPHAs, this manual is not included in the applicable contracts and work smart standards and has not been implemented.

To summarize, NNSA and NSO have established clear roles and responsibilities for oversight and direction of the site's emergency management program, and NA-40 has continued to provide active support to the NSO. NSO has effectively used the performance objective system to provide direction

for the contractor's program and convey feedback and direction to the contractor. NSO personnel actively managed the issues and corrective actions resulting from the previous Independent Oversight inspections and internal assessments. The identified actions were completed, closed, and appropriately validated, and follow-on effectiveness reviews were performed. With one exception, NSO personnel have been appropriately engaged in the site's exercise program. Notwithstanding the above, some important weaknesses in NSO direction and oversight were identified during this inspection. NSO has not formally reviewed and approved the EPHAs for the site's facilities, and recently removed the composite EPZ from the CEMP. And, although NSO personnel have been engaged in the site exercise program, no suitable assessments of site/facility programmatic elements have been completed recently. In addition, issues resulting from site exercises in 2006 were not entered into the issues management system in a timely manner. Finally, some of the corrective actions that addressed previous Independent Oversight findings were not fully effective in addressing the underlying issues.

F.2.2 Contractor Feedback and Improvement

The NTS contractor feedback and improvement area was not evaluated during the September 2004 Independent Oversight inspection. An Independent Oversight evaluation of the NTS contractor feedback and improvement area conducted in October 2002 determined that the primary site contractor had identified improvement opportunities from a variety of activities, that the processes used for issues management were effective, and that many corrective actions and improvements had been implemented. However, a significant backlog of overdue corrective actions existed. The feedback and improvement processes for Los Alamos National Laboratory (LANL) and Lawrence Livermore National Laboratory (LLNL) were not addressed in the October 2002 Independent Oversight inspection. This 2007 Independent Oversight inspection found that NSTec continues to identify improvement opportunities from a variety of activities and the process used for issues management is still effective (though weaknesses in implementation were noted). In addition, JNPO-LANL and JNPO-LLNL have processes for assessments and issues management, although JNPO-LANL has not conducted self-assessments of the emergency management program, and weaknesses in the implementation of the issues management process were noted for JNPO-LLNL.

NSTec has established a comprehensive emergency management assessment program that is effective in identifying programmatic weaknesses and opportunities for improvement. Emergency management assessments fall within the framework of the NSTec contractor assurance program, which requires the use of specific evaluation criteria for assessments and an assessment report format that documents the objective evidence of performance. Emergency Services and Operation Support (ESOS) personnel perform in-depth evaluations of all emergency management program elements annually and publish assessment reports that document the specific criteria evaluated along with the objective evidence that was used to determine compliance. As a notable practice, ESOS management rotates the personnel who conduct the assessments in order to gain different perspectives regarding NSTec's compliance with emergency management requirements. In addition, ESOS personnel perform several focused assessments each fiscal year (FY) on topics specific to emergency management activities, such as handling classified media in the emergency operations center and controlling and distributing EPHAs. Furthermore, NSTec senior managers review the results of the ESOS assessments conducted and meet frequently with both ESOS and NSO management to discuss issues and expectations.

JNPO-LLNL has a process in place for conducting self-assessments of NTS activities, and the JNPO-LLNL emergency plan requires an annual self-assessment of the emergency management program. The JNPO-LLNL self-assessment procedure specifies that the requirements in the work smart standards are the source for evaluation criteria, which for emergency management consists of the contractor requirements document from DOE Order 151.1C. However, the procedure does not require the identification of the specific evaluation criteria used in the assessment or documentation of the objective evidence used to determine compliance with the evaluation criteria. As a result, the assessor determines the level of detail provided in JNPO-LLNL self-assessment reports. For example, the draft FY 2006 emergency management annual self-assessment includes details on the specific evaluation criteria and evidence used to determine whether criteria were met for the three facilities that were included in the review, but a similar level of detail was not provided for the programmatic portion of the assessment. In another case, Device Assembly Facility personnel conducted an evacuation drill in FY 2006

as part of the overall emergency management self-assessment. The drill included specific performance expectations for the drill, and while the after-action report for the drill included a strength regarding the performance of the local emergency directors, no objective evidence was provided in the after-action report regarding how the specific expectations for the drill were met. Consequently, while JNPO-LLNL conducted annual emergency management self-assessments using programmatic assessments coupled with facility-specific drills and assessments, the resulting assessment and drill after-action reports do not consistently provide a clear description of the evaluation criteria used or the evidence used to determine whether the criteria were met.

JNPO-LANL has established a process for assessing NTS activities, although weaknesses exist in the JNPO-LANL emergency plan and assessment procedure. The JNPO-LANL emergency management plan for NTS activities requires a self-assessment of the emergency management program, but states that assessments are done on an "as needed" basis rather than annually as required by DOE Order 151.1C. The JNPO-LANL assessment procedure specifies how to conduct assessments; however, neither the procedure nor the JNPO-LANL emergency plan clearly requires the use of specific evaluation criteria or objective evidence of how the evaluation criteria were met. Furthermore, implementation of the assessment process for the emergency management program has not occurred because JNPO-LANL did not conduct a self-assessment of the emergency management program in FY 2005 or FY 2006. While the JNPO assessment schedule for FY 2007 includes an emergency management programmatic self-assessment, the schedule does not state that this assessment includes the JNPO-LANL emergency management program and the schedule does not include an emergency management self-assessment for the U1a complex.

Finding #7: JNPO-LANL is not conducting annual self-assessments of the emergency management program, as required by DOE Order 151.1C.

A comprehensive NSTec procedure specifies the issues management process to be used for all NSTec activities; however, ESOS does not enter all emergency management issues into the joint NSTec and NSO corrective action tracking system (caWeb) in a timely manner. The NSTec procedure for issues reporting appropriately includes prioritization of issues, identification of root causes, corrective action development designed to prevent recurrence, tracking of corrective actions, and validation of completion of corrective actions. ESOS conducted seven exercises and had two operational emergencies over the last year, and past practice had been that NSO would enter these issues into caWeb. NSTec only recently entered the numerous exercise issues requiring corrective action by NSTec into caWeb. Moreover, several improvement items from a DOE Headquarters no-notice exercise conducted last October and most issues identified during the two operational emergencies had not been entered into caWeb.

Weaknesses in the development of corrective actions and closure of emergency management issues are illustrated by the following examples of corrective actions that were ineffective or that were closed without evidence that the corrective action had been completed:

- An issue involving the formation of an industrial hygiene monitoring team was identified during an ESOS self-assessment nearly two years ago. The corrective action for the issue states that additional corrective actions would be developed and entered into caWeb within thirty days. However, no additional corrective actions were entered into caWeb and the issue remains open.

- An ESOS self-assessment identified an issue involving the development of a tracking system for offsite responder training that had been previously identified in caWeb and still required closure. The issue was subsequently closed, although no evidence exists that the corrective action for the issue was completed and the issue was again identified in a subsequent ESOS self-assessment. The issue remains open after having been originally identified over three years ago.

- A corrective action to develop a formal assessment program for emergency response organization (ERO) training was closed; however, the rationale provided for closure discussed the corporate training system rather than a formal assessment program, and no evidence exists that demonstrates that a formal assessment program for ERO training has been developed.

- A corrective action stated that a formal ERO training matrix would be developed; however, the rationale for closing the corrective action stated

that the corporate training matrix would include the ERO training once an ERO training plan was developed in the following FY. No additional corrective actions were entered in caWeb to ensure that the original corrective action of developing a formal ERO training matrix did occur.

Finding #8: NSTec has not consistently implemented timely and appropriate corrective actions in response to identified emergency management program weaknesses, as required by DOE Order 151.1C.

JNPO-LLNL has established an issues management process that includes a comprehensive set of requirements for prioritization of issues, root cause analysis, tracking of corrective actions, and verification of closure of issues. However, the determination regarding which findings will be entered into the JNPO-LLNL deficiency tracking system is left solely to the discretion of the JNPO-LLNL group leaders and facility managers. As a result, the emergency management issues that are being identified through programmatic assessments and drills, with one exception, are not tracked in the JNPO-LLNL deficiency tracking system. For example, JNPO-LLNL conducted a programmatic emergency management assessment in FY 2005, and numerous observations were noted for consideration for further action by JNPO-LLNL management. These observations included the observation that the procedures for determining emergency facility habitability are unclear and that a staffing continuity strategy is not in place for the JNPO-LLNL emergency management program or ERO. None of the observations were entered into the JNPO-LLNL deficiency tracking system, although an issue was entered into the tracking system one year later regarding the staffing concerns. In another case, two weaknesses were noted in an emergency management program assessment at the Joint Actinide Shock Physics Experimental Research facility in FY 2005 that involved the absence of a documented training program for the emergency response personnel and that document control was inconsistent with the JNPO-LLNL procedure. Neither of these two weaknesses were entered into the JNPO-LLNL deficiency tracking system. Furthermore, three findings were identified during a Device Assembly Facility drill in FY 2006. Corrective actions were identified as being needed for two of the findings in the after-action report, but the findings were not entered into the JNPO-LLNL deficiency tracking system. Corrective actions were initiated informally for one of the findings, but no evidence exists that corrective actions were taken for the other finding.

Finding #9: JNPO-LLNL is not consistently tracking and verifying the correction of findings from emergency management program assessments and drills, as required by DOE Order 151.1A.

JNPO-LANL has established a comprehensive issues management process. The JNPO-LANL issues management procedure provides detailed requirements and includes prioritization of issues, identification of root causes, prevention of recurrence considered during corrective action development, tracking of corrective actions, and verification of completion of corrective actions. JNPO-LANL entered four issues related to emergency management into the JNPO-LANL issues management tracking system; however, two issues were noted as having been inappropriately entered into the issues management tracking system and the other two issues were related to a one-time experiment conducted at the NTS. Given the small sample size, the absence of exercise-related findings for JNPO-LANL facilities, and the lack of emergency management self-assessments in FY 2005 and FY 2006, the ability of JNPO-LANL to effectively resolve emergency management issues cannot be determined.

To summarize, NSTec has established comprehensive processes for assessments and issues management. The NSTec assessment process is effective in identifying programmatic weaknesses and opportunities for improvement and ESOS produces assessment reports that provide a substantial level of detail regarding the specific criteria evaluated and objective evidence of performance. However, issues identified in exercises and operational emergencies have not been entered into caWeb in a timely fashion. In addition, ineffective corrective actions and the closure of issues without having completed the stated corrective actions limit the ability of NSTec to effectively resolve identified weaknesses. JNPO-LLNL also has processes in place for self-assessments and issues management, although the process allows the JNPO-LLNL senior managers to determine which issues will be tracked. JNPO-LLNL conducts annual emergency management self-assessments, but the resulting documentation does not always include the specific evaluation criteria or objective evidence of performance. While emergency management issues are being identified in the JNPO-LLNL annual emergency management self-assessments, the issues

are not normally tracked in the JNPO-LLNL deficiency tracking system and there are no assurances that corrective actions are being implemented to resolve the identified issues. JNPO-LANL has processes in place as well for assessments and issues management, although the JNPO-LANL emergency management plan does not require an annual self-assessment. JNPO-LANL has not conducted self-assessments of the emergency management program and the assessment schedule for FY 2007 does not clearly indicate that the necessary self-assessment will be conducted. Furthermore, the adequacy of the implementation of the JNPO-LANL issues management process could not be determined due to the absence of assessment-related findings and the very small number of other issues that were tracked in the issues management tracking system. Overall, NSTec, JNPO-LLNL, and JNPO-LANL have established processes for assessing performance and identifying issues, but these organizations have not consistently implemented the processes to identify and correct issues in a timely manner.

F.3 Ratings

A rating of NEEDS IMPROVEMENT is assigned to the area of NNSA line program management.

A rating of NEEDS IMPROVEMENT is assigned to the area of contractor feedback and improvement.

F.4 Opportunities for Improvement

This Independent Oversight inspection identified the following opportunities for improvement. These potential enhancements are not intended to be prescriptive. Rather, they are offered to the site to be reviewed and evaluated by the responsible line management and accepted, rejected, or modified as appropriate, in accordance with site-specific emergency management program objectives and priorities.

Nevada Site Office

- To ensure that requirements for assessments are commonly understood and applied consistently at the site, consider revising the CEMP to expressly include DOE Order 151.1C requirements for:
  - Contractor, laboratory, and user annual emergency management program self-assessments
  - NSO program self-assessments
  - Annual NSO assessments of the contractor, JNPO and user self-assessment programs.
- Consider developing and implementing a formal process governing the review and approval of hazards surveys and EPHAs.
  - Establish minimum experience and qualification requirements and a process for selecting document reviewers.
  - Include checklists and/or procedural guidance to address review activities, such as verification of facility materials at risk, sampling of release calculations, designation of protective action criteria and associated distances, derivation of emergency action levels and associated protective actions, and designation of the facility emergency planning zone.
  - Provide a method to capture the comment and resolution cycle during the review, and include a comment resolution process if necessary.
  - Ensure that the process addresses the final approval of the documents and includes a provision for forwarding copies to the appropriate site users and headquarters offices.
- Improve the visibility of the emergency management assessment program within NSO by including emergency management program assessments in the assessment and oversight manual and associated processes. Actions to consider include:
  - Address required emergency management assessments in the "base program" and "functional area" appendices.
  - Include a roll-up of emergency management assessments in the master schedule to ensure that upper-level management is apprised of the status of the programmatic assessments.
  - Include the assessments of emergency management programmatic areas and contractor and JNPO self-assessment programs in the AMSO assessment schedule.

- Consider the following to improve the implementation of the self-assessment program:
  - Ensure that the site contractor, laboratories, and tenants perform the required annual program self-assessments and provide the results to NSO.
  - Review the results of contractor, JNPO, and tenant self-assessments, provide feedback on good practices and identified weaknesses, and evaluate results for potential sitewide lessons learned.
  - Encourage the use of performance-based assessments.
  - Factor the self-assessments into the emergency readiness assurance plan and the overall emergency management assessment schedule.
- Improve the implementation of the assessment program by identifying the effort and resources necessary to execute the program through the development of a detailed, resource-loaded assessment plan. Specific actions to consider include:
  - Identify the assessments needed to address each of the emergency management program functional areas for each of the programs and facilities over the three-year programmatic assessment cycle.
  - When scheduling programmatic assessments, take into account internal and external assessments and evaluated exercises, as well as the completion and quality of contractor and JNPO self-assessments.
  - Balance the assessments of documents with assessments of field implementation of the documents.
  - Identify the resources needed to complete the assessment plan, and for activities that require outside expertise, identify how that expertise will be obtained.
  - Identify the resources necessary to review the hazards surveys and EPHAs.
  - Integrate short-term and long-term resource requirements for key document reviews with the resources required to perform assessments, and develop an integrated schedule for completion of these tasks.
  - Include the integrated plan and schedule in routine reports to upper-level managers and the emergency readiness assurance plan.
- To improve the usefulness of effectiveness reviews for corrective actions and corrective action plans, increase the use of performance-related criteria in these reviews and provide training to the reviewers in the conduct of performance-related reviews.

JNPO-Lawrence Livermore National Laboratory

- Consider the following actions to improve the effectiveness of the self-assessment program.
  - Balance document reviews with assessments of field implementation of the documents.
  - Conduct assessments using approved evaluation standards and criteria that are identified in assessment plans and/or reports.
  - Document the evidence that was used to determine whether evaluation criteria were met or not met in assessment reports.
- Enhance the JNPO-LLNL issues management process. Specific actions to consider include:
  - Ensure that corrective actions for findings and weaknesses identified by site assessment processes are integrated and tracked with corrective actions resulting from external assessments.
  - Require corrective actions for all weaknesses listed in drill and exercise after-action reports.

JNPO-Lawrence Livermore National Laboratory and JNPO-Los Alamos National Laboratory

- Consider developing a detailed, resource-loaded self-assessment plan for completing the required program assessments. Identify the resources needed to implement the self-assessment plan and, for activities that require outside expertise, identify how that expertise will be obtained.

JNPO-Los Alamos National Laboratory

- Consider developing procedures and processes that specify the expectations for the conduct of the assessments. Specific attributes to consider are:
  - Use of a set of approved evaluation criteria that are identified in assessment plans and/or reports.
  - Emphasize the use of performance-based assessments whenever possible.
  - Document the evidence that was used to determine whether evaluation criteria were met or not met in assessment reports.

National Security Technologies

- Enhance the ability of the assessment program to identify and correct weaknesses in the emergency management program. Specific actions to consider include:
  - Balance document reviews with assessments of field implementation of the documents.
  - When evaluation criteria are not met, but corrective actions are already in progress, ensure that the corrective actions are appropriately captured in caWeb.
  - Clarify in written form the organization responsible for entering issues into the corrective action tracking system for exercises and operational emergencies.
- Consider developing an emergency management assessment plan and annual schedule that includes each of the applicable emergency management program functional areas and ensure that the following are included and taken credit for as appropriate:
  - Areas that are tested significantly in the exercise program
  - Line organization (facility-level) self-assessments
  - Emergency management assessments of line organization programs
  - Functional area self-assessments related to the emergency management program, such as emergency public information and emergency medical support.
- To promote continuous program improvement through the emergency management issues management process, consider the following actions:
  - Consider performing a causal analysis of recurring deficiencies to determine what additional actions are necessary to prevent recurrence.
  - Ensure that corrective actions incorporate specific verification and validation activities.
  - Ensure that discussions, agreements, or subject matter expert reviews, used as the bases for closing corrective actions, are documented.
  - When validation activities identify continuing weaknesses, review the need to either re-open the issue or open a new issue associated with the original finding.

This page intentionally left blank.

Abbreviations Used in This Report (continued)

NA-41	NNSA Office of Emergency Management and Policy
NA-43	NNSA Office of Emergency Management Implementation
NNSA	National Nuclear Security Administration
NPTEC	Nonproliferation Test and Evaluation Complex
NSO	Nevada Site Office
NSTec	National Security Technologies, LLC
NTS	Nevada Test Site
OCC	Operations Control Center
PAC	Protective Action Criteria
PAO	Public Affairs Officer
TEL	Threshold for Early Lethality
WSI	Wackenhut Services, Inc.